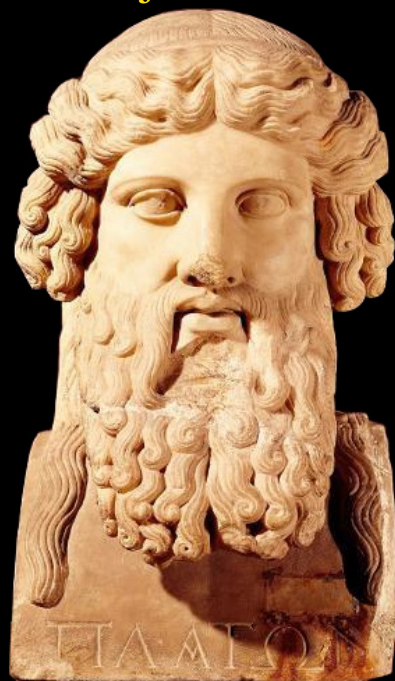
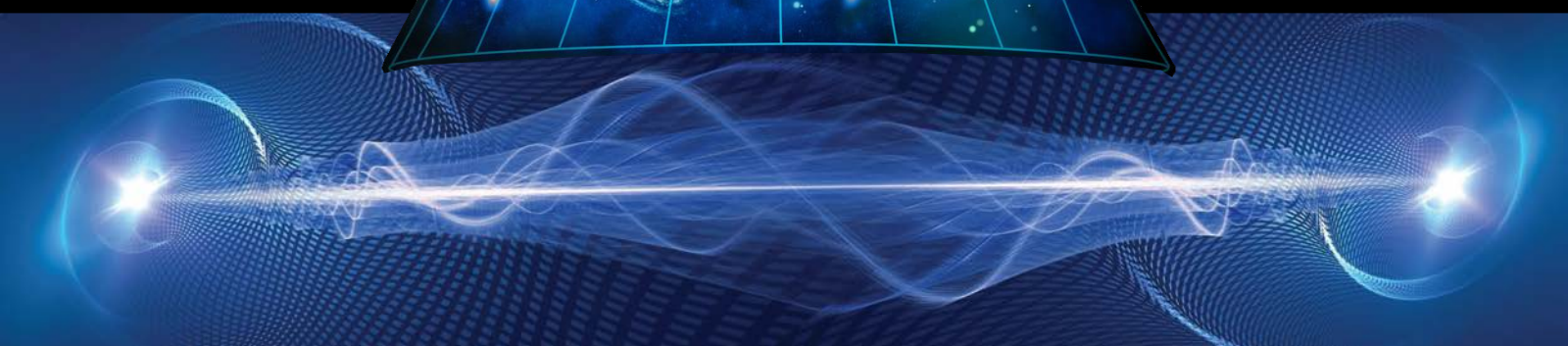


# **A Grand Unification of the Sciences, Arts & Consciousness: Rediscovering the Pythagorean Plato's Golden Mean Number System**

Scott Olsen, Leila Marek-Crnjac, Ji-Huan He and M.S. El Naschie



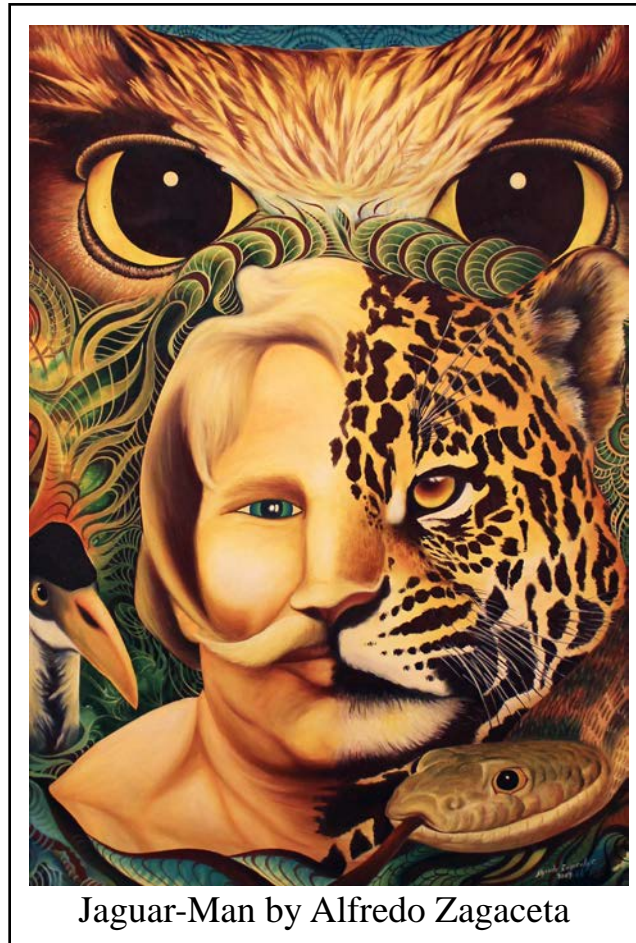
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Scott Olsen, Leila Marek-Crnjac, Ji-Huan He and M.S. El Naschie

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# Contents

Preface.....	vii
Foreword .....	x
1. Philosophical Background .....	1
2. Background Information: Cantorian Spacetime - Bijection Formula - Noncommutative Geometry and the Dimensional Function .....	3
3. M-Theory and Dark Energy .....	6
4. $E=mc^2$ and Cosmic Dark Energy .....	7
5. The Set Theoretical Foundation of Quantum Mechanics .....	9
6. Hardy's Quantum Entanglement $\phi^5$ , Unruh Temperature $\phi^4$ and the Barbero-Immirzi Parameter $\phi^6$ .....	12
7. The Degree of Emptiness and Empty Sets .....	14
8. Ordinary Energy Density $E(O)$ and Dark Energy Density $E(D)$ of the Universe .....	15
9. Dark Matter Energy $E(DM)$ and Pure Dark Energy $E(PD)$ .....	17
10. Cosmic Energy Density from David Gross, et al. and Heterotic String Theory.....	19
11. Hidden Extra Dimensions, Measure Concentration of Dvoretzky's Theorem and Related Issues .....	22
12. Art and Science - Two Sides of the Same Coin ..	23
13. Anomalies and Abduction – Charles Sanders Peirce.....	24

14. Plato and the Academy.....26

15. Plato, Stichometry and the Golden Section .....30

16. Plato’s Entheogenic-Initiation, Silence, and the One & Indefinite Dyad.....32

17. Other Paths to the Summit and Apollo 14  
Astronaut Edgar Mitchell’s Experience of Samadhi .36

18. The Penrose Microtubule Anomaly, Buckyball  
Clathrins and Consciousness.....38

20. A Family of Anomalies and the Golden Ratio as  
Abductive Inference to the Best Explanation; How the  
One Becomes Many .....46

21. Phyllotaxis and the Golden Rhythm of Nature ....54

22. Solving Quantum Paradoxes .....55

23. Golden Proportional Symmetry and Aesthetics ..57

24. The Pythagorean Quadrivium, Harmonics and the  
Music of the Spheres.....60

25. The Silent Pulse, Synchrony and Quantum  
Coherent States of Consciousness .....64

26. Harmonics of Illumination in the Platonic  
Tradition: Return to the One .....67

27. A Glimpse into the Brain and Consciousness via  
the Picture of E-Infinity .....69

28. Alexey Stakhov and the Mathematics of Harmony  
.....72

29. Concluding Remarks .....74

30. E-Infinity Theory Contributors .....78

Photo Credits.....80



Other Photo Credits.....81

References.....85

APPENDICES .....120

Appendix I: Towards a Golden Physics - Gatherings  
and Collaboration.....121

Appendix II: Golden Mean Transfinite Corrections  
and Coupling Constants .....128

Appendix III: Subatomic Particle and Quark Masses  
.....130

Appendix IV: Fuzzy Fractal Logic .....131

Appendix V: Types of Fractals.....132

Appendix VI: Research Notes – Hydrodynamic Phase  
Transition Model and Transmutation.....133

Appendix VII: Golden Mean Spirals as Mini Black  
Holes, Wormholes and Entanglement, and the Novel  
Features of Neodymium.....138

Appendix VIII: Consciousness and Life.....141

Appendix IX: Phase Transitions Governed by the Fifth  
Power of the Golden Mean and Beyond .....144

Appendix X: The Golden Mean as Coding Principle of  
the Brain by Harald Weiss and Volkmar Weiss.....145

Appendix XI: Retro-causation, Remote Viewing and  
Orch OR .....150

Appendix XII: Quotations Concerning: the Universal  
Language of Nature and the Fine Tuning of the  
Universe .....156

Appendix XIII: Quotations Concerning: Anomalies,  
Abduction and Paradigm Change .....160

Appendix XIV: Quotations Concerning: Plato,  
Aristotle & Their Commentators .....162

Appendix XV: Quotations Concerning: Mathematics  
and Beauty .....164

Appendix XVI: Quotations Concerning:  
Consciousness, the Brain and the Mystical.....166

Appendix XVII: Alexey Stakhov’s Aesthetics of the  
“Golden Section” .....170

Appendix XVIII: The Golden Mystery of the Three  
Means and the Harmonic Beauty of the Universe ...172

Appendix XIX: Foreword by Huston Smith  
for Scott Olsen’s next book: *Divine Proportion:  
The Mathematical Perfection of the Universe* .....179

Appendix XX: Keywords .....183

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**Author Affiliations**

- Scott Olsen, Professor Emeritus of Philosophy & Religion, Humanities Department,  
College of Central Florida, Ocala, Florida, USA
- Leila Marek-Crnjac, Ph.D., Department of Mathematics, Technical School Center of  
Maribor, Maribor, Slovenia
- Ji-Huan He, Professor, National Engineering Laboratory for Modern Silk, College of  
Textile and Clothing Engineering, Soochow University, Suzhou, China
- Mohamed S. El Naschie, Distinguished Professor of Physics, Faculty of Science,  
University of Alexandria, Alexandria, Egypt

# Preface

It has been a great honor to be asked by my good friend Mohamed El Naschie to be lead author of our new e-book, *A Grand Unification of the Sciences, Arts & Consciousness: Rediscovering the Pythagorean Plato's Golden Mean Number System*. Our friendship was forged several years ago when we first met at the Grosvenor Victoria Hotel in London in 2007 to discuss our common interest in the importance of the *golden mean number system*. I had recently written *The Golden Section: Nature's Greatest Secret* in 2006, and had decided to meet with the golden number scholar, Alexey Stakhov, near his home in Toronto, Canada. While there, Alexey implored me to meet with Mohamed, whom he said understood the role of the golden section in physics better than anyone else in the world. I sent Mohamed a copy of my book, and he responded with the first of several invitations to meet together, initially in London, and then later with him at physics conferences in Alexandria, Egypt and Shanghai, China. This was the beginning of a very close and meaningful relationship over the years that has now led to this book.

It is important to make crystal clear at the outset that the deep insights into the nature of physics contained herein are those of Mohamed El Naschie in collaboration with our co-authors Leila Marek-Crnjac and Ji-Huan He, along with the entire team of contributors to the Cantorian E-Infinity spacetime theory. My humble contribution has been merely to fill in some of the golden section background, and make evident the important (though somewhat hidden and often times misunderstood) influence of Plato and his Pythagorean predecessors. Their profound discovery of the role of the *golden mean number system* throughout nature and the cosmos has



maintained its influence, though at times in subtle and varying degrees, as an undercurrent throughout history right up to today.

When I accepted my role in this endeavor, I made it clear that we would pull no punches. And we haven't. As a result, we have produced a complete package that we are confident goes far in delivering the content represented by the title. However, despite my exuberance over what we have accomplished, I must shoulder sole responsibility for introducing anything herein that appears foreign to either one's consensus reality regarding consciousness or the traditional purview of physics. Nevertheless, the ontological and epistemological significance of the *golden mean number system* stands entirely on its own, and requires no external props.

In addition, it is my sincere hope that this work will help bring attention to the incredible intellect behind the creation of the E-Infinity spacetime theory. My initial encounter with Mohamed El Naschie in London brought back to mind Plato's account in the *Parmenides* [252] of the youthful Socrates' introduction to the elder philosopher Parmenides. The youth was absolutely awestruck in the presence of this intellectual giant. During my first meeting with Mohamed, I was overcome with genuine awe by the intellectual prowess of this immense personage who seemed to be towering over me in the spacious Grosvenor Victoria Hotel. I have absolutely no doubt that posterity will sort it all out, remembering this humble but tremendous human being as one of our greatest contributors to the intellectual patrimony of humanity, and in particular, to the recognition of the central role of the *golden mean number system* as the *lingua franca* of nature itself.

On behalf of our team of authors, we extend our deepest heartfelt thanks to each and every individual who assisted in the development of the E-Infinity spacetime theory. These contributors are the real heroes of this endeavor, and it is to this entire group that we dedicate this volume with profound respect and gratitude in their honor. [See Contributors, Section 30]

– Scott Olsen

“If someone can reduce Plato to a system, he will have performed a great service for humanity.”

– Leibniz [214]



Plato and Aristotle from Raphael's, *School of Athens*

# Foreword

A profound *golden mean number system* emerges underlying the cosmos, nature and consciousness by combining the insights from E-Infinity theory, along with Plato's initiatory insights into the golden section imbedded in his principles of the One and Indefinite Dyad, David Bohm's ontological framework of the superimplicate, implicate and explicate orders, and the pervasive presence throughout physics, chemistry, biology and cosmology of the golden ratio (often veiled by Fibonacci and Lucas numbers). The ubiquitous presence of the *golden mean number system* is evident in quantum mechanics, including quark masses, the chaos border, fine structure constant and entanglement, entropy and thermodynamic equilibrium, the periodic table of elements, nanotechnology, crystallography, computing, digital information, cryptography, genetics, nucleotide arrangement, Homo sapien and Neanderthal genomes, DNA structure, cardiac anatomy and physiology, biometric measurements of the human and mammalian skulls, weather turbulence, plant phyllotaxis, planetary orbits and sizes, black holes, dark energy, dark matter, and even cosmogenesis – the very origin and structure of the universe. This has been pragmatically extended through the most ingenious biomimicry, from robotics, artificial intelligence, engineering and urban design, to extensions throughout history in architecture, music and the arts. We propose herein a grand unification of the sciences, arts and consciousness, rooted in an ontological superstructure known to the ancients as the One and Indefinite Dyad, that gives rise to a *golden mean number system* which is enfolded into the substructure of all existence.

# 1. Philosophical Background

“And all things that can be known contain number, without this nothing can be thought or known.”

