Painting in Geometric Key

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Abstract

It is discussed how and why the Golden Mean plays a fundamental role in the artworks of artist Liviu Stoicoviciu, one of the co-authors of this article, whose geometric approach is presented here.

Introduction

Liviu Stoicoviciu chose not the common way of convenience, fame, nihilism in his Art because his painting uses no ordinary path. He just walked in the dark listening to his own voice from the subjective world of classic painting to the objective world of mathematics. He has run from the apparent disorder of nature to create his own world of geometric rectitude. Influenced by cubism and passing through op-art, best represented by Vassarely, he reached the moment when his works answer to the present day tendencies of constructivism. But he likes to say that in the same time his approach in Art is indebted to Brâncuşi's modernism. He discovered through mathematical studies and painting that elementary forms, juxtaposed, concatenated and obeying rules, grow in complicated structures that constitute the microcosmic elaboration of nature itself. In order to do that, he did not use computer, neither standard utilities, or special software programs, but traditional painting on canvas using pencil, ruler, triangle, oil and brushes, as well as his knowledge of descriptive geometry. Once he discovered growing rules in bi-dimensional plane, he modeled the Art object in tri-dimensional space. In a way he recreated the bi-dimensional world of painting and tri-dimensional one of the sculpture from geometric elements. He assumed for him the noble fate of offering pictorial-sensorial representations of geometry. For him, the discovery of the fact that the aesthetic of his creation can be connected to mathematical formulas represented a confirmation that "Golden Mean is a universal canon of the ideal beauty" [1].

Virtuosity in Combining Art and Geometry

The long road to perfection of the form paved by "geometrists" (see [2], [3]) was also followed by the Romanian painter Liviu Stoicoviciu. Conscious of the construction of "geometric artworks" with basic

elements (triangles, squares, hexagons, etc...), his intention was that these elements should not be equal anymore, but they have to increase while moving from the centre, and still "match" harmonically. The simplest increasing steps (i.e., the power sequence 1, 2, 4, 8, 16...) is nevertheless too fast, as it "goes out" of the page too soon. So he started by looking at intermediary sequences, on a diagonal at 45^0, reaching at last the geometrical progression 1, $\sqrt{2}$, 2, $2\sqrt{2}$, $4\sqrt{2}$, 8... All his artworks up to 1973 were of module $\sqrt{2}$=1,41- i.e., the diagonal of a square with side equal to 1 (see Fig. 1 left)

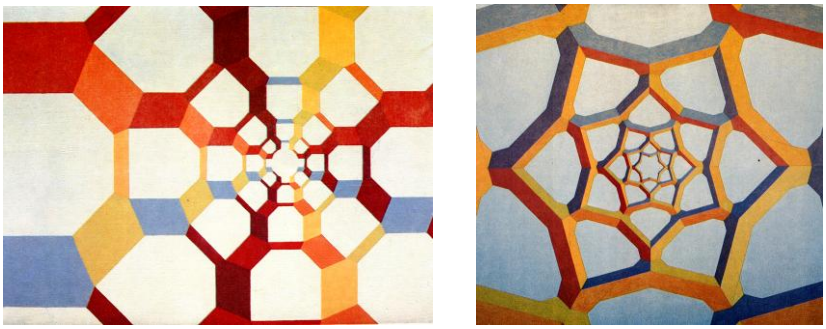

Figure 1: *(left) "The Little Octagonal", a √2 compositional development; (right) "Hexagonal", a √3 development*

Then he passed to the hexagon (see Fig. 1 right), where, still on the diagonal, this time at 30^0, he reached the geometrical progression 1,$\sqrt{3}$, 3, $3\sqrt{3}$, 9... and the works of module 1,73 – the diagonal of a rectangle having sides equal to 1 and to $\sqrt{2}$. The works "grow" between these two radicals, $\sqrt{2}$ and $\sqrt{3}$ most often with 1,618, the Golden Mean, that is the module of his pentagonal works with ratio given by Fibonacci sequence 2, 3, 5, 8, 13, 21, 34... (see Fig. 2).

