

Symmetry: Art and Science
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MATH AND CONTEMPORARY ART

BALÁZS FAA

Name: Balázs Faa, artist, (b. Pápa, Hungary, 1966).

Address: Hungarian Academy of Fine Arts, Hungary, Budapest, 69-71. Andrassy Road

E-mail: faa.balazs@mke.hu

Fields of interest: Fine art, visual education, web-communication

Awards: Munkácsi prize 2001, Osakai Grafic Biennale, bronze prize 1994

Publications and/or Exhibitions:

2004 Hungary, Székesfehérvár, István King Museum, with Péter Türk and György Olajos

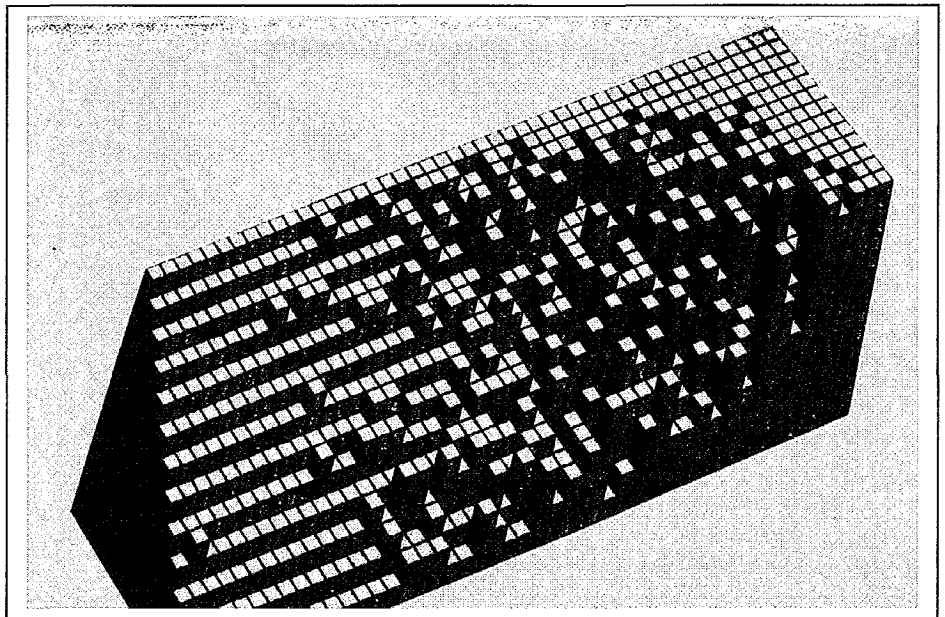
2002 Agnes Hincz: New drawings exhibition, Hungary, Budapest, Óbuda Cave Gallery

2000 Marseille, Friche belle de mai, Brouillard, Précise exhibition and conference

1999 Hungary, Budapest, Óbudai Társaskör Galériája, Untitled one man show

1998 Hungary, Szombathely, Szombathelyi Gallery, Ornament exhibition

Abstract: What is the meaning of mathematics? In what context can be used math in contemporary art? Is mathematics a tool for artists as for engineers or scientists? Aesthetics does not examine mathematics. In mathematics there are no subjective distinctions. Contemporary art - contemporary math?



1 ART AND SCIENCE

Universal terms can not be used in art. They are used in art-theory with more fantasy than success. As important in nature history being an idea universal (or its competence exactly determined), as unimportant in art. Here are no competencies and universal ideas. However this is not means, that art (in contradiction with nature sciences) means absolute freedom of subjective personalities. Just the opposite: art has to be constructive, but at least positive: art is not a self-consistent system, like mathematics, but an open system, its weight-point is outside of itself. The art-experience exist in spectators: the weight-point of the art is the public, the 'non-professional public. That's why there is no chance to determine, what does mean mathematics in contemporary art. But I can tell a story of an idea, my idea. First I thought, art is can not be less, than representing the whole world. I did not want represent the whole from one point of view, and did not want to represent a part of it from all the viewpoints. I wanted all - is it worth to start anything with less?