-Philolaus, Fr. 4

The present work sets out to do nothing less than suggest (in broad outline) a grand unification of the sciences, arts and consciousness by explicating the underlying reality of the universe's *goldenmeannumbersystem*. Following the diligence, determination, and professionalism of the eminent group of scholars (see Section 30) who together developed the E-Infinity theory, we will work closely with the actual scientific evidence. However, following the admonition of Gottfried Wilhelm Leibniz<sup>1</sup>, we will have the courage to travel some pathways and routes less travelled and too often avoided by those limited to practicing what Thomas Kuhn referred to in *The Structure of Scientific Revolutions* [87] as merely “normal science”. Caveat emptor, reader please beware, our job here is not to cover up the deeper insights of the creative geniuses of humanity, but rather to “lift the carpet” and bring them forth into the light of day. We are proposing a radical paradigm shift, a Copernican revolution and recognition of a *golden physics* in which the universe functions as a golden



Philolaus  
(c.470 BC – c.385 BC)



Leibniz  
(1646-1716)



Thomas Kuhn  
(1922 – 1996)

---

<sup>1</sup> Leibniz: “Two roads diverged in a wood and I – I took the one less traveled by, and that has made all the difference.”

supercomputer [41,86]. Along the way we will address a family of striking anomalies (Section 20), which when taken together point to a radical paradigm shift, and the very foundation principles for a *golden mean number system*, alluded to in antiquity as the One and the Indefinite Dyad. And in so doing we will necessarily be called upon to venture an answer to the greatest philosophical question of all: “How does the One become the Many?”

It was David Bohm who maintained, “The essential features of [quantum interconnectedness] are that the whole universe is in some way enfolded in everything, and that each thing is enfolded in the whole.” (*The Undivided Universe*)



David Bohm  
(1917 – 1992)

[88] Thus, like a hologram, each fractal part contains (in potential) the information of the whole. Not only will we provide strong evidence that consciousness and the associated resonant states of awareness are guided by the same *golden mean number system*, but that this potential can ultimately be fully realized through resonant unfoldment into a nonlocal state of cosmic consciousness, known as samadhi. Witness as an example, the climactic cosmic conscious experience of Apollo 14 astronaut Edgar Mitchell during his return journey to earth after becoming the 6<sup>th</sup> person to walk on the moon [89].

A quick preliminary note regarding our usage of the symbolism for the golden ratio. There are two versions, one we will refer to as the Greater and symbolize by the upper case Greek letter  $\Phi = \frac{\sqrt{5}+1}{2} \approx 1.6180339...$  and the other we will refer to as the Lesser and symbolize it by



the lower case Greek letter  $\phi = \frac{\sqrt{5}-1}{2} \approx 0.6180339\dots$ .

The numbers are identical but for the difference of exactly one. They are reciprocals of each other, so that

$\frac{1}{\Phi} = \phi$  and  $\frac{1}{\phi} = \Phi$ . Typically, it is more common in

the sciences to emphasize the use of the Lesser or  $\phi$ , to which, merely by convention, we will associate the name Truth. Whereas in art and aesthetics it is more common to emphasize the use of the Greater or  $\Phi$ , with which we will associate the name Beauty.

“Beauty is truth, truth beauty – that is all  
Ye know on earth, and all ye need to know.”

- John Keats, *Ode on a Grecian Urn*

## 2. Background Information: Cantorian Spacetime - Bijection Formula - Noncommutative Geometry and the Dimensional Function

This story may have started with Pythagoras’s extensive study and initiatory experiences at the hands of the priests in ancient Egypt and Babylon, and maybe even before. At the heart of this is a theory of cosmic music, the music of the spheres, as encoded in their sacred tetraktys and quadrivium (see Section 24) through number theory [8-15], and includes the tremendous work which sprang from it [11-12] and influenced many modern research directions which are visible in our own present time [6,8,12,49-53].



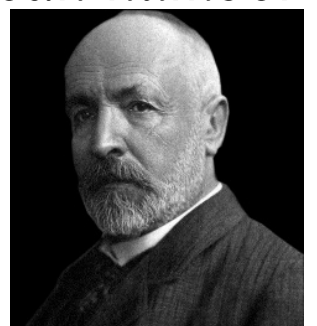
Pythagoras  
(c. 570 – c. 495 BC)





Authors He, El Naschie and Olsen  
2012 Mini-symposium on Dark Energy,  
Fourth International Symposium on Nonlinear Dynamics,  
Shanghai, China

The present work may be extensive [1-290] but it is really quite condensed and is a relatively short account of the long story of the impact of utilizing the *golden mean number system* [1-22,38-41,53,209,249] in quantum cosmology in particular [14-22,27,34,38,64,119,204,205] and in unifying art with science and the “missing science” of consciousness in general [6,8,10-12,45-53,79,80,99,100,110,111,116,118-120,131,150,153,196,219,247,256]. We draw attention to parallel developments coming from different directions of logical and historical motivation converging on the same critical point, namely number theory in general [13,23] and the *golden mean number system* in particular [19,21]. To put the preceding point in explicit terms, we just need to recall the fundamental fact that the spacetime manifold of our E-Infinity Cantorian theory is virtually made up of an infinite number of unions and intersections of random Cantor sets with the golden mean  $\phi = (\sqrt{5} - 1)/2$  to the power of  $n$  as Hausdorff dimension where  $n$  takes the value from one to infinity as well as  $n = 0$  which gives us unity (i.e.  $\phi^0 = 1$ ) as shown in numerous previous publications [1-9,13-22,26,168].

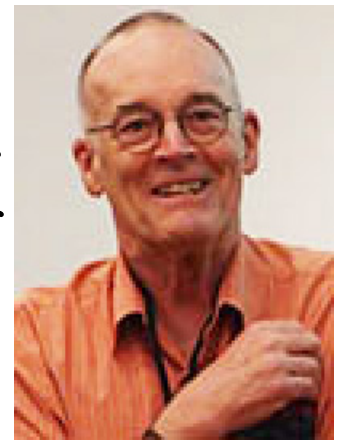


Georg Cantor  
(1845 – 1918)



Felix Hausdorff  
(1868 – 1942)

It is a well-known fact due to the American mathematicians R.D. Mauldin and S.C. Williams's theorem, that a random Cantor set has the golden mean as its Hausdorff dimension [175] and that is why we are using  $\phi^n$  as statistical weight for the hierarchical E-Infinity Cantorian spacetime [1-3,19,24]. In this way, the deductive dimensional theory developed by Karl Menger and Pavel Urysohn has entered into E-Infinity and was integrated into its mathematics via the bijection formula [1,2,3,19,24]



R.D. Mauldin

$$d_c^{(n)} = (1 / d_c^{(0)})^{n-1}, d_c^{(0)} = \phi \quad (1)$$

which in turn serves the same purpose and has the same meaning as von Neumann-Connes' dimensional function of the Penrose fractal tiling universe [25-28]

$$D = a + b\phi, a, b \in \mathbb{Z} \text{ and } \phi = (\sqrt{5} - 1) / 2. \quad (2)$$

Let us now show how equation (1) and (2) stated above deliver the same Hausdorff dimension of a spacetime which is topologically four dimensional.

In the case of equation (2) all we need is to set  $n = 4$  and  $d_c^{(0)} = \phi$  to find immediately the famous Hausdorff dimensionality. Consequently, for Einstein's spacetime with  $D(4) = n = 4$  one finds [1-4,25,26]

$$\begin{aligned} d_c^{(4)} &= (1 / \phi)^{4-1} \\ &= (1 / \phi)^3 \\ &= 4.2360679... \\ &= 4 + \phi^3 = \Phi^3 \quad . \\ &= 4 + \frac{1}{4 + \frac{1}{4 + \frac{1}{4 + \dots}}} \end{aligned} \quad (3)$$

The result we just found goes far beyond Einstein's  $D = 4$  because every single internal region is also four dimensional. And so everything which appears in this space to be a mere point, turns out on careful observation to be an entire Cantor set as is obvious from the continued fraction representation of  $4 + \phi^3$  given in equation (3). Such a space is clearly scale invariant [6,15,19,21]. This scale invariance is in general an important and essential property of a truly consistent theory as discussed in many earlier publications [1,8,15,17,19,21,24]. The preceding equations were derived based on a geometrical topological picture of E-Infinity spacetime. Moreover, there is a second dynamical-mechanical picture of the same space which is frequently referred to as the nested oscillation picture of E-Infinity and was used in connection with the brain [51-53]. More on this later, see for example formula (50) in Section 27, and Appendix X.

### 3. M-Theory and Dark Energy

Continuing this way we derived equation (3) above and we have shown how, in Witten's M-theory,  $D = 11$  can be converted to a general fractal and scale invariant M-Theory with a dimensionality equal to eleven plus the exact Hardy quantum entanglement probability  $P(H) = \phi^5$  [2,3,29]. Consequently, we see that we have



Edward Witten

$$\begin{aligned}
 D &= 11 + \phi^5 \\
 &= 11 + \frac{1}{11 + \frac{1}{11 + \dots}}
 \end{aligned} \tag{4}$$

i.e. an eleven-dimensional spacetime inside a larger one and so on indefinitely [15,30].

In fact, in the last twenty-five years or so, we have deduced numerous similar relations which the reader may find mathematically derived and physically explained in the relevant voluminous literature on E-Infinity Cantorian spacetime theory [1-8,13-31,40,45,49,54].

However, in the present work we will concentrate on and recall only theoretical results which are of immediate relevance and direct use with respect to our concern here as stated at the very beginning with the connection between science, the arts and consciousness through the *golden mean number system* [5,6]. This is testified to by our derivation of the energy density of the dark section of the cosmos i.e. pure dark energy which amounts to almost 73.5% of the total energy of the universe, as well as the dark matter energy density found using accurate cosmic measurement to be roughly 22% [3,6,16,17,18,32]. Consequently, the total dark energy sector is about 95.5% which harmonizes well with the result of the cosmic energy density which can be measured in a direct way rather than indirectly inferred, namely the ordinary cosmic energy of about 4.5%. In other words, the total energy density adds up to the maximal energy density given by that most famous of all equations [33], namely equation (5) which will be discussed next.

#### **4. $E=mc^2$ and Cosmic Dark Energy**

The celebrated mass-energy equivalence equation states that

$$\begin{aligned} E &= \gamma mc^2 \\ &= mc^2 \end{aligned} \tag{5}$$

where  $m$  is the mass and  $c$  is the speed of light.



## 20. A Family of Anomalies and the Golden Ratio as Abductive Inference to the Best Explanation; How the One Becomes Many

“In the end we are driven to search for what we hope will turn out to be the correct ontology of the world. After all, it is the desire to understand what reality is like that burns deepest in the soul of any true physicist.”


Lucien Hardy [179,180]

1. Quark masses and the Chaos Border are governed by the golden ratio [72,285].
2. Hardy discovered that the entanglement probability (and therefore, nonlocality) of two particles is exactly equal to the Lesser golden ratio to the fifth power or  $\phi^5$  [55].



Lucien Hardy interviewed by Scott Olsen, 2018 Science of Consciousness Conference, Tucson, AZ

3. MIT physicists, led by Pablo Jarillo-Herrero discovered that two-sheets of graphene twisted by about 1.1 degrees allow electrons to become easily entangled and superconductive [147,148]. We (the authors) predict they will eventually discover this angle is precisely  $\phi^{11} \times 360^0 = 1.118023205...deg$ .
4. Olsen observed that the biometric measurements of the human skull, in “Mammalian Skull Dimensions and the Golden Ratio ( $\Phi$ )” by Tamargo and Pindrik, are ratios of adjacent Lucas numbers, approximating the golden ratio [18:11 and 11:7] see [56].

5. Olsen noticed the biometric measurements of lion and tiger skulls are ratios of adjacent Lucas numbers [7:4 and 4:3] see [56]. This is of interest to those on a shamanic path (see Section 16) where identification with the big cat is not uncommon [144,277].
6. Perez noted in 1991 that single-stranded whole human genome DNA gene-coding region sequences and codon populations were fractal, finely tuned to the golden ratio (1.618...) and related to Fibonacci and Lucas numbers [57].  Jean-Claude Perez
7. Perez also found two binary code attractors. The top state matches the Lesser = 0.618..., and the bottom state matches  $\frac{1}{2}$  the Lesser = 0.309.... These two states create a self-organizing bi-stable binary code, that is in a perfect octave of one another [58].
8. Persaud-Sharma and O'Leary report in "Fibonacci Series, Golden Proportions and the Human Biology" that Perez found the widespread occurrence of Phi ( $\Phi$ ) and the Fibonacci series throughout various species in 2009. Like human and chimpanzee genomes, the codon populations of twenty various species including eukaryotes, bacteria and viruses showed that three parameters (1, 2, and Phi ( $\Phi$ )) define these populations to a precision of 99% and often 99.999% [58, 59].
9. The genomes of both Homo sapiens and Neanderthals exhibit Fibonacci and Lucas resonances (see Jean-Claude Perez) [57].
10. Petoukhov confirmed Perez's SUPRA-code of DNA [123]; and then went on to discover a law of golden genomatrices underlying the genetic code which is based upon two values only: the Greater,  $\Phi$ , and the Lesser,  $\phi$  [124].



