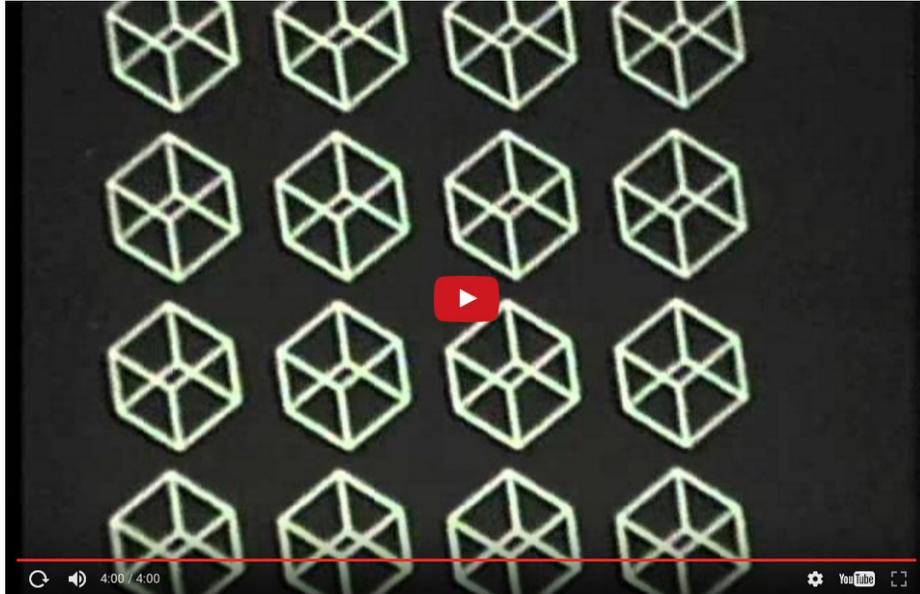# MuDA

Cubic Limit
Interview with Manfred Mohr

Cubic Limit

During Manfred Mohr's legendary 1971 exhibit at the Museum of Modern Art in Paris, he met the CEO of a data storage and preservation company, which specialized in microfilm. Mohr was invited to experiment on their brand new machine to make computer animations. Mohr accepted and during the next four years made several short computer films, such as Cubic Limit. According to Mohr, "it was a very painful experience since the process was very slow and the turnover dragged out over many months."
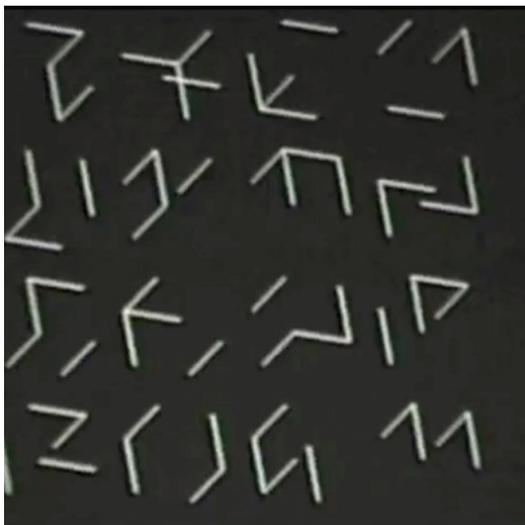
Each frame was drawn in high resolution with a light beam directly from the computer onto 16mm film to create the animations.

How did you come up with the idea to use this computer to create moving images?

I made several short 16mm computer films in the early 1970's. In 1971, at ARC in Musée d'Art Moderne de la Ville de Paris, I showed my work calculated and drawn by a computer, which was a first in a museum at that time. During that show I made demonstrations of plotter drawings.

On one occasion I met the CEO of La Compagnie Générale de Micromatique, a graphic company. He invited me to experiment on their graphic machines. I had no prior knowledge of this graphic machine, which by the way, is not a computer as it only renders a pre-calculated digital result from a computer into graphics.

At that moment in time I was also struggling with some other philosophical problem about computer generated graphics. I had so many ideas every day that I could not program fast enough to bring them all on paper. I realised that all my ideas were so diverse, and yet did not really have a common theme.