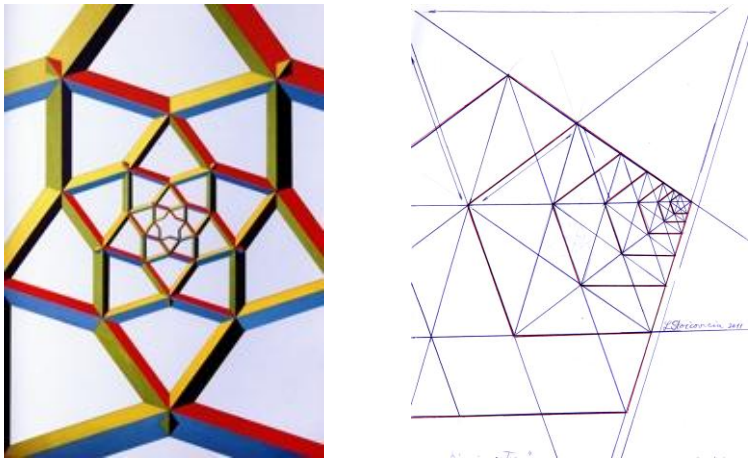

Figure 2: *(left) "The Pentagon Composition", a Golden Mean compositional development; (right) "The Dynamic Pentagon"*

From figure 2 (right), we notice that these pentagons are the only poligons respecting the fractal sequence belonging to the Golden Mean. If one builds some spirals, in both senses, through the knot points of the increasing poligons in Stoicoviciu's works, such an operation would have as a result some "flower networks", with 4, 5, or 6 "petals", that turn and grow according to the module corresponding to the respective polygon. (1,41; 1,618; 1,73) See fig. 3 a, b, c.

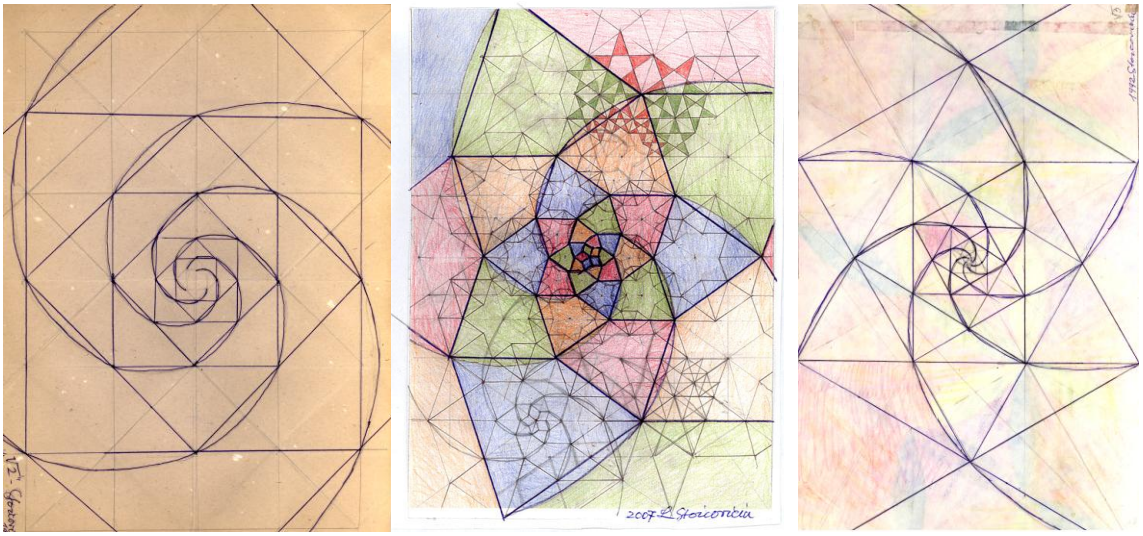

Figure 3: *(a) Spirals based on* $\sqrt{2}$*, (b)Spirals based on 1,618, (c)Spirals based on* $\sqrt{3}$

Observing figure 3, it is obviously for anyone to notice that the development using Golden mean (b) offers the most (aesthetically) pleasing sensation for the eye. Then the problem was to spatiate, to volumetrize these plane figures, inscribing in them different projections of cubes and prisms. But later he succeeded to realize in space one of his simpler works with three axes and he built his first tri-dimensional model. Beginning with this approach, the works begun to clarify, by "seeing" them completely in space, thinking of how they can be built. He said: "I had this revelation in 1985, when I realized that "my octogons" were in fact projections of pyramids. Then passing from cube to pyramid (octahedron), I managed to make the pyramidal model with 4 axes of module 1,41. (See Fig. 4).