11. Systolic and diastolic blood pressure follows the golden ratio [60].
12. The Greater golden ratio is present in the human heart beat's cardiac cycle [61].
13. The first Penrose Anomaly, “Why do Fibonacci numbers appear in microtubules?” [53]
14. The second Penrose Anomaly, “Quantum reduction [wave collapse] must be a nonlocal process.”[196] See Appendix XI for significance for consciousness.
15. In 2019 Hameroff indicated that EEG waves, including gamma synchrony – the best neural correlate of consciousness (NCC) now appear to be the result of “microtubule oscillations” i.e. “interference beats of quantum vibrations in microtubules.” [153]



Scott Olsen and Stuart Hameroff,  
2019 Science of Consciousness Conference,  
Interlaken, Switzerland

16. In 2019 Hameroff observed that Orch OR indicates that “anesthetics dampen, and psychedelics [entheogens] promote quantum vibrations in microtubules.” [153] See Section 16.
17. Tangled or mutated Tau protein molecules (which when normal, stabilize and assist microtubules) result in microtubule disintegration, leading to

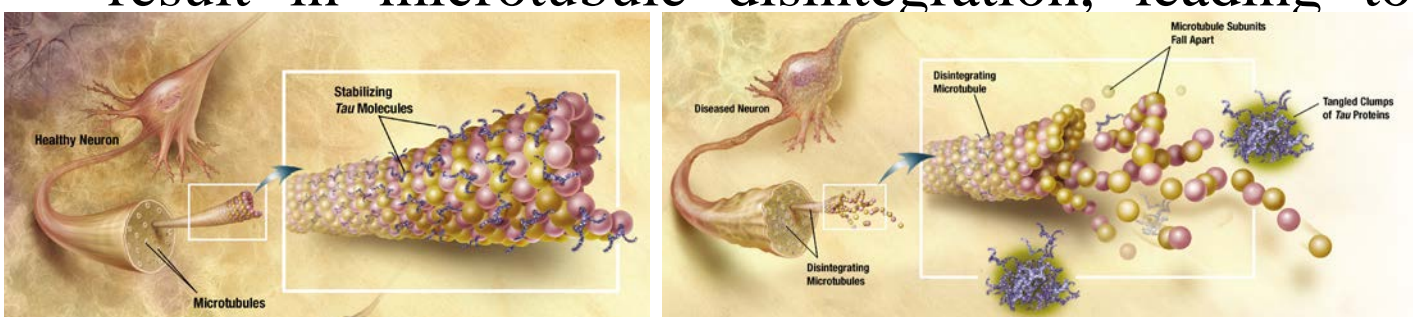


Diagram of how microtubules disintegrate with Alzheimer's disease, zoom in for details.

[\[https://en.wikipedia.org/wiki/Neurofibrillary\\_tangle\]](https://en.wikipedia.org/wiki/Neurofibrillary_tangle)

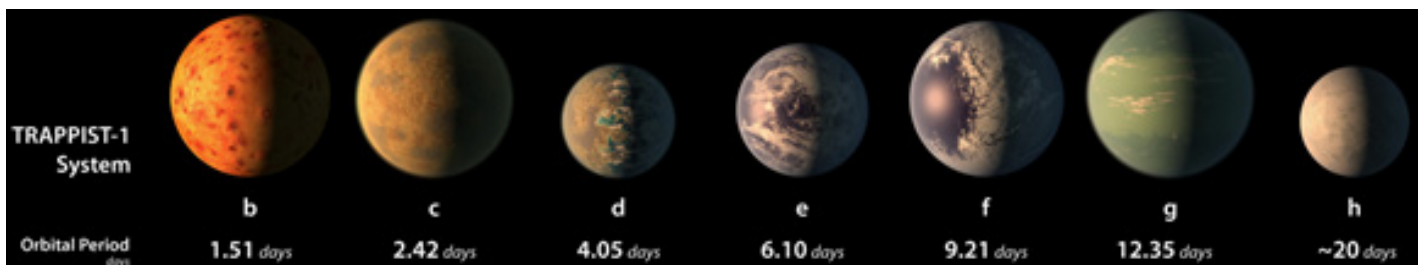
- dementia, Alzheimer's disease (i.e. destabilizing consciousness) and apparently cancer as well [149].
18. Tuszynski in his 2019 Science of Consciousness presentation, "Construction of an Integrated Model of Neuronal Bioelectric Circuitry," states that "mitochondria are photon entities and microtubules may be receivers." [150]
  19. Clathrins, closely associated with microtubules, are truncated icosahedra with  $\Phi^3 : 1$  geometric resonance and are involved in synaptic neurotransmitter release [75].
  20. Anita K. Roopun, et al. discovered that the neocortex appears to have found a way to pack as many, minimally interfering frequency bands as possible into the available frequency space by using  $\Phi$  as a common ratio between adjacent frequencies in the EEG spectrum. [173]
  21. Sir Harold Kroto, et al. won the 1999 Nobel Prize in chemistry, having discovered the structure of  $C_{60}$  to be a truncated icosahedron, therefore exhibiting  $\Phi^3 : 1$  geometric resonance.



Scott Olsen with Sir Harold Kroto (1939 – 2016),  
2013 Symmetry Festival,  
Delft, the Netherlands

22. The divergence angle of plant phyllotaxis equals roughly 137.5 degrees, the angle arising from the golden cutting of a circle [70,181].
23. In 2010 the golden ratio was discovered in QM phase transitions [67].

24. The orbits of the planets of the Trappist-1 solar system are in Fibonacci resonance [69,117]. While planet g completes one orbit around its star, planets b,c,d, and e complete 8, 5, 3, and 2 orbits respectively, in descending Fibonacci order, and planet f completes  $4/3$  orbits – a musical fourth. Planet h with an approximate 20-day orbit is very close to the Lesser golden ratio relative to the 12.35-day orbit of adjacent planet g (i.e.  $12.35 / 20 = 0.6175 \approx \phi$ , first noted by Aaron Schmidt).



[https://commons.wikimedia.org/wiki/File:PIA21425\\_-\\_TRAPPIST-1\\_Statistics\\_Table.jpg](https://commons.wikimedia.org/wiki/File:PIA21425_-_TRAPPIST-1_Statistics_Table.jpg)

25. The adjacent orbits of all six planets of the Kepler-11 (or HD 158259) solar system are virtually in 3:2 Fibonacci resonance (the musical fifth), beginning with the first inner planet and moving out. That means for every three orbits each planet makes, the next one out completes two orbits [151]. “All the planets are locked in rhythmic harmony, like a waltz in a cosmic ballroom.” [154]

26. The orbits of Neptune and Pluto are in 3:2 Fibonacci resonance, a musical fifth.

27. The relative mean orbits and mean diameters of Earth and Mercury approximate  $\Phi^2:1$  [73].

28. Paul Davies discovered that rotating black holes flip from a negative to a positive specific heat when the ratio of the square of the mass to the square of the spin parameter (rotation speed) equals  $\Phi$  [72,285].

29. The cosmic background radiation anomalies abductively suggest a dodecahedral universe (see Luminet) [63]. And the 2019 reassessment of the Planck satellite data now makes it more probable

than not that the universe is spherical-like than flat [64].

30. On the Copenhagen interpretation of QM, measurement (i.e. observation) collapses a pre-quantum wave (Lesser squared or 0.3819...) into a pre-quantum particle (Lesser or 0.618...) [5,54,95].
31. Grzedzielsik proposed the role of the golden ratio in entropy as the governing proportion underlying thermodynamic equilibrium in self-organizing systems [125].
32. Two-dimensional anyons, which are neither fermions nor bosons, were first named by Nobel Laureate Frank Wilczek in 1982 [170]. According to Bernard Field and Tapio Simula, golden fibonacci anyons provide the simplest anyon model for universal quantum computation by particle exchange or braiding alone [171]. Hermann Otto maintains that Fibonacci anyons as qubits may be the ultimate approach to quantum computation “because they naturally simulate processes which determine the speed and storage capacity of the human mind [brain].” [182]
33. El Naschie has offered a watertight confirmation for the E-Infinity Cantorian theory results for ordinary and dark cosmic energy density of the universe by a computation fundamentally based on a golden mean fusion function that goes back to the highly original anyon proposal of Frank Wilczek [172].
34. “What is it that gives life its distinctive oomph?” (see Paul Davies) [65].



Frank Wilczek,  
Nobel Laureate,  
Physics 2004



35. Buddha's discovery of the middle path is not in the center, but at the golden cut [66].
36. Ideal human biomechanics and gait are governed by the golden ratio[62].
37. Golden ratio observed in magnetic field [68].
38. Given the worldwide concern with viruses and epidemics, Otto points out that the  $\phi^5$  phase transition may be central to viral morphology. "Viral self-assembly is intimately related to the Tammes problem [188] of covering the surface of a sphere by optimally packed N circular disks with the alteration that in case of viruses the coverage may be conformational-optimized by disk-like protein capsomers (subunits) having two different radii. Some time ago, Bruinsma, et al. [189] showed that such a two-radius model as a form of structural free energy minimization prefers the icosahedral symmetry as well as the transition of sphere-like viruses to rod-like ones such as found for buckytube aggregates." For an excellent discussion of the architecture of viruses see Parvez, 2020 [197].
39. Focusing on the plethora of phase transformations governed by Hardy's  $\phi^5$  entanglement probability of two particles [55] (see #2. above), Hermann Otto noted the deep connection with statistical mechanics [182,184] and the superconducting phase transition [185-187,7].
40. Ancient Egyptian Khesi-Ra panel from Saqqara depicts an architect holding two staffs and they are in  $\sqrt{5}:1$  relation (see Figure 7) [71].



*Figure 7. Khesi-Ra panel*

41. The Great Pyramid Semi-elevation (the half-meridian triangle) is a right-angled triangle composed of legs of  $\sqrt{\Phi}$  (height) and 1 (half base), and a hypotenuse of  $\Phi$  (apothem) see Figure 8 [96, Olsen, 2018].

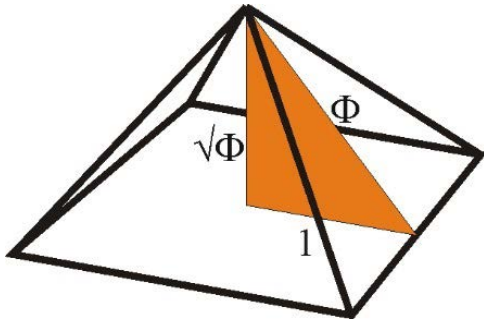


Figure 8. Great Pyramid Semi-elevation (the half-meridian triangle).



Herman Otto

42. Herman Otto's latest Great Pyramid research found that the "One yields as result  $R_v = \pi\phi^5$ , where  $\phi = 0.6180339887$  is the golden mean. It is important that the number  $\phi^5$  is a *fundamental constant of nature describing phase transition from microscopic to cosmic scale.*" [198,199]

Taken together, this family of striking facts, puzzles or anomalies, many of them biometric, lead abductively towards an inevitable "inference to the best explanation" of the deep significance of a golden ratio substructure enfolded into nature and the cosmos. The *golden mean number system* underpins nature's optimal form, function and even consciousness. The overall result is that the Pythagorean Principles of the One and Indefinite Dyad, the golden ratio and its reciprocal (Greater=1.6180339..., and Lesser=0.6180339...), and the One as their geometric mean, i.e.  $\Phi:1:\phi$  or  $\Phi:1::1:\phi$ , provide a proportional *golden mean number system* that is enfolded, infused into nature and the cosmos as its very substructure. Life (hylozoism) and consciousness (panpsychism) pour in from the very beginning riding these golden numbers from the superstructure that

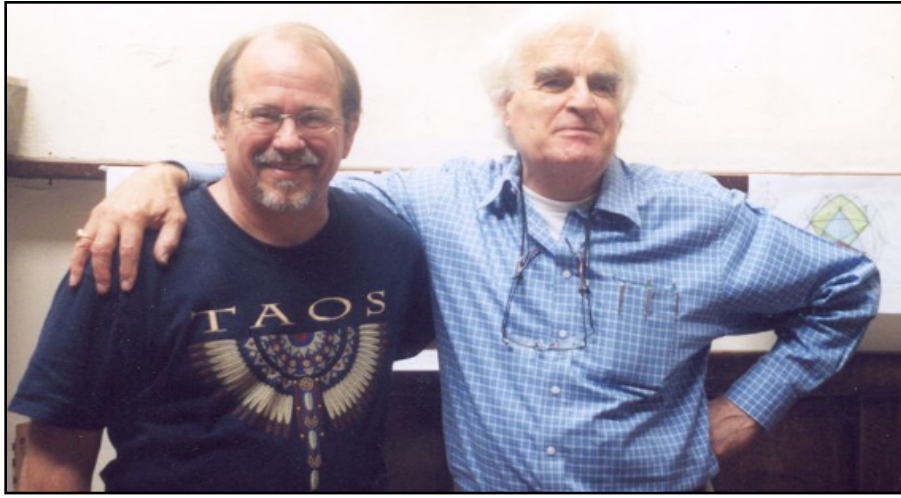


appears with the initial ontological act, Big Cut, Big Bang or Big Bounce. This is also pervasive evidence of how the One, the Source, becomes the Many – infusing itself into each and every part through an initial Asymmetric Golden Cut that perpetuates itself holographically through a fractal golden number symphony. This is the grand unification of the sciences, arts and consciousness manifested through a *golden mean number system*. As Bohm’s holomovement would suggest, each part has the entire universe enfolded into it – with all the infinite potential and possibility implicit within that can be unfolded along the way.

## 21. Phyllotaxis and the Golden Rhythm of Nature

Plant unfoldment moves in synchrony or consonance with the silent pulse or rhythm of nature – which is one with the cosmos. The sunflower’s daily movement is attuned to the position of the sun relative to the movement of the earth. In the foreword to their monumental treatise, *Symmetry in Plants*, Jean and Barabe place the golden section front and center of the mystery when they write: “Daisies and sunflowers are the emblems of phyllotaxis: all the problems of phyllotaxis are summarized therein. The presence of particular numbers, e.g. Fibonacci numbers, an angle of 137.5 degrees, the golden number  $\Phi = \frac{(\sqrt{5}+1)}{2} \approx 1.618$ , and forms (e.g. logarithmic spirals) in their capituli, and shoot apices, demands an explanation, and has served as a spur to the human intellect.... It is in phyllotaxis that symmetry in plants is most striking and puzzling.” [70]

It turns out that there is an ideal angle for phyllotaxis or spiraling leaf arrangement in the plant kingdom.



