INTERACTIVE ARTICLE COVER

RUPKATHA JOURNAL
ON INTERDISCIPLINARY STUDIES IN HUMANITIES
ISSN 0975-2935

About the Journal

Journal DOI	https://dx.doi.org/10.21659/rupkatha
Journal Home	www.rupkatha.com
Indexed by	Scopus Web of Science: Emerging Sources Citation Index (ESCI) DOAJ
Journal Metrics	CiteScore 2020: 0.2 | SJR 2020: 0.162 | SNIP 2020: 0.193 | JCI 2020: 0.50

About the Issue

Issue	**Volume 14, Number 2, 2022**
Editor	Tirtha Prasad Mukhopadhyay
Issue DOI	https://doi.org/10.21659/rupkatha.v14n2
TOC	https://rupkatha.com/v14n2.php

About the Interview

Title	**Computer Artist Manuel Felguerez: A Brief Interview on the Pioneering Origins of Geometry Painting**
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Author ID	None
Funding	**No funding received. Published free of any charge.**
Article DOI	**https://doi.org/10.21659/rupkatha.v14n2.05** **Pages:** 1-4
Abstract	https://rupkatha.com/v14n205
Full-text PDF	https://rupkatha.com/V14/n2/v14n205.pdf
Article History	**First Published: 18 June 2022**
Article Impact	**Check Dynamic Impact**
Copyright	Aesthetics Media Services
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Computer Artist Manuel Felguerez: A Brief Interview on the Pioneering Origins of Geometry Painting

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Abstract
This interview cum memoir of Manuel Felguerez, by the author, describes the development of two projects in the words of the Mexican artist Manuel Felguerez himself. Felguerez speaks of his experience as a Latin American artist, his encounter with digital technology in the United States and the trajectory of art that his work takes during an intense and experimental period of creativity in the seventies. Felguerez's explorations were embodied in two books, *El espacio multiple* (Paz 1988) and "The Aesthetic Machine" *La máquina estética* (Felguerez y Sasson 1983). The project involved the use of computers for the composition of incipient new media paintings, sculptures and engravings. After the project was concluded, the author avoided the use of computers again, and for different reasons. The value of this interview of a pioneering artist in contemporary America lies in the insider's view of the situation in the art world, the artist's first-person revealings and confessions and the deep personal life of the artist as an individual.

Keywords: algorithm, computer, geometry painting, sculpture

This interview was taken in 2020, at Felguerez home in Mexico City. Felguerez is always kind enough to respond to your questions and reflect on his artwork. Felguerez started talking as he was asked about the beginnings and well-springs of his first inspiration for creating a work with computers:

> "The origin of my artistic work in relation to technology is a bit casual. When I was a teacher at the School of Plastic Arts at the National Autonomous University of Mexico (UNAM), I was assigned the task of teaching thirty hours of class every week. You could call it a handful, or a plethora. I almost wasted the day at school. One day along with two other teachers I decided to ask the Technical Council for permission to give us ten hours each week, to dedicate just to research. The Technical Council first said they agreed; however, the next day when we arrived at the school, and despite the Technical Council's approval, we saw that other professors of the University cooked a scandal, and started demonstrating with banners and signs against this decision of the council. Someone said: "Teacher investigator, teacher aviator".

The protesting teachers were afraid that this permission for independent research meant that it afforded an escape from teaching activity. Because of the scale of the protest, the Technical Council retracted and finally cancelled the permit. But the higher authorities of the University called the Coordination of Humanities and found out about the developments. The. Committee

then called us back and said: "…. look, a University organ that refuses to allow time for research is not worthy of being an organ of the University". Since then any teacher who joined the University with an appointment of a full-time position could do research as well. That was like winning the lottery.

So, we had to make a formal request for the research hours. But then we were questioned, as to what we were going to investigate? I thought about a topic that was in the air; namely, one about the possibility of using the computer as a working instrument, one that is based on the layman's grand idea that the computer is a device that calculates with a great speed. Since I was interested in geometry, and mathematics, I set out to apply the possibility of the computer to produce or devise a project on art. I didn't know what to call it at that time – an *abstract* artwork? But that was the origin. The project was based on two texts, one was called *El espacio multiple* (*The Multiple Space*) written by Octavio Paz in 1988. Following *El espacio multiple*, I proposed that the real plane does not exist, so that each geometric space could generate itself from a flat square or a relief to ultimately form a sculpture. This meant that if I made a half-circle and lifted it then I made a cone. This way I'm already creating a visual relief but if I grab it at the back and repeat the same or change the direction of accumulation, I could transform the whole geometrical base into other shapes and form a sculpture.

So I started working with the idea. The first thing that I did was to analyze pictures. I started a project with an architect friend and tried to solve a simple problem by asking ourselves the basic question of whether an abstract picture naturally has a prevenient top and bottom. We wonder how we know if it is "up" or "down", and we started to analyze such pictures. I do not remember if it was Rudolph Arnheim who forwarded a theory that says that in a painting there is a balance and that equilibrium implies a point at the center of the painting and hence each form that is made has a distance from the center and at the same time a relative specific weight. Turning an object into a zone of rays, and putting all the shapes in a box means that you could calculate its speed – the speed of rotation of an object. If I let the painting move around its supposed gravitational center, it would start by turning in one direction. As it stops it would tend to weigh more on one side than on the other. In order to find equilibrium, the painting would again start to rotate at a certain speed, oscillating between ends until it reached a kind of rest. That speed could act as a fingerprint. It could indicate my sense of a personal composition (since I initiated the balancing for a certain object in space). I resolved this question of the speed of rotation in my paintings, and therefore, when I started doing the first experiments with a computer, I did more research to know about the visual trajectories of my personal ways of composing art. Everything that fell off from a predictive pattern I erased; and everything that coincided I kept. These patterns were not traces of what I had invented: only a kind of (template) form existed in my previous painting. So already, as if by chance, any random elements that the computer-generated from my interventions were then repeated in my new compositions, and hence it was not totally random. As I kept searching, I kind of failed in my anticipations – the pre-existing patterns did not necessarily materialize into an aesthetically satisfactory shape but they gave me an idea, of new unknown compositions. I remember for instance that drawing a circle on the computer was a very odd thing because it was like a collection of hundred lines that had a little peak on each intersection.

