



EUROPEAN SOCIETY FOR MATHEMATICS AND ART NEWSLETTER

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FOREWORDS ACTIVITIES RESOURCE UPDATE GALLERY

Dear Colleagues,

The first part of this letter is in keeping with the spirit of our organization, which is to diffuse knowledge of the world of mathematics.. ESMA's view is somewhat different from that of most institutions involved in popularizing mathematics. The Moscow Popularizing Center is an excellent example of these.

These institutions are directed at math-science students and the content of their lectures can be quite technical. The content of students' lectures can vary according to the different countries and different traditions according to which mathematics is conceived and practiced. We should analyze, conserve, and make use of this diversity more advantageously.

ESMA envisions an intermediary step before entering the core of the subjects covered by most math-popularizing organizations. ESMA lectures can be understood as introduction to subsequent lectures. Because of this, ESMA reaches a much broader audience than most.

ESMA lectures try to avoid being too technical, insisting instead on ideas, concepts, the relations among different chapters of mathematics, and among maths and other fields, arts in particular. By their content, which can be modulated according to their public, they can address all kinds of publics, i.e. decision makers as well as people who have very little or even no knowledge of any science. The reader will find in the back of the Newsletter the text of a flyer distributed to the French community by which we encourage institutions of every kind to mount exhibitions of Mathematics & Art in association with ESMA's lectures. Although the distinction between the two is imprecise at this time, the ESMA and children's lectures are complementary.

Indeed, in the near future, there will be two kinds of ESMA lectures: those to increase public awareness and those for math-art creation and interactivity. We are only offering the former for the moment. "Imaginary" in Oberwolfach is preparing courses for the latter. More information on this will be given as soon as the courses are ready.

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The second part of this letter concerns mathematical content. A distinguishing feature of mathematics is to point out and to exemplify some structures and behaviors apparently endowed with universality.

An example of this is the extension mechanism. It is a classical tool used in algebra, or even more recently, in logic. In the human field, it is the one, among others, which infers the passage of the vision of the tree to that of the forest. One may even see in the use of that mechanism a kind of justification for the search for universal properties. Extension was introduced in the 1830's by the young mathematician Evariste Galois, who undertook the first analysis of the consequences of this process.

For some reasons, any object has a tendency to expand, to extend, and to increase its complexity. A given object K has properties of internal stability associated with some invariant events and transformations. For instance, a stable society may be characterized by the clock of periodic events or by the elections of its political components, thus by some cyclical group. As a consequence of a process of extension, an increase in population or the introduction of new technology, for example, the object now becomes L . Its internal set of stable properties, in part responsible for inducing its external behavior, may a priori conserve those of K , i.e. K 's internal set of transformations, completely, partially, or not at all.

Last month the mathematics community honored the bicentenary of Evariste Galois born two centuries ago, on October 25 1811. Galois was the first mathematician to understand the prominent role of the set of internal transformations in L which keep those of K invariant or not.

Perhaps this type of consideration, inspired by the activities of mathematicians, could be useful in understanding the future of our societies as well.

With my best wishes,

Claude P. Bruter

ANNOUNCEMENT

January 6, 2012. The Journal of Humanistic Mathematics will host a reading of poetry-with-mathematics on Friday January 6, 5-7 PM in Boston's Hynes Convention Center at the annual Joint Mathematics Meetings. Both mathematician-poets and others who use mathematics in their poems are invited to submit. Send work prior to December 1, 2011 to **Gizem Karaali** up to 3 poems that involve mathematics (in content or structure, or both) -- no more than 3 pages -- and a 25 word bio.

January 2012 to May 15, 2012 COMPETITION FOR AN OPEN SOURCE EXHIBITION OF VIRTUAL MODULES. The modules submitted to the competition will be part of an open source exhibition on the theme of Mathematics of Planet Earth. The exhibition will have a virtual part, as well as instructions to realize material parts to stimulate imagination on the many domains where mathematics plays a crucial role in planetary issues. More information on the **MPE 2013** webpage.

Brown University. From Euclid to Newton. Online exhibition. The Mathematics Collection is one of the oldest and most comprehensive resources of the Library system. Brown University Library possess a copy of each sixteenth-century translation of Euclid's Elements of Geometry into a modern language. First translations into modern European languages were published in the seventeenth and eighteenth centuries: French (1564) Dutch (1602), Russian (1739), Swedish (1744), and Danish (1745). Many more authors included in the History of Science collection.

ACTIVITIES

ESMA members' activities throughout the month & upcoming activities. To be listed in this column: info@mathart.eu

November 25-27, 2011. "Comme dans un rêve" Jeremie Brunet. 3D Fractal exhibit & multimedia show. Rips Gallery, 16 rue Jacquemont, Paris. FR. (33) 06 61 75 84 47.

December 1-7, 2011. Topological ice cubes. Herve Lehning. Photographs, paintings, mathematical objects. Rips Gallery, 16 rue Jacquemont, Paris. FR. (33) 06 61 75 84 47.

On-Going. Mathematics and Art, Fine arts to the service of Mathematics. Claude Bruter, *Gazette des Mathématiciens* # 130,89-90. Extended French version of the September 2010 Newsletter of the European Mathematical Society. Including an in-depth report on ESMA last summer exhibit in Aimes.