Scott Olsen and Keith Critchlow (1933 - 2020)  
Kairos Summer School Retreat, UK (see Apps. XII & XVIII)



Figure 11. Doryphorus (the  
Spear-Bearer) by Polyclitus  
of Argos

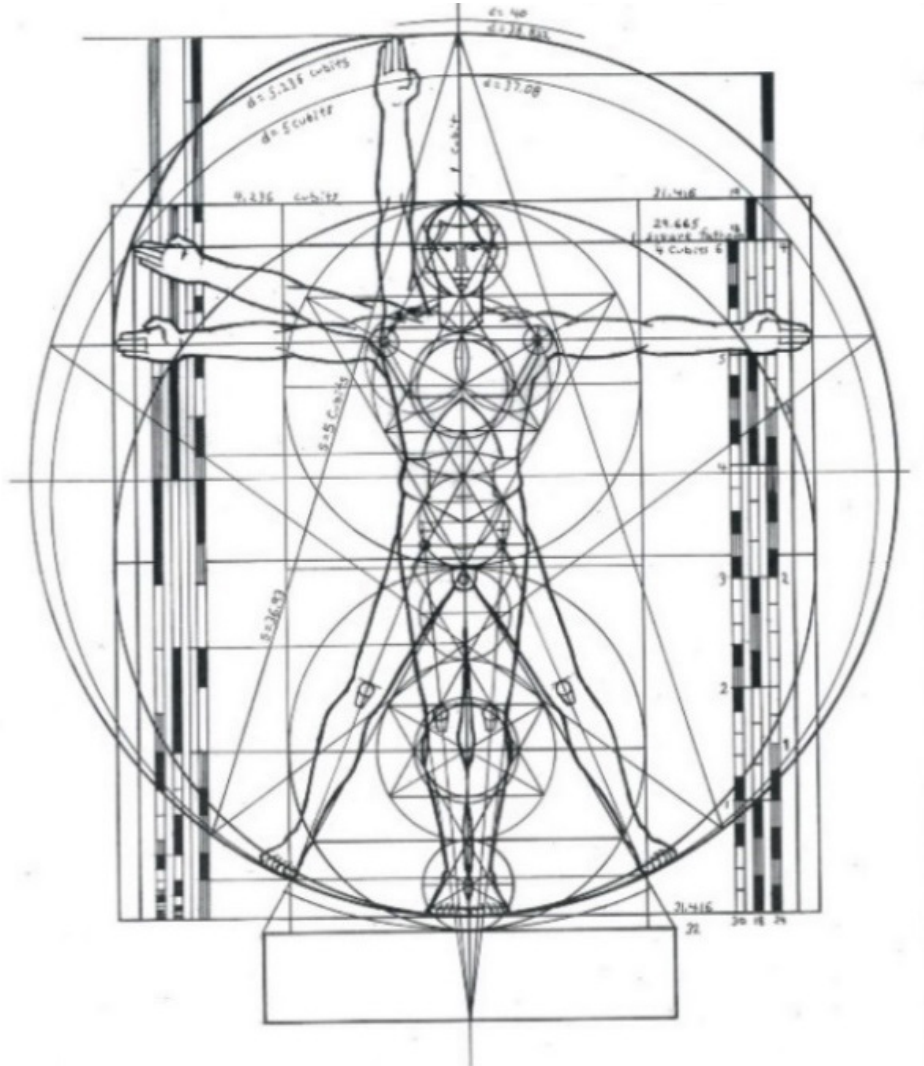


Figure 12. Da Vinci's Vitruvian Man  
by Lance Harding [72].

## 24. The Pythagorean Quadrivium, Harmonics and the Music of the Spheres

“Geometry has two great treasures: one is the theorem of Pythagoras; the other, the division of a line into extreme and mean ratio [the golden cut]. The first we may compare to a measure of gold; the second we may name a precious jewel.”

-Johannes Kepler, *Harmonice Mundi* [107]

Harmonics (number in time) was one of four disciplines studied in the Pythagorean Quadrivium [283], together with Arithmetic (pure number), Geometry (number in space), and Spherics (number in space and time). The golden ratio is a theme common to all. The structure of both rhythm and harmony is based upon intervals of simple integer ratios. The most simple and pleasing musical intervals, the octave (2:1) and the fifth (3:2), are the first Fibonacci approximations to the golden ratio. The Fibonacci series continues with the major and minor sixths (5:3 and 8:5, respectively). The scale itself holds the next step (13:8), for astonishingly, if we include the octave (2:1), musicians play eight notes in a scale, taken from thirteen chromatic notes. Finally, simple major and minor chords consist of the 1st, 3rd, 5th and 8th notes of the scale [72,285].

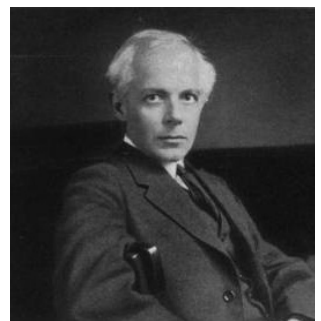


Johannes Kepler  
(1571 – 1630)



Ludwig van  
Beethoven  
(1770 – 1827)

The golden ratio has been used by composers from Dufay to Bach, Bartok, and Sibelius, as a way of structuring a work of music. Russian musicologist Sabaneev discovered in 1925 that the golden ratio predominates in compositions by Beethoven (97% of works), Haydn (97%), Arensky (95%), Chopin (92%, including almost all of his *Etudes*), Schubert (91%), Mozart (91%), and Scriabin (90%) [71,72,285].



Béla Bartók  
(1881 – 1945)

“Bartok based the entire structure of his music on the golden mean and Fibonacci series – from the largest elements of the whole piece, whether symphony or sonata, to the movement, principal, and secondary themes and down to the smallest phrase”

-J. Kappraff [162]



For Pythagoras, it was ultimately all contained in his vision of the Music of the Spheres. When one passes through the disciplines of the Quadrivium, one combines the sublimity of pure arithmetic, harmonics and geometry, in the harmonic rhythms of the three-dimensional planetary objects in a cosmic synchronous dance through time. We know that the Pythagoreans carefully guarded their deepest secrets. And Aristotle made it clear that Plato was a follower of the Pythagoreans and had an unwritten doctrine, the *agrapha dogmata* (αγραφα δογματα), in which he apparently disclosed (reportedly in an enigmatic manner) some of the deeper mathematical mysteries of the One and Indefinite Dyad philosophy in his unwritten lectures *On the Good* [See the Tübingen school, 104,105].

“Aristotle, Heraclides, Hestiaeus, and other associates of Plato attended these (lectures *On the Good*) and wrote them down in the enigmatic style in which they were delivered.”

- Simplicius on Aristotle's *Physics* 202b36.

It was the brilliant Ernest McClain, philosopher and professor emeritus of music at Brooklyn College who in *The Pythagorean Plato: Prelude to the Song Itself* began to uncover some of the Pythagorean musical content and puzzles in Plato's dialogues [77]. McClain discovered in his study of the Music of the Spheres in Plato that there appeared to be a universal wisdom tradition of similar numbers and parallel harmonic mathematical insights secretly embedded in Plato which McClain also found in other cultures including Egypt, Babylon, Sumer and India. See for example McClain and Kappraff's discussion of the construction of the Parthenon involving the

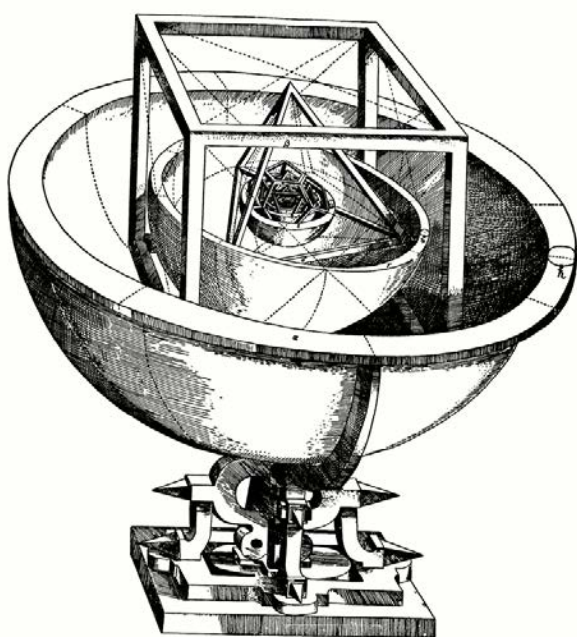


Ernest G. McClain  
(1918 – 2004)

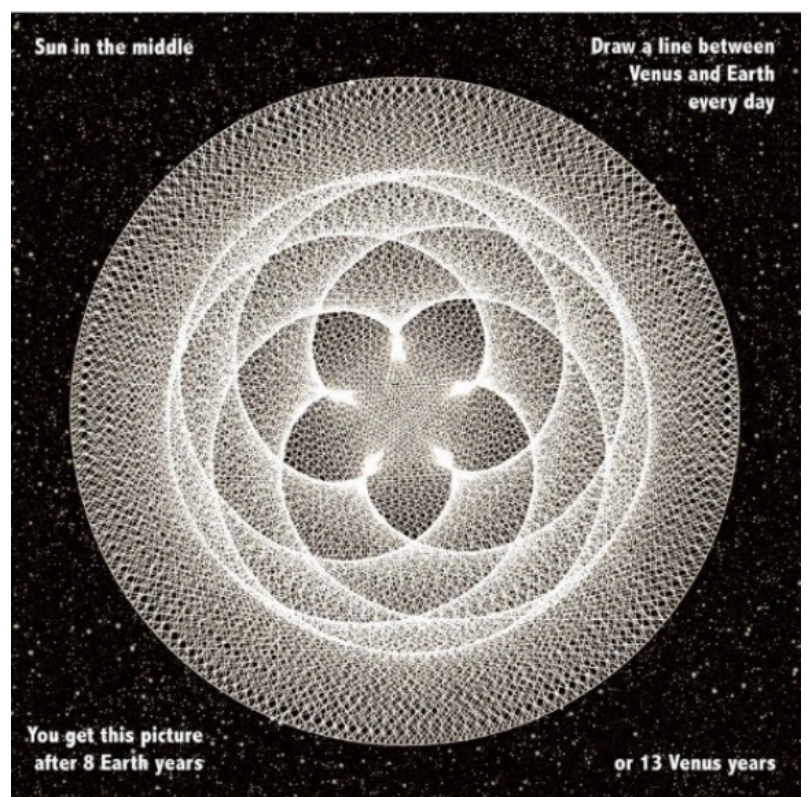
Pythagorean 12-tone just tuning system, with the pentatonic and heptatonic scales employed in the construction of the Parthenon. Apparently, the ancient Phrygian mode of the heptatonic scales was the preferred mode of Plato [78].

Kepler followed up on the Pythagorean Harmony of the Spheres in his *Harmonice Mundi* with nested Platonic solids and their golden and root ratios mirrored in the orbits of the planetary solar system (see Figure 13). This was later confirmed by John Martineau in his *Little Book of Coincidence* where he took the mean orbits and mean diameters of the planets and discovered that Kepler was right (see for example Figure 14, Kiss of Venus). Thus, the *golden mean number system*, root ratios and Fibonacci numbers are reflected in the solar system [73,107-108].

This Pythagorean Harmony of the Spheres was transferred by Danish physicist Niels Bohr into his model



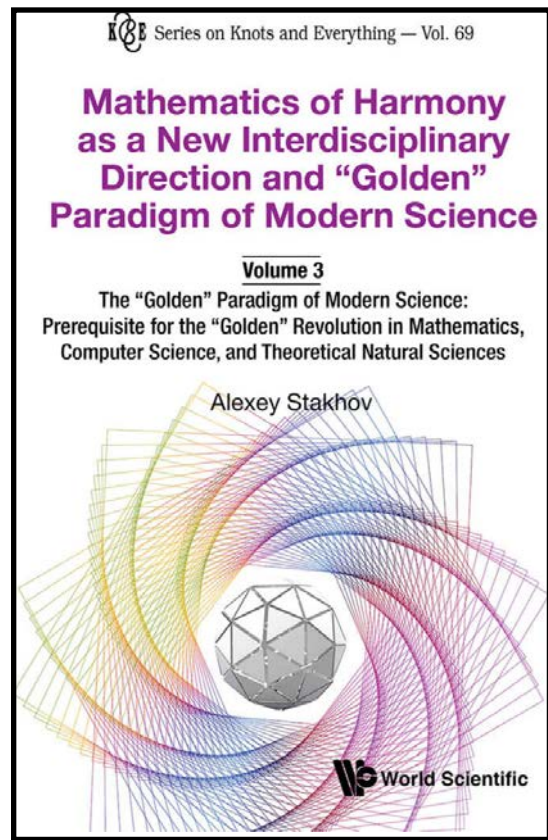
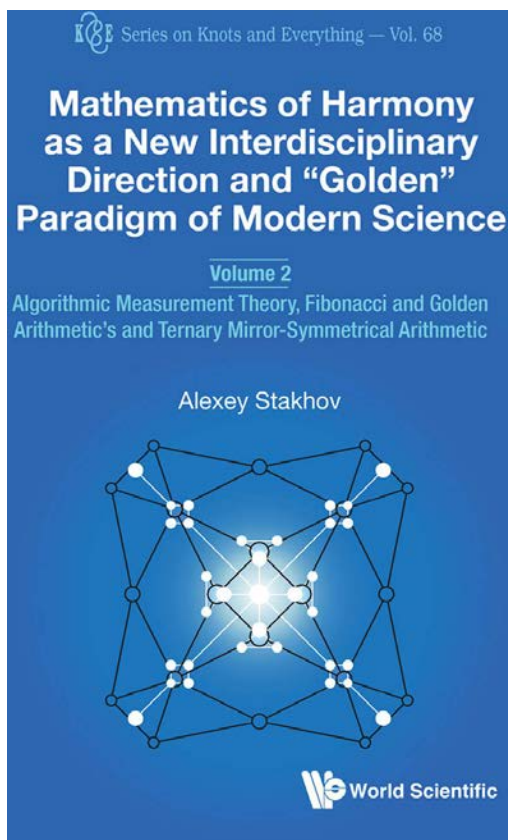
**Figure 13.** Kepler's nested Platonic solids model of the solar system.



**Figure 14.** John Martineau, "Kiss of Venus." Venus draws a beautiful fivefold rosette around Earth every 8 years (or 13 Venusian years) relating to Fibonacci numbers 13:8:5, reflecting  $\Phi:1:\phi$ . Zoom for details.

of the quantized microcosm of elementary particles and radiation. As Oliveira Neto explained it, Bohr found:





## 29. Concluding Remarks

“Someday we’ll understand the whole thing as one single marvelous vision, that will seem so overwhelmingly simple and beautiful that we may say to each other: ‘Oh, how could we have been so stupid for so long? How could it have been otherwise!’”



– John Wheeler (1911 – 2008)

Leading experimental scientists know that in any accurate experiment such as COBE and WMAP, testing a cosmological theory entails in general finding certain numbers to decide if a theory is right or wrong. Hence on this account alone when some call number theory mere numerology, it is at a minimum immensely misguided and short-sighted. It was the invention of the zero by the ancient Indian civilization and its sweeping implementation by the Arabs in the decimal number system that gave us a solid basis for the subsequent modern sciences. This simple step must thereby be



considered one of the most important intellectual steps taken by humanity undergirding modern civilization. The same, and much more, could be said about modern set theory and the deep meaning of countable infinity and incommensurate infinity. Even far more advanced than all of that and far more efficient than the binary number system employed in modern digital computers, is the almost miraculous *golden mean number system* which surpasses anything we could think of and deserves to be labeled a transfinite Alan Turing machine or golden supercomputer for short [41,42,21,83,119].



