

Generator Polyhedron Geometry and Relationships with Plato's Timaeus and Epinomis

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Abstract

The purpose of this paper is to present to the scientific community, a newly discovered invention [2017] of a polyhedron, namely the "generator polyhedron", which is a non-regular icosahedron having polyhedral bases of 12 isosceli triangles and 8 equilateral ones. Its skeleton structure consists of 3 orthoparallelogrammes, orthogonal to each other with sides' ratios $[4/\pi = 1.27201965, \text{ for } \pi = 4/\sqrt{\varphi}]$ based on the square root of the golden number and related directly to the regular icosahedron, whose structure is based on the golden number [1.618033989..] and to the dodecahedron, whose structure is based on the square of the golden number [2.618033989..]. Thus further, get relationships with the other platonic/eucleidean solids.

Keywords: Generator Polyhedron; Platonic-Eucleidean Solids; Polyhedra; Geometry; Plato's Epinomis; ψυχής γένος; Timaeus; ψυχή; Seven Circles; Heaven

Introduction

Part of this paper is, an extract of my published book [ISBN 978 - 618 - 83169 - 0 - 4] titled: Treatise on Circle - Generator Polyhedron [Harmony and Disharmony Condition of Three Concentric Circles in Common Ratio. It concerns 3 concentric circles in ratio

to each other of $4/\pi$ [for $\pi = 4/(\text{square root of the golden ratio})$], with analyses and comparisons of the computed results, for evident conditions of Symmetries or Dissymmetries and consequently conditions for Harmony or Disharmony [in contrast with similar ratios involving the value of currently used π .

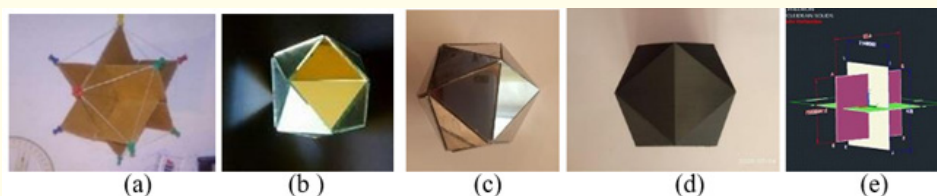
Generator polyhedron geometrical configuration

Figure 1: Generator polyhedron" construction.

(a) Skeleton hardboard initial structure, (b) Hardbord structure, [Scale 4X], invested mirror triangles [Cuts by Lousis Co Melissia, Athens], (c) Paper structure [Scale 2X], invested INOX triangles [Waterjet Cuts DIN Piraeus], (d) PLC [Scale 2X], 3D Print [Geometry design and vector coordinate's definition, By Panagiotis Stefanides, solid works computations and print by Dip. Eng. A. Georgostathis 3D form], (e) Generator polyhedron AutoCad by Dr. Ginnis Kandylas geometry and vertices vector coordinates definition by Panagiotis Stefanides.

Polyhedron structural design

The skeleton's planes of the dodecahedron are based on the ratio of 2.618033989/1, the icosahedron ones are based on the ratio 1.618033989/1 and the construction of the generator polyhedron are based on the ratio 4/3.14460551 = 1.27201965.

