European Society for Mathematics and the Arts

Newsletter

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Dear All,

1) Math & Art in the Ancient times or in the visual mind ? Look at : http://www.bradshawfoundation.com/middle_east/ancient_geometry/Ancient%20Geometry%20Azhideh%20Moqaddam.pdf *the lecture by John P. Miller on :* http://www.bradshawfoundation.com/ancient_symbols_in_rock_art/index.php.

*2) A modern form of art is slowly expanding : kinetic art (*http://en.wikipedia.org/wiki/Kinetic_art*). Since it is intrinsically linked with movement, its roots are very ancient, much older than what is written in Wikipedia. We may say that works in 3D appeared in a weak form with the creation of all kinds of mechanisms. From this point of view, kinetic art goes back to antiquity. The word mobile refers to more recent creations. Here are the websites of two French contemporary artists working in that field :* www.laurentdebraux.com *and* www.rogervilder.com*. Note that Tchebyshev mechanisms remarkably exemplified by Nikolai Andreev (*http://en.tcheb.ru/*) could be a source of enrichment to kinetic artists. Since movement is involved, we could also say that artists producing deformable structures belong to the kinetic movement. That is the case of our friends Dmitri Kozlov and Philippe Rips for instance. Their work has been successfully used for pedagogical purposes. The question of that kind of use remains open regarding the standard kinetic art which, until now, has not tried to exemplify specific mathematical results arising from dynamical system theory.*

It would be of course worthwhile to encourage artistic representations of phase portraits, to write a booklet for those interested in the pedagogy and in the popularization of mathematics on the mathematical concepts and facts appearing in 2D and 3D works where movement is involved. Such a booklet would be all the more useful since the mathematics of movement and evolution is quite absent from any courses at primary and high school levels.

It could then inspire artists involved in what they call «Geometric Art». I recently saw

beautiful works created by a small panel of 11 such artists in Christiane Peugeot's gallery in Paris. Though I could admire the purity of the shapes, the equilibrium of the constructions, the delicate choice and harmony of the colours, the fact is that, as many artists of the Madi group, they only use lines and rectangles. Except for the use of the basic Pythagorean theorem, there are very few more advanced mathematics in general. One of these artists used the Fibonacci sequence to define and successfully set rectangles on the canvas, creating a beautiful effect of controlled dynamics. But how to show from these works :

- the presence in the background of the Aristotle-Liouville theorem according to which any local movement is a combination, a coupling C – giving birth to the local curvature – between a local translation (a pure linear force) and a local rotation (a pure rotational force),
- or the simultaneous presence of an expansion and a contraction which also appears in nature and that can be illustrated by an Anosov flow ?

3) Our Greek colleagues are developping math-art activities for young pupils. The file titled Math & Art : the Greek School gathers the documents they have recently prepared. They give an outlook on the precise subjects this School is working on and experimenting with. You can get in touch with the founders of the School, Dimos Varopoulos <dvarop@otenet.gr> and Panagiota Argiri <argiry@gmail.com>. They are of course interested in new ideas, discussions and active cooperation.

4) As I recalled in a former letter, any activity characterized by an exceptional quality is understood as an artistic activity. Practically speaking, ESMA is mainly involved in the creation of art works supported by mathematics and in a form of pedagogy of mathematics using these works. The conception of ESMA lies on general philosophical considerations and some of their consequences. These considerations are based on some rather universal concepts which underlie mathematical activity among others (cf for instance Energie et Stabilité ES). It is quite natural that the most important of these concepts, sometimes with a different name than now, appear in the writing of the great masters, Heraclitus, Plato and Spinoza. It is also not surprising that these concepts have valuable consequences for the practice of political art or the art de vivre. May I mention two books, respectively regarding political art and in art de vivre : the first one is the **Memoirs of the Second World War** *by sir Winston Churchill (the French translation with significant footnotes was published by Taillandier edition), the second one is titled* **Du bonheur, un voyage philosophique** *by Frédéric Lenoir. From the first chapters of the first book, one could extract the fact that a lot of dysfunctions within our societies come from the fact that people do not do what they say. Personal ethics moulds the art de vivre.*

Best wishes,
Claude

P.S. :

1) An exhibition of Philippe Rips's works will start on May 15, 16 rue Jacquemont, Paris 17.

2) The following engraving, a portrait of the mathematician Jean-François Niceron (1613-1671), can be seen in a small corridor of the famous Chateau de Vaux-le-Vicomte, which prefigures Versailles, and where Lenôtre, using the recent discoveries of optical geometry, designed skillfully arranged terraced stretches of water. Note the two Monge projections of the star polyhedron.

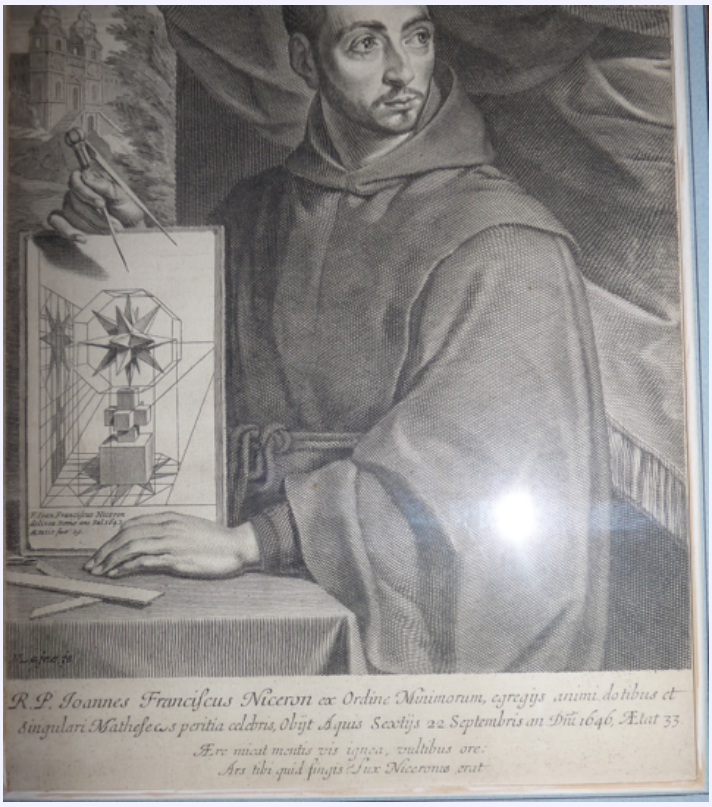

FIGURE 1 – The two Monge projections of the star polyhedron

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