Alan Turing  
(1912–1954)

The present work starts from antiquity and takes seriously the ancient theory of Pythagoras and Plato of a *golden mean number system* and uses its basic premises to solve the mystery of dark energy of the cosmos and the fundamental question about the unity of art and science as well as the bigger than life question of consciousness as seen via the pioneering work of Penrose and Hameroff [6,52-54,79,80,99,196,213,219].

The Principles of the One and Indefinite Dyad make up the superimplicate order giving birth to the implicate order or *golden mean number system*, which in turn is enfolded or infused into the explicate order of Lucas and Fibonacci numbers (and root ratios) throughout nature and the cosmos. Thus, *the One and Indefinite Dyad make up an ontological prenumber superstructure* that enters at the outset into the fabric of reality as life (hence, hylozoism – universal life) and consciousness (panpsychism – universal sentient awareness). This is the basis of nature's ability to combine and complexify in its evolutionary unfoldment of consciousness, and

ultimately for the individual to enter into the climactic cosmic nonlocal state of awareness, or samadhi. David Bohm in his “A New Theory of the Relationship of Mind and Matter” writes:

“For the human being, all of this implies a thoroughgoing wholeness in which mental and physical sides participate very closely in each other.... There is no real division between mind and matter, psyche and soma.... Each human being participates in an inseparable way in society and in the planet as a whole.... Such participation goes on to a collective mind, and perhaps ultimately to some yet more comprehensive mind in principle capable of going indefinitely beyond even the human species as a whole.” [76]

This, of course, raises the more speculative question as to whether or not there is a profound cosmopsychism or universal consciousness at work here. It is not our goal to try to establish that thesis. This is a position we feel must be left up to the individual to determine for oneself. Nevertheless, we would be remiss not to at least address the point. Many who have had the more profound transformative experience alluded to herein have expressed the conviction of incredible intelligence and purpose at work in the universe. You will recall in Section 16, that astronaut Edgar Mitchell attested to his own experience of the universe’s seeming unity, intelligence and purpose.

“I experienced a grand epiphany accompanied by exhilaration.... An overwhelming sense of universal connectedness... an ecstasy of unity.... And there was the sense that our presence...

and the existence of the universe itself, was not accidental but there was an intelligent process at work. I perceived the universe as in some way conscious.... From that moment on, my life was irrevocably altered.” [89, pp. 3-4]

But we leave that issue for the reader to sort out for oneself. Here we must rest content with our more humble effort. We have been laser focused on establishing the basis and supporting arguments for our overriding hypothesis. As first expressed in the Foreword, this is nothing less than “a grand unification of the sciences, arts and consciousness, rooted in an ontological superstructure known to the ancients as the One and Indefinite Dyad, that gives rise to a *golden mean number system* which is enfolded into the substructure of all existence.” To that end, you the reader will have to be the judge of the degree of our success.

We wish to close with the simple observation that it appears that the underlying principles of our hypothesis, namely the One and Indefinite Dyad as expressed through the *golden mean number system*, were known long ago by the recognized king of philosophers, the Pythagorean initiate of the mysteries, Plato<sup>9</sup> himself. Today, nearly twenty-five centuries later, it is most beautifully encoded in the magnificent **E-Infinity theory** for which so many have labored and contributed [1,3,86]. It is to them and the glorious fruits of their effort that we here dedicate this work.

---

<sup>9</sup> Plato’s real name was Aristocles “the best glory” and he was certainly the great glory of Athens. However, according to various traditional accounts, he was renamed Plato (πλατυς = broad) for his athletic physique (broad shoulders and chest), breadth of eloquence or style, or broad forehead. Certainly, following his illumination in the Eleusinian mysteries or epopteia (climactic awakening of inner vision) his work and name reflected his immense breadth and clarity of vision.

# 30. E-Infinity Theory Contributors



Maricel Agop



Saleh Al-Athel



Mohamed S. El  
Naschie



Ervin Goldfain



Mohammed A.Z.  
Habbab



Ahmad M. Harb



Ji-Huan He



Mohamed A.  
Helal



Mae-Wan Ho



G. Iovane



Tomasz  
Kapitaniak



Alan L. Mackay



Leila Marek-  
Crnjac



Ray Munroe, Jr.



S. Nada

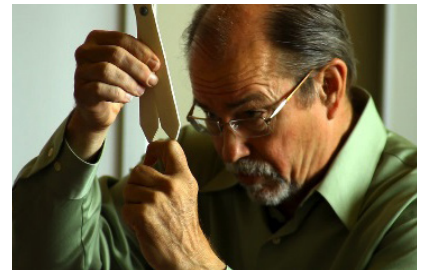




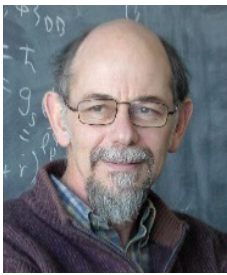
Laurent Nottale



Nader Okko



Scott Olsen



Garnet Ord



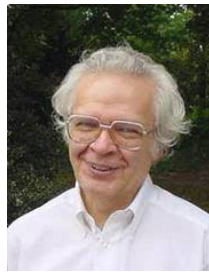
Hermann Otto



Carlos Castro  
Perelman



Ilya Prigogine



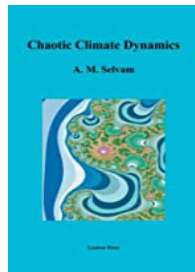
Otto E. Rössler



Boris Rozin



Metod Saniga



A. Mary Selvam



Alexey Stakhov



Susie Vrobel



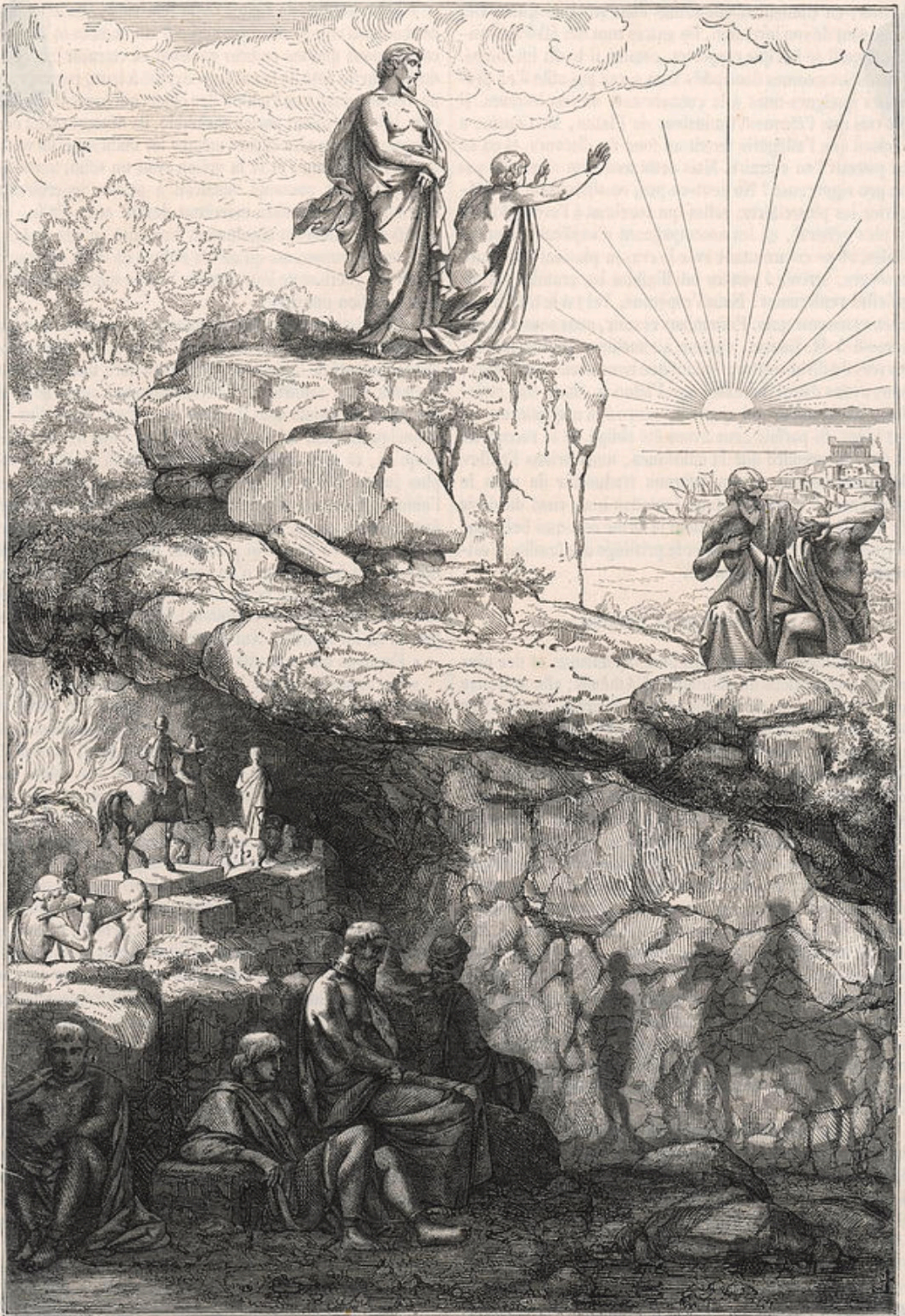
Harald Weiss



Volkmar Weiss



# APPENDICES



Chevignard, in 'Magasin Pittoresque' July 1855, page 217



# Appendix I: Towards a Golden Physics - Gatherings and Collaboration

## Fractal Spacetime Founders – The Three Musketeers



Garnet Ord, Laurent Nottale and Mohamed El Naschie: The Three Musketeers, founders of fractal spacetime at Mohamed's home in Cobham, England UK (2006).

Mohamed El Naschie affectionately referred to the collaborative founders of fractal spacetime physics as The Three Musketeers – Ord, Nottale and El Naschie. More particularly, he stated: “The idea of fractal spacetime, Cantorian spacetime and most of what I have done is based on the work of an English Canadian. It is Garnet Ord who deserves credit for bringing fractals into physics and in the development of E-Infinity theory.”

### When Zero is Equal to One [95]

By M.S. El Naschie and S. Olsen

#### Abstract

Starting from a set theoretical equality between “zero” and “one”, we show the **power of the golden mean random Cantor sets in resolving long-standing quantum paradoxes such as entanglement, nonlocality, wave collapse and the particle-wave duality.** In particular, we show that a classical result regarding the **probability P for quantum entanglement is equal to the [Lesser] golden mean to the power of five, i.e.  $P = \phi^5 = 0.090169945$ .** This value has been experimentally confirmed giving convincing proof of the consistency, exactness and reality of our set theoretical foundation for orthodox quantum mechanics.

Furthermore, we contend that the ease with which these paradoxes are solved through theoretical applications of golden mean random Cantor sets, point to a potential new vista in physics. This abductive approach leading to novel hypotheses in the face of otherwise difficult anomalies, may **pave the way for a serious shift in the physics paradigm**, one in which the golden mean plays a central role in the very fabric of space-time. We may well be on the threshold of a new era of what we will call: **golden physics** [85]. El Naschie and Olsen [95]

Einstein Symposium 2005, Bibliotheca Alexandrina



Gathering of some of the world's most illustrious minds, Bibliotheca Alexandrina. From left to right: Douglas Hofstadter, Michio Kaku, Gerard 't Hooft, Ismail Serageldin, Murray Gell-Mann, Klaus von Klitzing and Mohamed El Naschie

**Douglas Hofstadter:** American cognitive scientist and Pulitzer Prize winning author.

**Michio Kaku:** American professor of theoretical physics at the City College of New York, futurist and author.

**Gerard 't Hooft:** Distinguished professor of theoretical physics at Utrecht University, the Netherlands. He shared the 1999 Nobel Prize in Physics with his thesis advisor



Martinus J. G. Veltman (1931–2021) for elucidating the quantum structure of electroweak interactions.

Ismail Serageldin: Founding Director and Emeritus Librarian of the new Bibliotheca Alexandrina.

Murray Gell-Mann (1929 – 2019): American physicist who received the 1969 Nobel Prize in Physics for his work on elementary particles.

Klaus von Klitzing: German physicist awarded the 1985 Nobel Prize in Physics for discovering the integer quantum Hall effect.

Mohamed El Naschie: theoretical physicist and engineer with dual citizenship in Egypt and the UK. Distinguished Professor of Physics at the University of Alexandria, Egypt. Twice nominated for the Nobel Prize in Physics, once by his mentor and colleague, Ilya Prigogine, the 1977 Nobel Laureate in Chemistry.

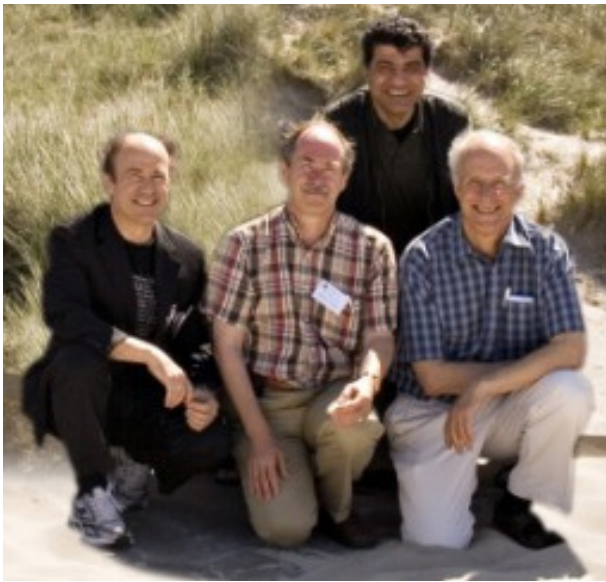
### Collaborative Friendship: El Naschie and 't Hooft



Gerard and Betteke 't Hooft visited the El Naschies at their home in Alexandria, Egypt during the 2005 Einstein Symposium held at the Library of Alexandria.



Good friends for some time, 't Hooft and El Naschie were also together in 2003 in KAKST, Riyadh, Saudi Arabia for the opening of The National Center of Mathematics and Physics. 't Hooft lectured on *Confinement of Quarks* and El Naschie on *Quantum Gravity: The Quest for Unification*. They were joined there with presentations by three other illustrious physicists, Walter Greiner (1935-2016), Werner Martienssen, and David Finkelstein (1929-2016).



Wilczek, 't Hooft, El Naschie and Gross celebrating 't Hooft's 60<sup>th</sup> birthday.