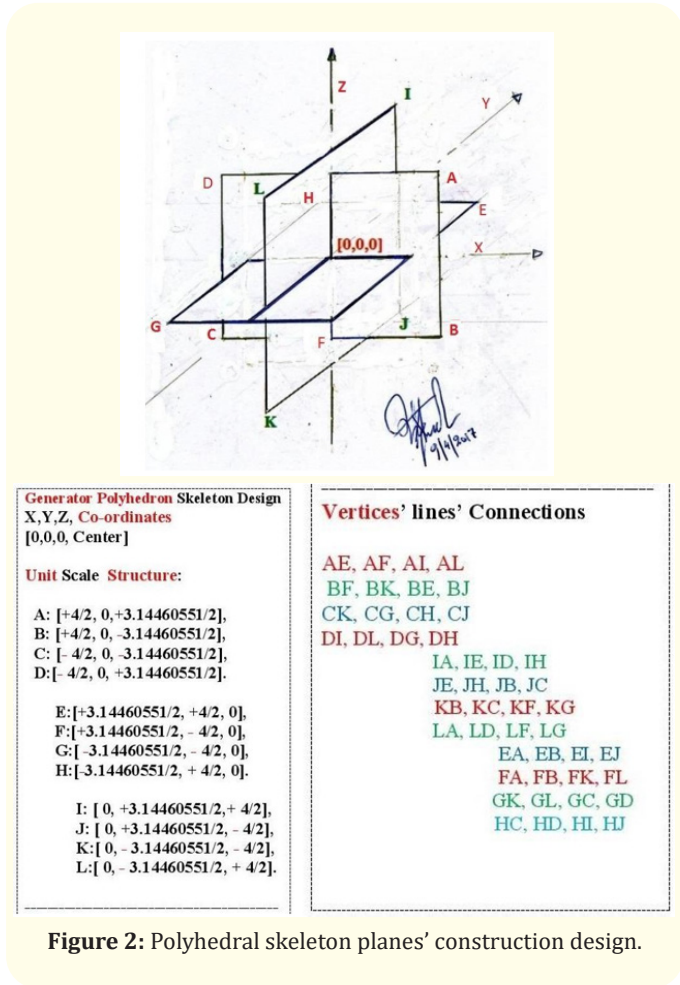
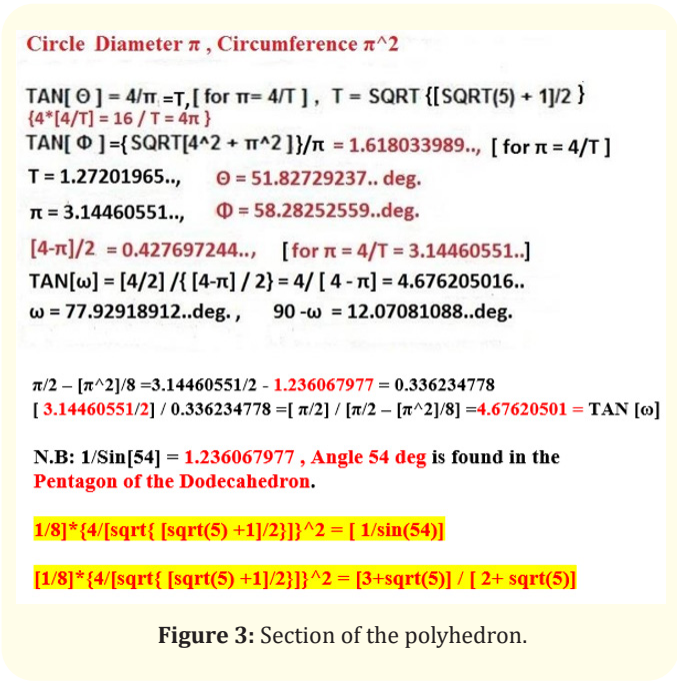
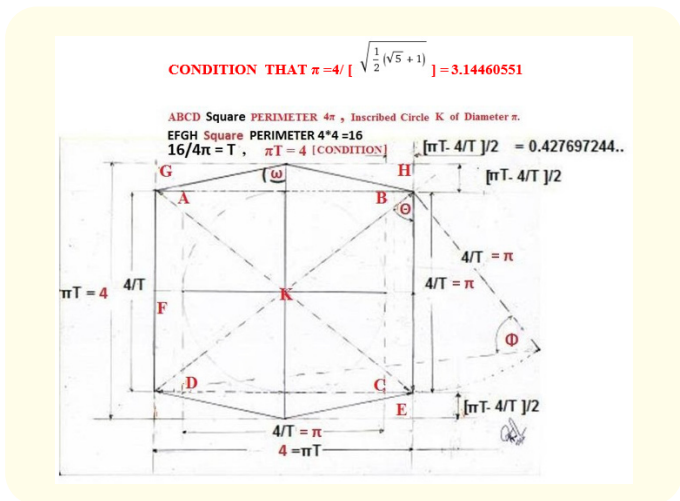


Figure 2: Polyhedral skeleton planes' construction design.

Section [parallel and in with plane ABCD] and calculations



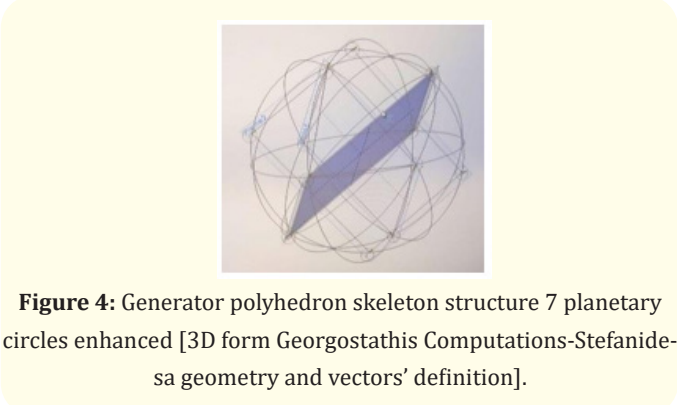
Plato's epinomis-timaeus

The word "γένος- genos" found in Plato's "Epinomis" 981b but, found no reference for this word of this Plato's work in Liddell and Scott. As I understand it concerns an additional genus of Polyhedron, a very Special one Ontologically, and this is very important [I understand]: "Στερεὰ δὲ σώματα λέγεσθαι χρὴ πέντε,, τὸ δὲ ἄλλο γένος ἅπαν ἔχει μορφήν μίαν.....ψυχῆς γένος.. [..there are ... five solid bodies....the other total genos, has one formthe genos of the soul...].

Plato, also, states that the composition of soul and body bares a single form [ψυχῆς και σώματος αποτελεί μίαν μορφήν- Epinomis 981a].

Similarly, Plato in Timaeus elaborating on the word "soul- ψυχή" and the 7 circles [Ti. 36D] of the planetary star bodies [Ti.38C-D] (Figure 4).

He makes reference to the solids [σώματα] Ti. 53D-E and also, by the word genos- form [γένος-εἶδος] Ti.54b.



Conclusion

Concluding Interpretation by Panagiotis Stefanides

For the “genos of the soul” geometrical form, the configuration of the “generator polyhedron” is proposed. <https://www.linkedin.com/pulse/generator-polyhedron-platonic-eucleidean-solids-panagiotis-stefanides/>.

In anticipation

To the lifetime instructive discussions and navigation instructions I received, during lengthy sea and oceanic seafarer's voyages, from my father [Capt. Chr. P. Stefanides], on the celestial bodies their spirals and temporal periodic cyclic motion frequencies [1-4].

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