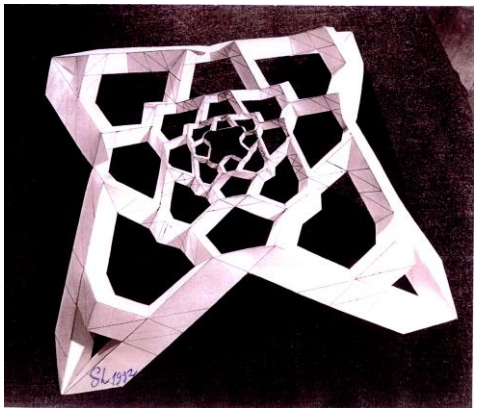

Figure 4: *4 Axes pyramidal model*

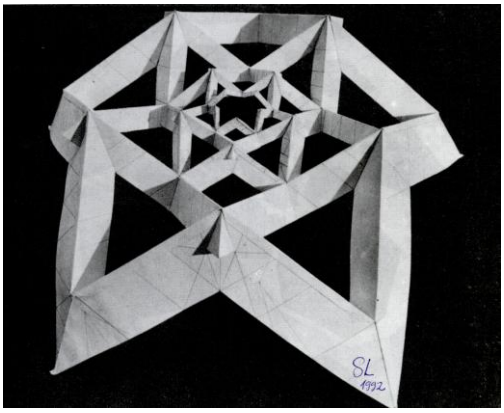

Figure 5: *"The Pentagon"*

Doing the same with the pentagon, that is considered the projection of a dodecahedron, in 1988 I succeeded, without realizing at the time, to make my "masterpiece": *The Pentagon* [Fig. 5], as it can be "seen here". This Pentagon represents the progressive spatial construction, (in the Golden Mean progression), of the Golden Mean itself. The star pyramids that results from the joints in the knot points of this "geometrical perfection" confers the construction an unusual strength. (See Fig. 6).

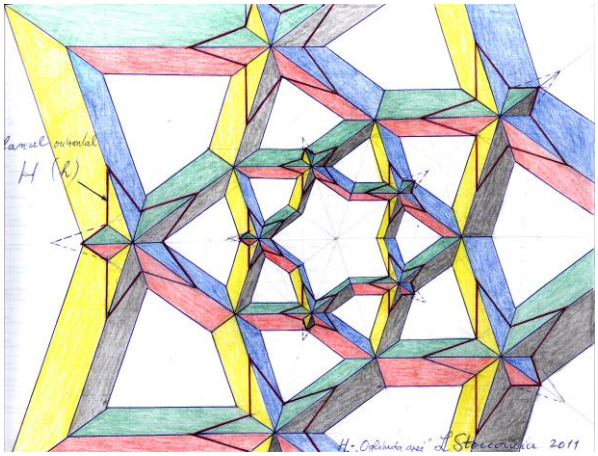

Figure 6: *Pentagrams formed at joints*

It is a sort of ”pyramid of the infinite” due to these growing pentagons. These pentagons can be circumscribed by pentagrams in a growing sequence until reaching the desired dimensions.This is exactly the property of many natural growing phenomena. As an example we cite the Nautillus growth.When Nautillus mollusc grows, it builds the shell in successively growing rooms sealing the smaller one that become unusable. Liviu Stoicoviciu’s construction could be extended to the dimension of a pyramidal-pentagonal pavilion of 8m height and 27 m in lenght. (in this case, the base beams could have 10 m in length). The building of this Pentagon spatially describes spirals, in fact the logarithmic spiral corresponding to the Golden Mean that does not change its form when it grows. This property of selfsimilarity looks in form like the sequence of pentagons and pentagrams inscribed one into another according to Fibonacci sequence. ”After a life time study and creation of geometrical esthetical forms, I can tell without hesitation that the Golden section offers the most harmonious and surprisingly beautiful progression and in the same time the strongest resistance against the chaos invasion giving us a chance of survival ” (see [4]). According with what we have presented here, we understand better the words of the philosopher critic Ion Papuc: ”Liviu Stoicoviciu assumes that reality is ruled by the number (As Plato said in Timaeus), or more precisely by fraction, ratio or proportion and therefore, in its irreducible essence, the reality of the world is harmony, as part of eternity, and finally, the world is cosmos, organized reality. His paintings illustrate the fundamental thesis that, beyond the amorphous, worn-out, aleatory illusion, the world is geometry, rigor, mathematical calculus, ecstatic figure, reducible to a numerical formula. Everything happens as if this universe of ours has a dual nature: on the one hand, a reality of dusts and alterations, continuously deteriorating itself at the highest speed, on the other hand the very everlastingness of the world, its geometrical system. Our painter persists in unveiling the latter.”

References

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