On July 5th, 2006 Mohamed joined the three Nobel Laureates, physicists Frank Wilczek, David Gross and Gerard 't Hooft on an island in the Netherlands to celebrate 't Hooft's 60th birthday.

The 2004 Nobel Prize in Physics had been awarded jointly to the Americans, David Gross, Frank Wilczek and H. David Politzer for the discovery of asymptotic freedom in the theory of the strong interaction.

In honor of 't Hooft, El Naschie wrote an editorial entitled, "On being a man who wants to know everything: G. 't Hooft's 60th birthday address." [215] He wrote: "Gerardus 't Hooft is undoubtedly one of the principal architects of the standard model of high energy elementary particles. He was born in 1946 in Den Helder, the Netherlands and in 1999 was awarded the Nobel Prize of Physics together with Professor M. Veltman for resolving the problem of the 'infinities'. It may be fair to say that from a theoretical viewpoint, the electroweak was the ugly duckling or the frog from Shakespeare's *Midsummer Night's Dream* which was transformed by 't Hooft's renormalization magic into a handsome prince." Mohamed also spoke of 't Hooft's "personal kindness and modesty," assistance to less fortunate "scientists all over the world" working in difficult conditions, and his lovely family, including his exceptional wife, "Betteke, a medical doctor by profession" who had joined Gerardus at the El Naschie home on more than one occasion.

## Fritz John, Mitchell Feigenbaum, and ‘t Hooft & Veltman: Pathway to El Naschie’s $\Phi$ -based Transfinite Corrections & Coupling Constants

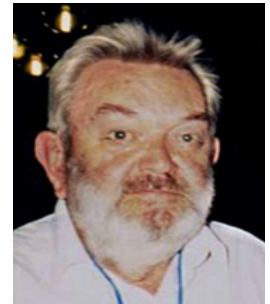
El Naschie’s early engineering background proved very useful in the development of the E-Infinity spacetime theory and his brilliant  $\Phi$ -based “golden” transfinite corrections and coupling constants. He acknowledged having been inspired early on by the “operator methods of Fritz John used in the simplification of elastic shells’ equations.” [216] Another major influence was Mitchell Feigenbaum’s “golden mean renormalization groups.” And finally, El Naschie had extremely important discussions with his good friend, Gerard ‘t Hooft, regarding ‘t Hooft and Martinus Veltman’s promising renormalization and regularization procedures.



Fritz John  
(1910 – 1994)



Mitchell Feigenbaum  
(1944 – 2019)



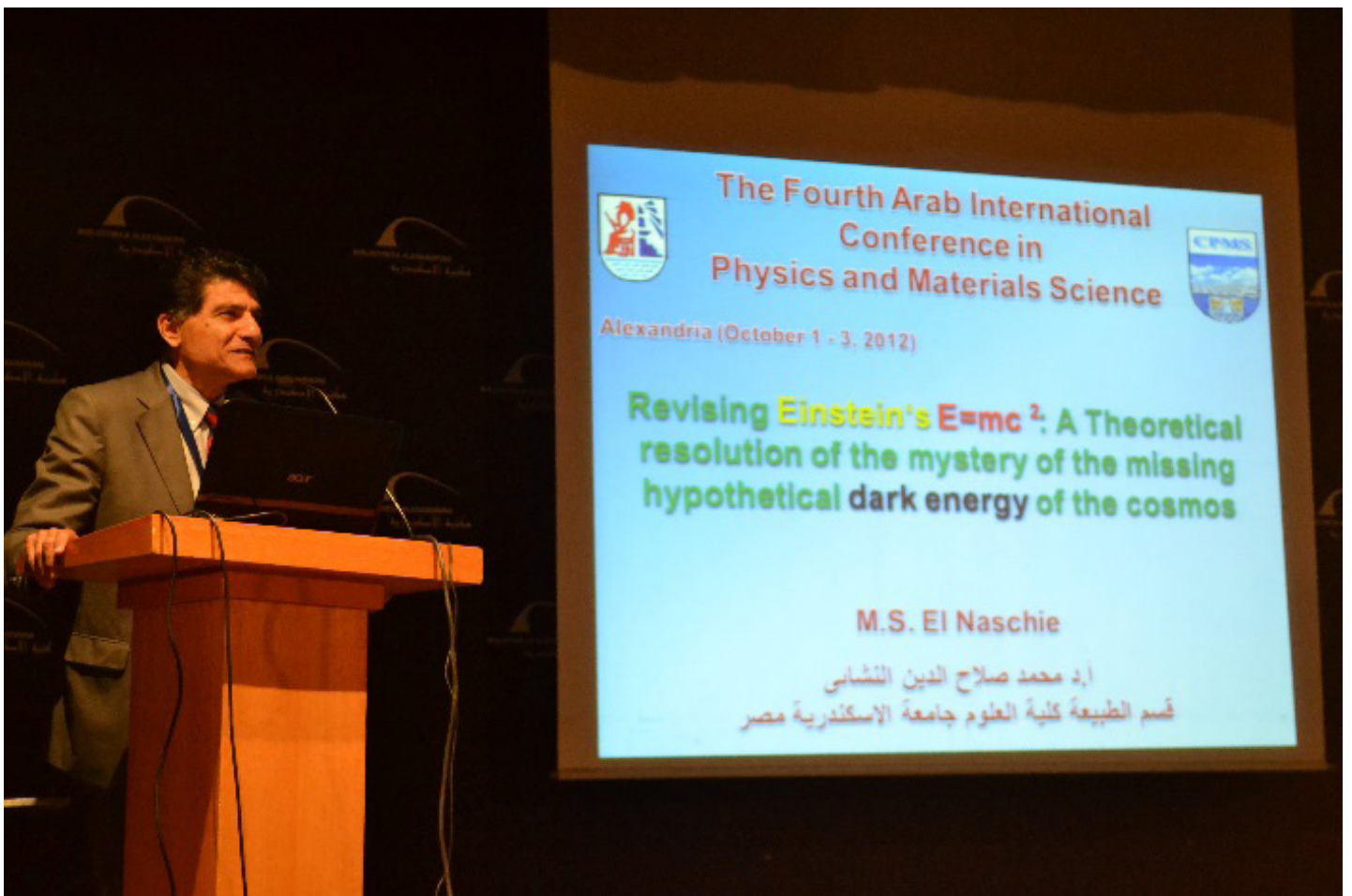
Martinus J.G. “Tini”  
Veltman (1931 – 2021)

Awarded the 1999 Nobel Prize in Physics, ‘t Hooft and Veltman had “elucidated the quantum structure of electroweak interactions.” ‘t Hooft had proven that gauge theories are renormalizable and together with Veltman worked on dimensional regularization and the holographic principle. To achieve their goal, ‘t Hooft and Veltman had applied a “small order of perturbation parameter” to spacetime which they then allowed to “tend to zero to restore the integer four dimensionality of spacetime at the end of the conceptually simple but computationally exhausting calculations.” [16] ‘t Hooft confided in El Naschie that “Veltman occasionally wondered if there could be somewhere a physical



meaning” for the perturbation parameter “without letting it go to zero.” Although “at that time neither fractals were one of the tools of quantum and high energy physics nor was Cantorian spacetime invented yet,” El Naschie nevertheless was deeply intrigued. It dawned on him that “dimensional regularization implied the fractality of spacetime.” [16]

4th Arab International Conference in Physics 2012,  
Bibliotheca Alexandrina



Ord and Olsen were present with El Naschie at the Bibliotheca Alexandrina in 2012 when Mohamed first unveiled his striking *golden mean number system* calculations for Ordinary Energy E(O), Dark Matter Energy E(DM) and Pure Dark Energy E(PD). His talk was titled, “Revising Einstein’s  $E=mc^2$ : A Theoretical Resolution of the Mystery of the Missing Hypothetical Dark Energy of the Cosmos.”





Garnet Ord, Scott Olsen and Mohamed El Naschie, 4th Arab International Conference in Physics, Bibliotheca Alexandrina, Egypt (2012).

One of El Naschie’s brilliant transfinite corrections used in the Dark Energy calculations is:  $\kappa = \phi^3(1 - \phi^3) = 0.18033989\dots$  [16 & 207]. “ $\kappa$  was conjectured to relate to the ‘t Hooft (not yet discovered) renormalon particle” of dimensional regularization [18]. (See Section 10 in the main text, formula 39). This provocatively efficacious and simple formulation is also exactly equal to the doubling of Harding entanglement: i.e.  $\kappa = 2\phi^5 = 0.18033989\dots$ . See Appendix II.



Garnet Ord and Scott Olsen with Mohamed El Naschie at his home in Alexandria, Egypt (2012).





During a break from filming *Mohamed El Naschie & Scott Olsen in Conversation* [86] at the El Naschie residence in England 2018

“Fine tuning is a logical consequence of using the golden mean number system of E-Infinity Cantorian space.”  
– El Naschie [204; we are also looking forward to John Martineau’s proposed 2021/2022 book *Coincidence* for an anthropic principle account of fine tuning].



From left to right: John Martineau, Lance Harding, Keith Critchlow & Scott Olsen: Keith and his “A-Team” boarding the Chunnel to Chartres Cathedral for a 2008 Kairos Sacred Geometry Summer School Retreat. See App. XVIII.



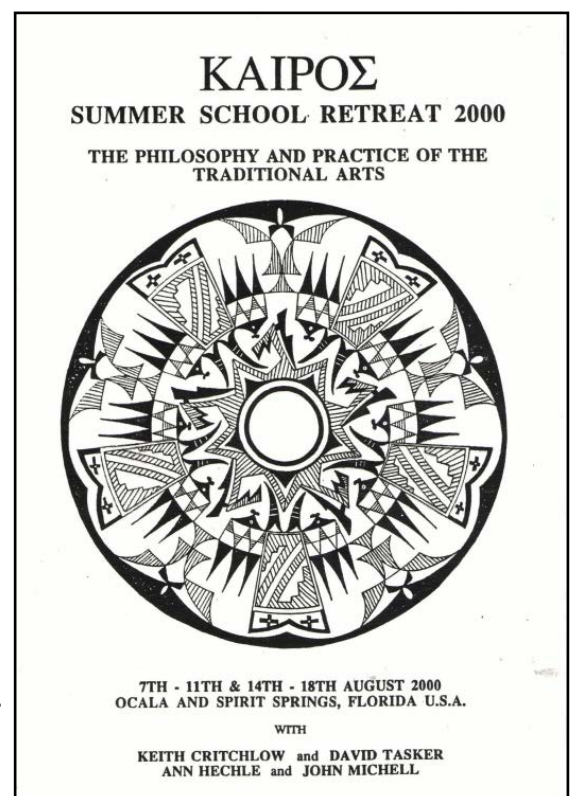
# Appendix XVIII: The Golden Mystery of the Three Means and the Harmonic Beauty of the Universe



Scott Olsen and Keith Critchlow with John Michell  
discussing his geometric watercolor paintings,  
Kairos Summer School Retreat, UK.

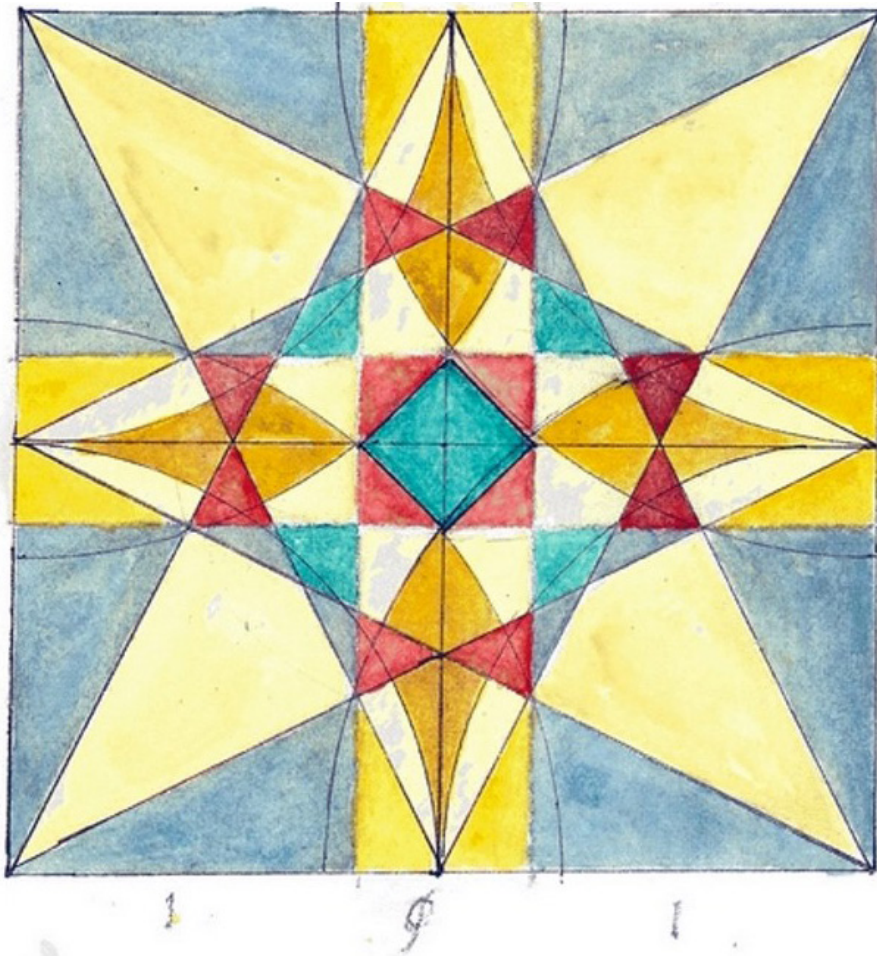
“Keith Critchlow has one of the century’s rare conceptual minds.... He lauds the work of others while himself pouring forth, in great modesty, whole vista-filling realizations of nature’s mathematical structuring. Keith Critchlow has added a new all-space filling snub-tetrahedron to the set of known polyhedra.... He is one of the most inspiring young scholar-teachers I have the privilege to know.”  
– Buckminster Fuller [275]

Keith Critchlow headed up the Kairos Sacred Geometry Summer School Retreats that alternated





yearly between the UK and the US with occasional excursions to Chartres Cathedral, France and the Alhambra Palace in Granada, Andalusia, Spain. He later became director of the Visual, Islamic and Traditional Arts programme (VITA) at the Royal College of Arts which was later incorporated into The Prince's Foundation School of Traditional Arts. He worked in close collaboration over the years with his good friend, author, artist, Platonist, sacred geometer & geographer, and traditionalist thinker, John Michell (1933 - 2009). Their efforts and mentorship helped spawn many wonderful works [281-290], including John Martineau's Wooden Books series, compendiums listed on pp. 176 and 177.