RESOURCE CENTER

Available on the ESMA website, resource center page. For suggestion, recommendation, comment on new posts: info@mathart.eu

- **ALEXANDERSON, Gerald L.** "Luca da Pacioli and Leonardo's drawings of polyhedra". Department of Mathematics and Computer Science, Santa Clara University, Santa Clara, California. Bull. AMS, 47, **3, 553-556. EN** ([Resource, Mathematics](#))

- **WANG B.-B.** "Simplexes in tensegrity systems". Tensegrity systems are self-stressed equilibrium pin-jointed cable networks in which a continuous of cables (tensions) are stressed against a discontinuous system of struts; or rather cable networks composed of tensegrity simplexes. ([Resource, Mathematics](#))

GALLERY

三上晴子 欲望のコード



MIKAMI SEIKO Desire of Codes

Seiko Mikami: Desire of Codes. December 18, 2011. NTT InterCommunication Center [[ICC](#)]

Desire of Codes, installed across a large wall, consists of 90 wall-mounted devices equipped with sensors and micro cameras as well as six robotic arms suspended from the ceiling and equipped with cameras and projectors. Each device detects the position and movement of viewers, hovers insect-like toward them, and monitors them. At the end of the exhibition space is a large, circular screen reminiscent of an insect's compound eye, onto which is projected a complex mixture of images from the past and the present, fed by an original database comprising images from the cameras in the installation as well as images from surveillance cameras at public places around the world.

OF INTEREST

Fourier transform



....**F**our years ago, inspired by reading news coverage about the opening chord to "A Hard Day's Night" - famous because, for 40 years, no one quite knew exactly what chord Harrison was playing, Jason Brown of Dalhousie's Department of Mathematics decided to try and see if he could apply a mathematical calculation known as Fourier transform to solve the Beatles' riddle. The process allowed him to decompose the sound into its original frequencies using computer software and parse out which notes were on the record. "Music and math are not really that far apart," he says. "

They've found that children that listen to music do better at math, because math and music both use the brain in similar ways. The best music is analytical and pattern-filled and mathematics has a lot of aesthetics to it. They complement each other well."... *Scientific blogging*

Fractal Würfelspiel

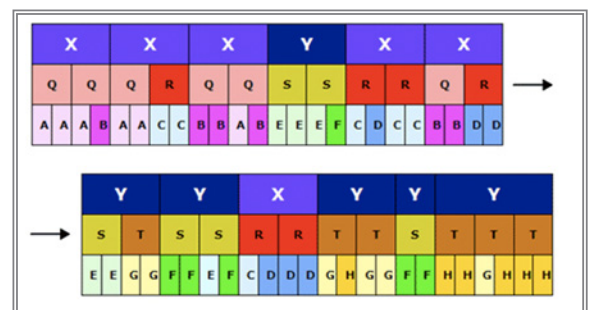
After Mozart's and Haydn's Würfelspiel ("game of dice") pieces. It consist of individual bars which can be arranged in any order by the throw of dice, and the result will sound musically coherent.

Stravinsky's Rite of Spring - Games Of The Rival Tribes.

motif:	A	B	C	B	C	Break	A	Break	A	B	B+	A	B	etc...
beats:	9	7	7	6	11	6.5	3.5	6.5	4.5	6.5	6	7	7.5	

John Cage's percussion sextet First Construction (In Metal).

Dmitry Kormann is a composer/keyboardist from São Paulo, Brazil. He works mainly on commissions for stage, screen and multimedia, which he balances with his research into algorithmic composition processes and his interests in Ambient/Trance and World Music. He is currently based in Birmingham, UK. PlusMath.org





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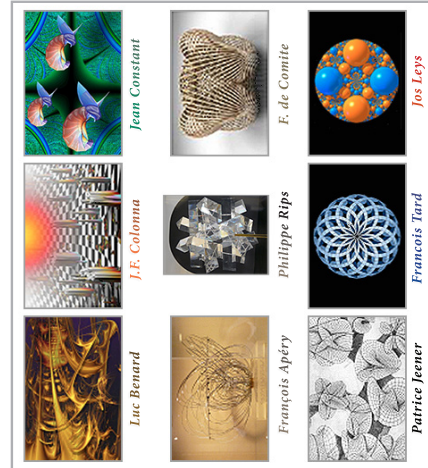
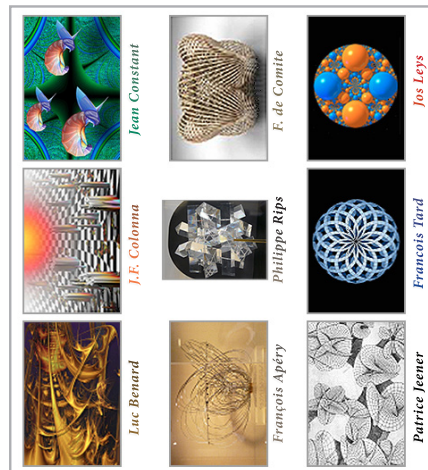
ESMA (European Society for Arts and Mathematics) was founded in late 2009. Its purpose is to contribute through artistic means to the lowering of barriers of any kind that separate mathematics from the public.

ESMA traveling exhibition includes works from 38 artists and representations of some of the most recent mathematical objects. The artwork illustrates in a fascinating way concepts, facts and theories of all areas of Mathematics. It helps raise public awareness and open the mind to the richness of the mathematical world.

Some of the featured artists make themselves available for public speaking engagements. The content of their talks is tailored to each audience. Presentations can be made to elementary, middle, high schools, university students and general audiences as well.

We invite our colleagues to read on this issue the article titled "The Fine Arts at the service of Mathematics" published in the October 2011 issue of the Gazette des Mathématiciens.

The educational institutions, cultural centers, municipalities, museums, and all that wish to bring to their audience these informative and innovative exhibitions are welcome to explore ESMA website and contact us at info@mathart.eu for additional information and advance booking.



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