When I was doing all those experiments, I also decided to continue to write a book to justify three years of my work. In the book titled *The Aesthetic Machine* (1983), on which I worked with Mayer Sasson who was studying distribution grids of electricity for New York City, working as an expert in the American Electric Power company. He was a director and an expert in programming. And he was the one who gave me the idea of trying to see what happened while applying systems identification, for predictions. Systems analysis consists mostly of reiterations – like if I tried explaining with the example of a comet which approaches earth. Astronomers may observe it for 15 or 20 days, as it could be possible to identify what its behavior will be like in space in the next three hundred years or three thousand years, or even three million years. By extrapolating predictive analysis to my work, I wondered if I could discover what the fate of my artwork would be after 25 years from a given moment. The analysis would allow guessing what would happen to it in the future. It's like science fiction. If I continued designing along that path, I could guess how my paintings would look like in the future. Well, we started to apply the computer's results. I sent all my proposals from my Harvard computer to Mayer, who received them in New York and processed them and returned the results. One day he finally told me he had already completed writing the program. With my wife, I ??went to number one Broadway, where the offices had a large window of about 30 meters, and was a space full of machines with some people dressed in sky blue. These guys in blue operated the computers: they connected the results of the computer analysis on a plotter, and I began to see drawings like my own, though not exactly as if what I would consciously draw. The images flitted across at a speed of one per second. It produced a brutal emotion that showed that the experiment had somehow been successful. We continued working on that project for a while but we thought that the program had to be optimized. I mean that aesthetically my sensitivity led me to evaluate a drawing each time I ran the computer. I had the drawings and every day I also corrected, I watched them and graded them for the best options. I gave the highest grade of ten, then nine, eight and so to break down to zero. The next day I did the same with the options produced by the computer.

Well, since I had all that stuff, I asked myself, now what do I do with this? There I have them, I'm not sure what they meant: more than 4000 possibilities of my paintings in an imaginary parallel universe. If I were a merchant I would have set up something like an original cigar factory. But I was an artist. Well first I said, I have to pass this on as something that genuinely looks like art. As they were geometric drawings I called them ideograms but they were really ideas, but they were ideas for painting or sculpture. I had to make paintings or sculptures with them. Right there in Boston I made a ball of squares already with colors and everything, that along with some sculptures and models were going to end up in an exhibition at the Carpenter Center for the Visual Arts, in a building designed by Le Corbusier in Harvard. It seemed like the cycle was closed and I had already exhausted a mechanism that was like a puzzle: it was a mechanism with which I could change a square or a circle, or what could also produce infinite possibilities of harmonic color according to my creative prototype of colors. All I did was use that kind of color that was already mechanized; once the first one was done, it needed nothing more than moving it so the computer could have done it too. But I didn't get into that anymore. I said, if I grab and throw a 100-meter line by hand and make that the guiding line of my drawing, what will come out of the computer is something with lines like when you make a signature that is only yours, a personal line. Then embracing the options of color, and forms of the compositions produced with lines, I started

thinking about musicalizing it. So, I wrote the book and took a decision, I do not know if it was good or bad at the time. I closed the computer and never opened it again. I have not opened it again, because it absorbed me – it was very exciting, it was everything I could hope for, but the beauty of the painting was in the accident. I said to myself that I either go down a path of subjectivity or I stay with the computer. If I keep the computer, then I may become a very famous technician in the field of artistic management of the computer, but life is going to fall away.

To recap, I received the Guggenheim Scholarship for Harvard in 1975. In Mexico I already began the exploration for *El Espacio Multiple* three years before, in 1971, 1972. I remember that computers were like wardrobes. There was IBM. They had black robes with a little slit to pass punched cards. At that time I learned Fortran 4. It was my language. All that was what I started with. During the seventies, my work was totally geometric. The computer was very much present in that period but from the eighties, I went in another direction. The drawings of that period are in my drawers now. Some of the paintings in my studio are from the seventies, some were converted to sculpture, and some other artworks were exhibited elsewhere in the world, in museums and private collections. I made paintings based on the compositions predicted by the computer, but they were, in a sense, also real paintings. The drawings came out of the computer, but after that, the full modificatory process the computer-generated compositions and artworks emerged like any normal painting. But this was an era of my works in which little by little I also started changing. It began very simply but I was filling my works with pictorial elements until they no longer knew where they came from.

So here I recount my days in Boston with Mayer Sasson. I gave several interviews in American magazines and my work became very popular at that time. Here in Mexico, in the *Centro Multimedia* there is a room that bears my name for this research. Sometimes some researchers come from other places and countries to ask me about the project. This might mean something was left out, but from my side, it seems that going back to such work meant it was like being resigned to the computer once again. Yet I think of moving forward.

Declaration of Conflict of Interests

The author(s) declared no potential conflicts of interest.

Funding

No funding has been received for the publication of this article. It is published free of any charge.

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