### NEW LIGHT ON PHI

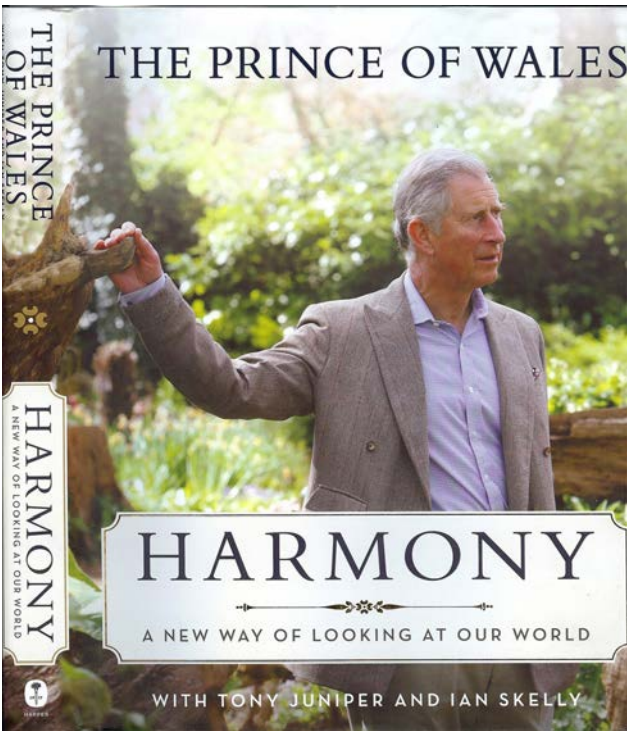
*A book I greatly value ~ it's the pride of my collection ~  
is Mr Olsen's recent work upon the 'golden section'.  
It's something that could change the world. If they could  
understand it,*

*I'm certain the authorities would long ago have banned it.  
The secret it exposes is the Key to life's creation.  
I can't explain it in a line, so here's an illustration.*

John Michell's painting and poem featuring Scott Olsen's  
*The Golden Section: Nature's Greatest Secret.*

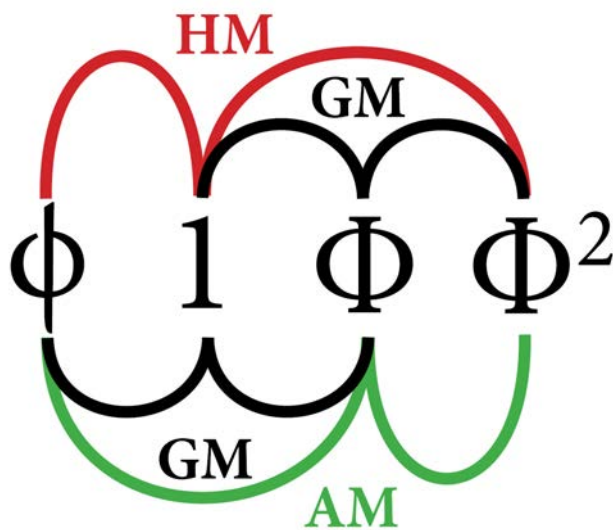


The Three Means and the Golden Mean Number System:  
Uncovering the Harmonic Beauty of the Universe



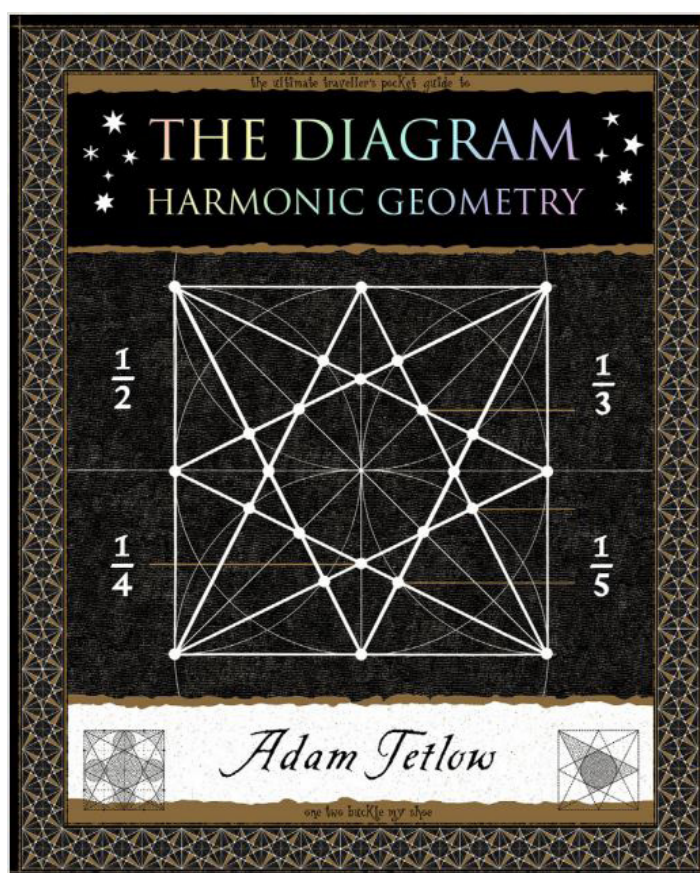
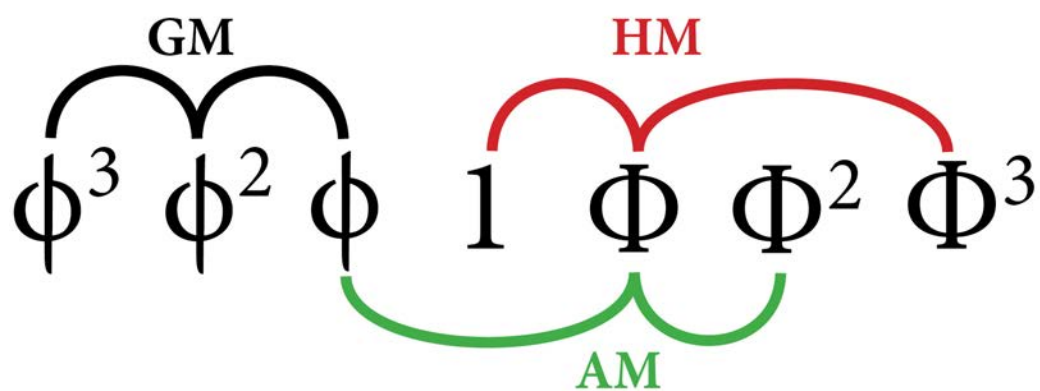
Prince of Wales and Keith Critchlow

Having studied under Keith Critchlow and John Michell, and using the Starcut diagram to understand the three means in *The Modulor* of Le Corbusier, Lance Harding uncovered the following significant relationship in the golden series. Where AM = the Arithmetic Mean, GM = the Geometric Mean, and HM = the Harmonic Mean.

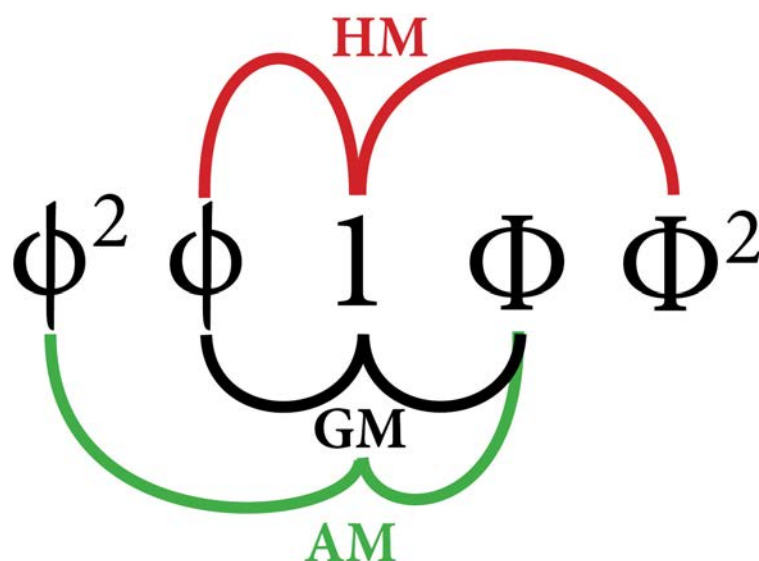


Lance Harding receiving his Ph.D. from the Prince of Wales for *The Ancient Greek Canon of Human Proportion and the Vitruvian Man*.

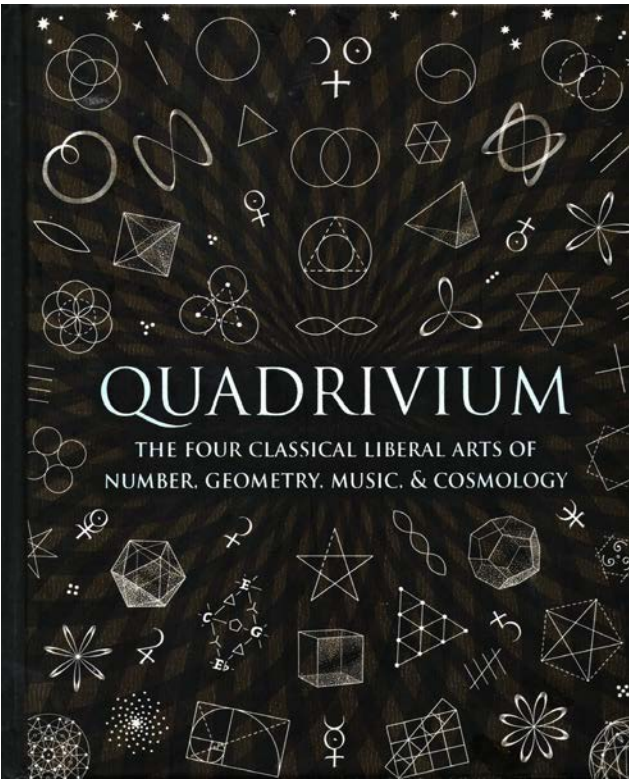
Recently Adam Tetlow, while working on his new book with John Martineau, *The Diagram: Harmonic Geometry* [276] reminded us all that the three means retain their internal structure while sliding back and forth along the golden series.



Tetlow's observation inspired Scott Olsen to uncover an underlying *paradigmatic symmetry* arising out of the One and Indefinite Dyad when the One acts simultaneously as the Arithmetic, Geometric and Harmonic Means. This symmetry is then enfolded by the *golden mean number system* into the substructure of all existence. "As above, so below, and as below, so above." - Hermes Mercurius Trismegistus

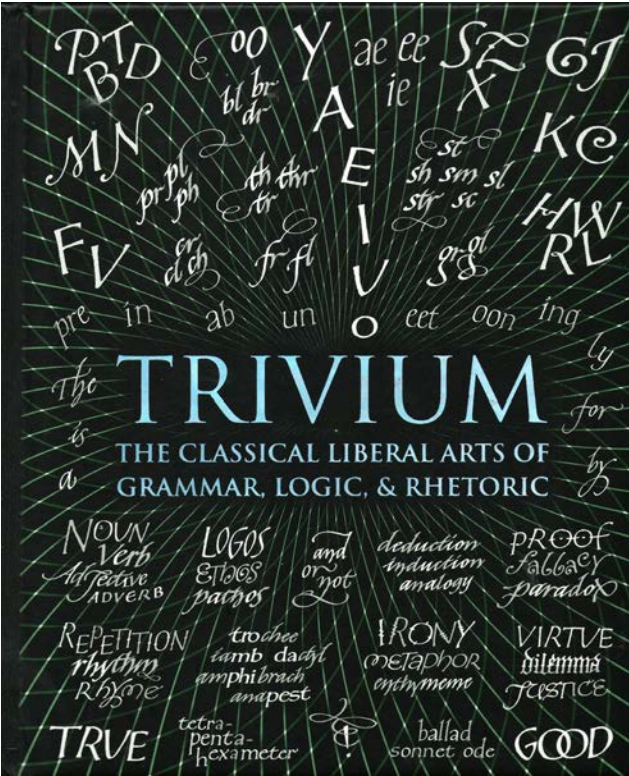






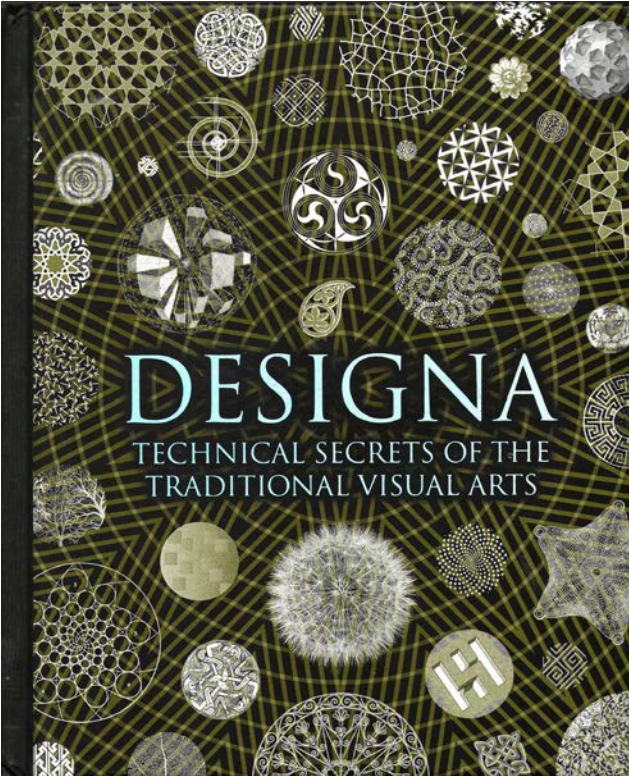
[283]

	Foreword	3
	Keith Critchlow	
Book I	Sacred Number	7
	Miranda Lundy	
Book II	Sacred Geometry	59
	Miranda Lundy	
Book III	Platonic & Archimedean Solids	127
	Daud Sutton	
Book IV	Harmonograph	181
	Anthony Ashton	
Book V	The Elements of Music	237
	Jason Martineau	
Book VI	A Little Book of Coincidence	291
	John Martineau	



[284]