Going back to my music background, I dreamt of inventing a sort of musical instrument on which I could play "graphics" that would be recognisable with a common theme. If I play saxophone, no matter what I play, it would always sound like a saxophone. Then the cube came to my mind and I immediately adopted it as my instrument: A rigid structure of 12 lines and fixed relationships (later expanded into n-dimensional hyper-cubes)
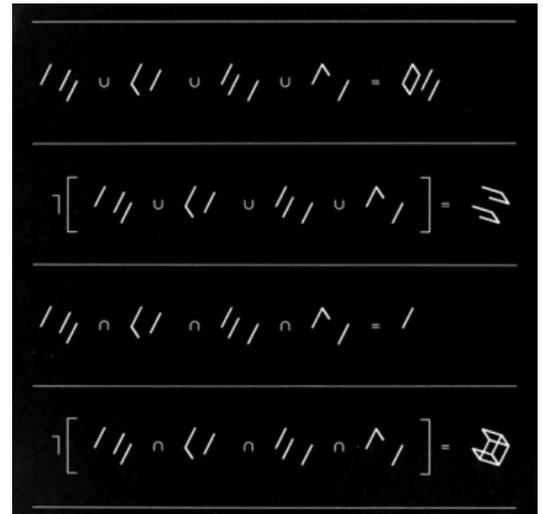

Visual equations of cubes, plotter drawings on paper, 1975

This became my vocabulary, and the connection to the above mentioned CEO came just in time to experiment with a rotating cube as a moving image. It was also the time when I was very interested in the mathematician René Thom and his idea of a 'catastrophe point'. I wanted to experience the moment (catastrophe point) when a rotating cube was not anymore recognisable and dissolved into just abstract lines.

In which language did you write Cubic Limit?

I programmed in **FORTRAN IV** and ran the program at the institute of Meteorology in Paris, where I had access at the time. I wrote the results on magnetic tape, which I then brought to the company to execute it on their graphic machine. From a small internal screen, a camera made a 16mm film. Since I had no experience in filmmaking, it took me a while to figure out all the programming details of filming, speed, size etc. I had to write all the software myself because nothing existed in this field at that time. From the moment of delivering the tape and the finished 16mm film it took weeks, and since I had no priority, sometimes months. After three years I lost patience and interest.
I have an archive in Germany of print-outs of most of my early programs. You might not realise at that time one wrote programs on punched cards. I have about 10,000 punched cards sitting there. Here in New York, I have most of the basic printed code because I always made books of my computer print-outs for my own reference and the pleasure of making books.
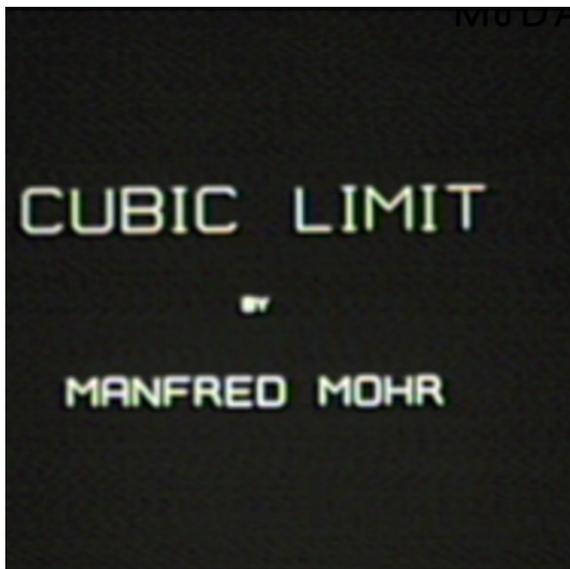

You say the work of Max Bense altered the way you look at the world.

I came upon Bense by accident. A friend of mine who studied Philosophy suggested that I read Bense's poetry in the early 1960's. I did, and got so impressed by the language, that I also bought his philosophical writings Aesthetica IV, which contained the four books he wrote since 1952. I slowly realised that the ideas he developed corresponded to something I was unconsciously seeking for a long time. I was very much interested in the content of what I was doing as an artist, and less in emotions. Through Bense I got the

lead of where to go.