Art uses signs, and the meaning of them works in the spectator. The meaning (the experience) is very subjective, because it comes into being in the spectator, not in the artwork. I think the meaning of an artwork depends more on the spectator than on itself. So I finished to meditate on the meaning of my work. In the same time I have seen, the other subjective element is in the traditional way of making artworks. What is this way? The visual idea can be realized by many variations. Some variation is chosen by the artist, and he tries to realize them by continuous trials and errors. This continuous correcture has influence the original idea. I did not want choose. I did not want the best, the exceptional. I wanted to make all.

2 PENROSE-TILING

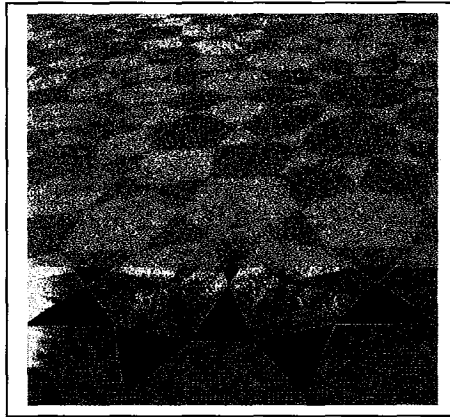
Soon I started use different methods, as I learnt in the school. I created systems, images-making machines, and I was present in them, only as an animator. In my systems always were gaps. That's why I started be busy with mathematics. I recognized, that the main point in a machinery is not making meaning-rich artwork (anyway making the meanings is a job for the spectators), but to show the structure. Using math gave me the possibility to create a system, which can produce such result, as I never could invent. There is machinery, by which the world shows itself. I was impressed very much when I first met with the Penrose-tiling. The Penrose-tiling can tile an infinite plain by two kind or rhombuses, and the order of the shapes never repeats itself. This fact seems to prove my idea about the 'over-human' systems. There is another interesting fact: this tiling is not present in the nature: not in the living world, not in crystallography and not in the quantum mechanics. Math is unnatural. Maybe that's why primitive people used to draw geometric patterns and we live in square shaped spaces. We have to declare again and again that we left the streamlined and regardless world of the animals.

It is a long story. Artworks made by math can be recognised soon. Math has special taste, well known and strangely not human. Illustrating math is quite impressive, and many artist thinks it is 'strong' enough to manage an artwork. Thus, the visual style of math illustrations are straight transported to the artists' canvas (choosing the easy way). Thus, math has no meaning in this kind of artworks. It seems to be some mystic nature object or only a tool. However math is not a tool, but a complex meaningful way of thinking. It is impossible to integrate into contemporary art, at least without any efforts. I work many years to find a way. The next chapter describes a method used one of my artwork series. For more information please visit www.hincz.hu/indexe.html.

3 IFS drawings

IFS means Iterated Function System. This is a description of an iterated function system mainly for novices in math. The first thing to understand is iteration. The simplest example is the series of numbers, where the next number is always bigger by one as the previous: 1, 2, 3, 4 ... The next number in the series produced from the previous by adding one, and the this procedure is repeated to the infinite. The mathematicians describes this series like this: $a_{n+1} = a_n + 1$.

This is called the generator-function of the iteration. The generator-function is a procedure, producing a number from another number. If a function applied to its result again and again: this is iteration. The iterated function system differs from a simple iteration: it uses a function system instead of a single function. The function systems are not really interesting in this case (otherwise yes), just one is shown: which produces the drawings. In 2D a point can be rotated, shifted and scaled. These procedures called transformations, and mathematicians use the functions of the three transformation in a function system, just for simplicity (?). This function system called the transformation matrix. In fact a transformation matrix is a couple of numbers (in our case 6). The matrices has many benefits, in our case just one: they can be used as generator functions, since they produces from a point an other point, and the "outout" point can be an "input" point again. As simple example: a point shifted to east again and again produces a horizontal line, if the distance is small enough between the points. If they are also rotated, the result a spiral. But this is not all, because one transformation matrix can produce only lines or spirals, and (although very interesting phenomenon) not enough. I use more than one transformation matrices. (In fact between 2 and 32). Let say, we have four of them. Between iterations, I randomly choose a transformation matrix (generator function). The selected matrix transforms the actual point to the next one. This is pretty complex, but there is more. The chance in the random selection is not the same for all matrices. One of them has bigger chance, than the others. So, taking math's point of view, that's all.



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