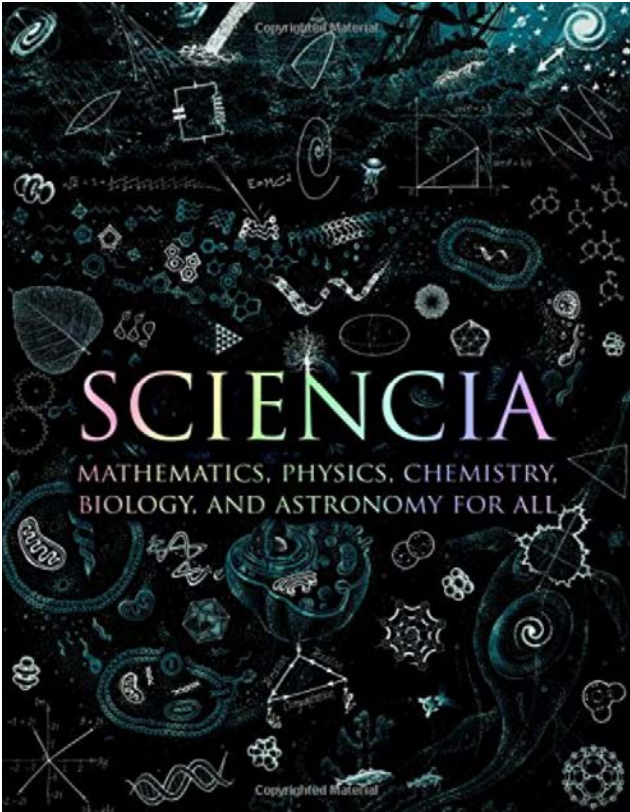
Book I	Euphonics	7
	John Michell	
Book II	Grammar	55
	Rachel Holley	
Book III	Poetic Meter & Form	115
	Octavia Wynne	
Book IV	Logic	175
	Earl Fontainelle	
Book V	Rhetoric	235
	Adina Arvatu & Andrew Aberdein	
Book VI	Ethics	295
	Gregory Beabout & Mike Hammis	
Appendices	Character & Narrative	Adam Tetlow 356
	The Art of Memory	John Martineau 362
	Proverbs	Alice O'Neill 366



[285]

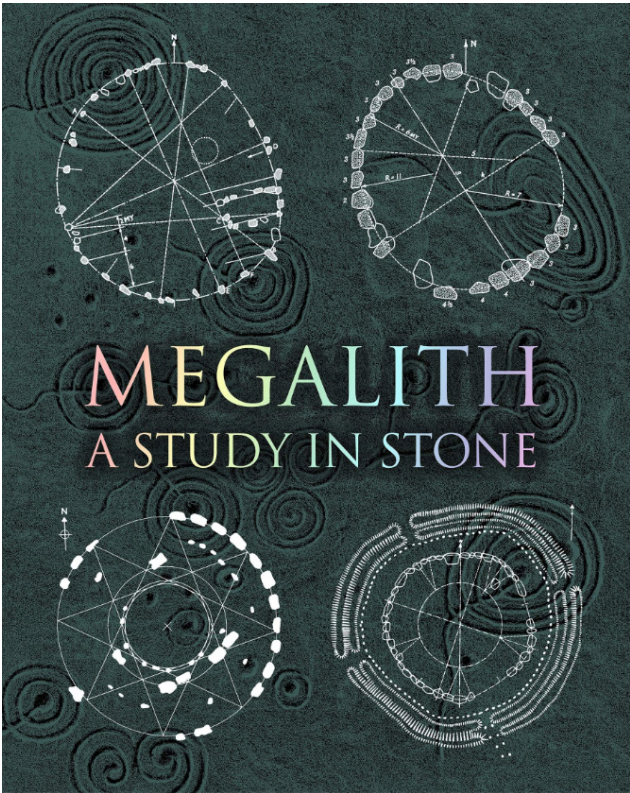
Book I	Celtic Pattern	3
	Adam Tetlow	
Book II	Islamic Design	57
	Daud Sutton	
Book III	Curves	113
	Lisa DeLong	
Book IV	Perspective	171
	Phoebe McNaughton	
Book V	Symmetry	233
	David Wade	
Book VI	The Golden Section	293
	Scott Olsen	





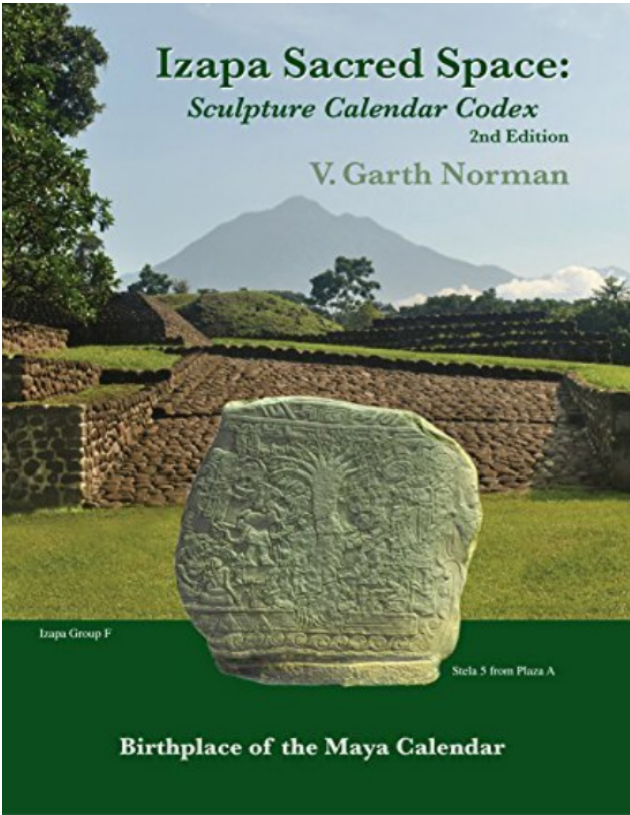
[286]

<i>Book I</i>	Useful Mathematical and Physical Formulae <i>Matthew Watkins</i>
<i>Book II</i>	Q.E.D. <i>Burkard Polster</i>
<i>Book III</i>	Essential Elements <i>Matt Tweed</i>
<i>Book IV</i>	Evolution <i>Gerard Cheshire</i>
<i>Book V</i>	The Human Body <i>Moff Betts, M.D.</i>
<i>Book VI</i>	The Compact Cosmos <i>Matt Tweed</i>

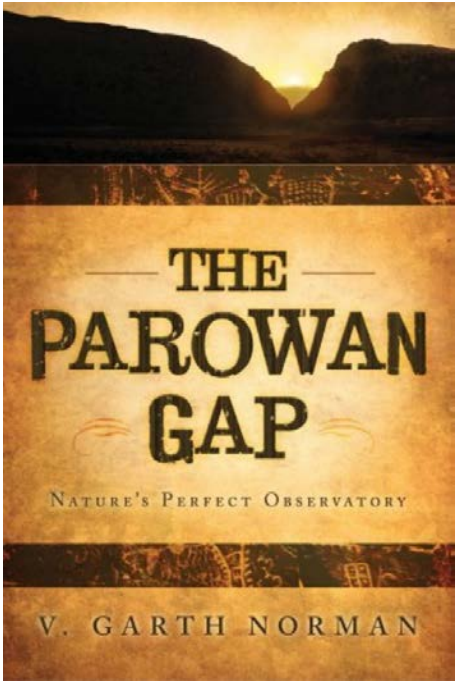


[287]

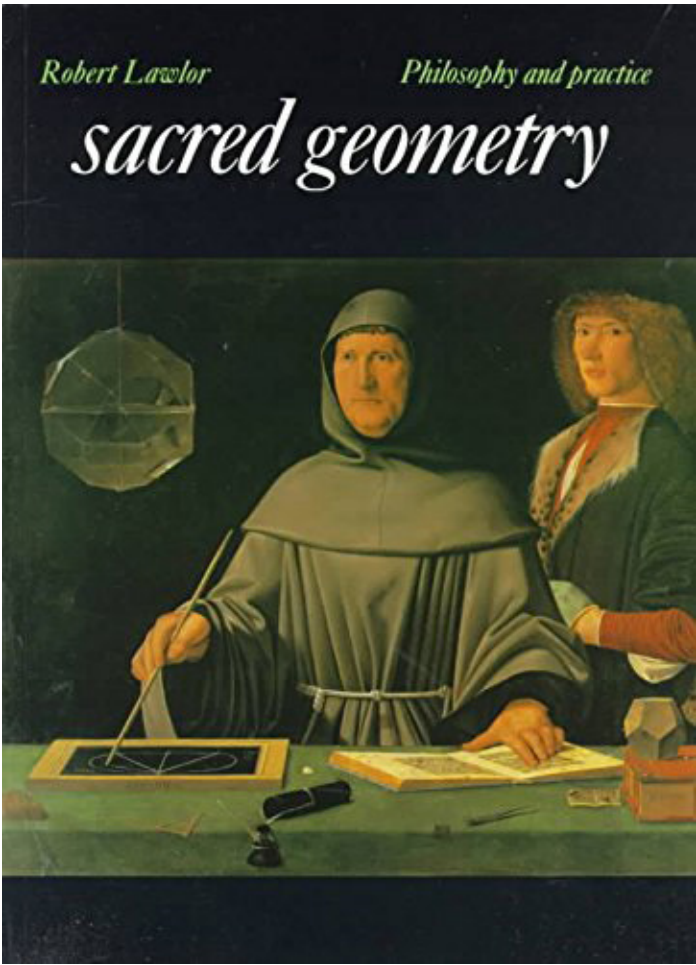
<i>Book I</i>	Stone Circles <i>Hugh Newman</i>
<i>Book II</i>	Carnac <i>Howard Crowhurst</i>
<i>Book III</i>	Stonehenge <i>Robin Heath</i>
<i>Book IV</i>	Avebury <i>Evelyn Francis</i>
<i>Book V</i>	Stanton Drew <i>Gordon Strong</i>
<i>Book VI</i>	Callanish <i>Gerald Ponting</i>
<i>Book VII</i>	Ancient British Rock Art <i>Chris Mansell</i>
<i>Book VIII</i>	Surveys of Stone Circles <i>Alexander Thom</i>



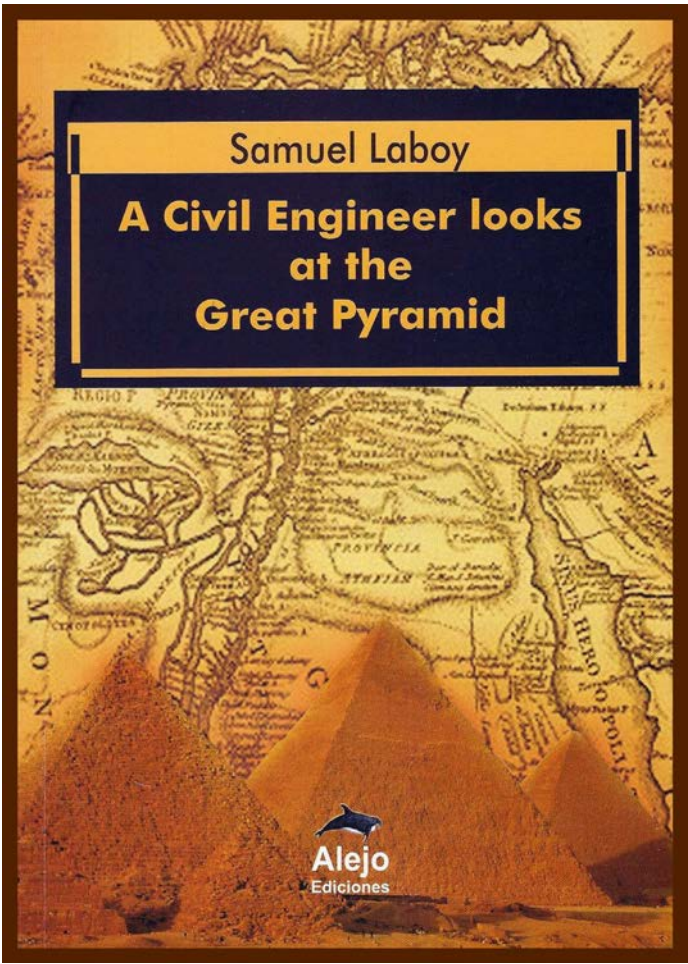
Books by  
V. Garth Norman



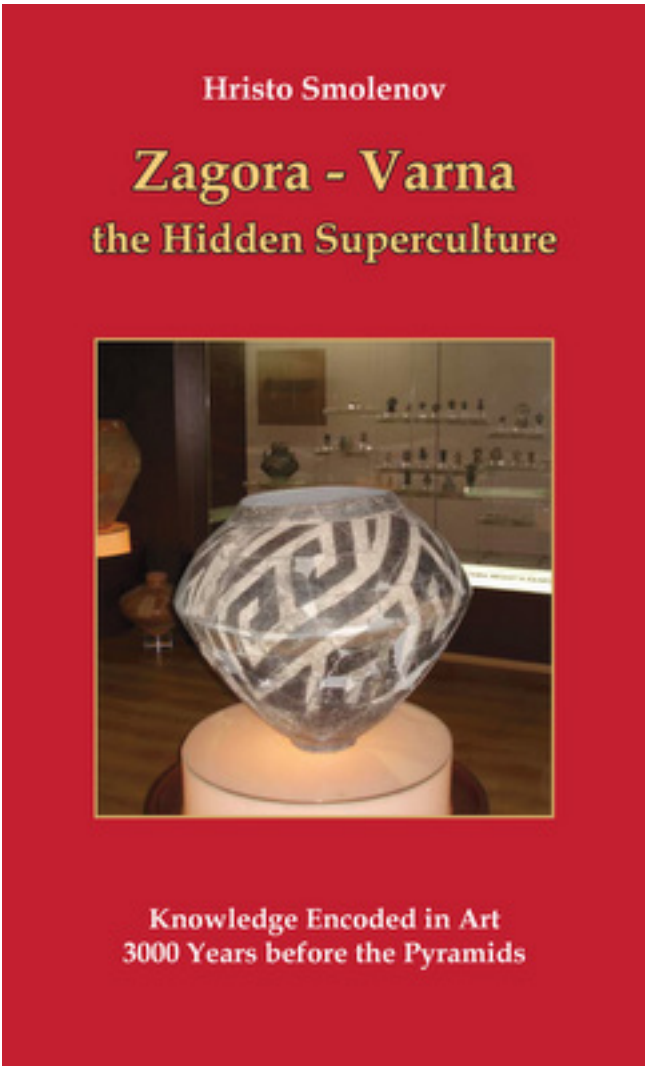




Robert Lawlor



Samuel Laboy



Hristo Smolenov