A few years later I was ready to write algorithms of my ideas. I was irreversibly attached to the fact that I can create a visual result from a non-visual logic. Since knowledge is irreversible, up to this day when I see an artwork, my mind looks immediately for its logical content. I cannot and I do not want to return to emotional expressions.
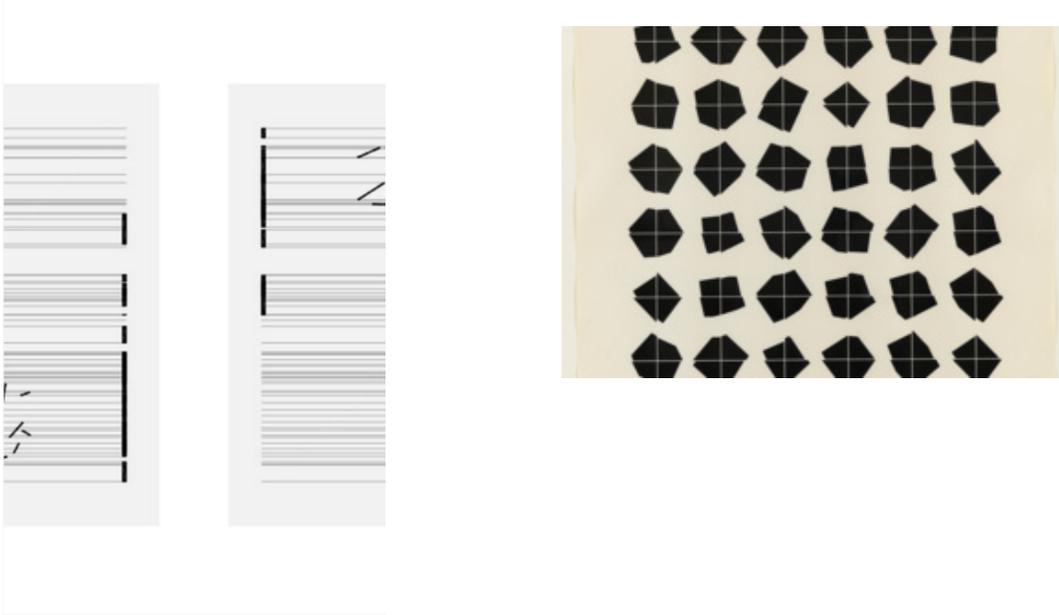

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However, you must feel strong emotions when finding this logic in a beautiful artwork. How are logic and emotion connected in your work?

The question an artist could ask himself: why do I have this or that idea? Where does this information come from? Very early on I understood that a basic artistic understanding and behaviour comes from having the ability of an associative thinking. That means in essence that all my knowledge, my life experience, my upbringing etc, are theoretically thrown in one cerebral melting pot without value and preferences. From this melting pot, an artist makes the most unexpected connections and finds questions and answers. Which on the first glance, have nothing to do with each other, (sometimes exclusive and sometimes ridiculous), but in the end a good artist makes sense out of it and gives it a new meaning.

Obviously up to this point, mysterious developments and emotions play the largest role in finding an idea. Also, one can say that this is where an "artistic style" can be noticed. Once an idea is born, a different game starts. From there on, an idea can be developed in a systematic or in a non-systematic way. I chose the systematic way. One also must say that no matter how systematic and rational one develops his ideas, there is still a lot of personal and maybe emotional references readable in one's work.
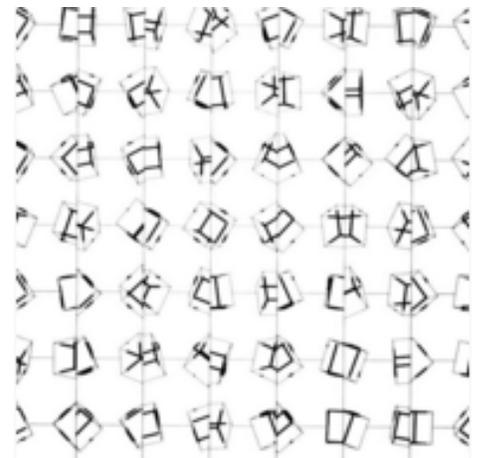
You used computers as an artistic tool in a time when they were used for business, science and military purposes. How did people react to your inappropriate use?

Nobody really objected to the use of this expensive and sophisticated machine to create art in the

1970's. On the contrary the engineering departments, including architects and business owners, were eager to adapt the possibilities to create graphic representations with the computer and a plotter.

It was the art world which was completely taken by surprise and revolted loud and clear: how dare you make art with this machine! I personally was confronted many times with unpleasant remarks and rejections. On one occasion, at a presentation of my work at the Sorbonne in 1976, I was greeted with a barrage of raw eggs on my head and the shouting of the students that I use military equipment to destroy art. Articles were sometimes rejected from art journals because of the word computer. In fact, the art world seemed to be embarrassed to use the word computer.

Luckily, there were also people who appreciated my work and even some galleries started to show and sell my work. In a show at Galerie Weiler in Paris in 1974, I tried so hard not to push the "computer thing" and only called my work Drawings. During the vernissage a man came up to me and said: These are fantastic drawings, but considering the hard work you put in, maybe you should look into using a computer.