

Complexity / Art And Complex Systems

Samuel Dorsky Museum of Art
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How do you understand and illuminate the behavior of the world when you know there are rules and regularities, yet the outcomes are unpredictable and often irreproducible? How does the scientist proceed? How should the artist proceed?

For example, since in complexity theory the outcome is often unpredictable, how should the artist intercede? Is there a definite endpoint, or can one even be bolder and remove the artist and let an automaton-like process take over? What if one gives the same rules to two artists or two scientists; what would complexity yield?

These and other questions are the focus of the exhibition *Complexity / Art And Complex Systems*. The exhibited art utilizes ingredients of complexity itself, demonstrating such concepts as multiple agents, non-linearity effects and emergent phenomena.

Complexity is, on first and last examination, full of lush beauty as well as ideas. Many of the works are the results of the application of a strict procedure, but the results are buoyant.

Some pieces convey the world we are familiar with, upended.

Jack Ox's *Color Organ Still Shot #5* offers a deft marriage of the organic and the digital. In the large print, forms are defined by masterful drawing. The defining hatch marks are digitally manipulated, however; in one instance mirrored as in a Rorschach blot. The drawing is of a landscape invaded by an ordered progression of bar chart-like color elements that graph patterns in music.

Similarly, Frank Gillette's digital prints have the veracity of landscape as captured by a camera, but the landscape is morphed into hallucinogenic light and pattern unknown in this world.

Deliberation, Planning and Chance

Daniel Reynolds is represented by a large painting of poured polyurethane and enamels, materials that are immiscible. The paints gather and repel into pools by chance, but with enough regularity to appear to be pre-determined. The forms resemble microscopic organisms, squirming with vitality.

Behind frosted Plexiglas, 56 red lights in an eight by seven grid turn on and off in an apparently random pattern. Can we decipher the code? If we step back far enough, can we discern an image? There is a seductive, insistent pulse to *Red Life* by Leo Villareal; appropriate because it is an approximation of Life. The piece is adapted from Conway's Game of Life, a mathematical set of birth, death and survival rules.

Janet Cohen's work also asks us to analyze structure and the significance of integers, in this case, in baseball stats. Baseball is a canny subject for her attention. A casual pastime for most of us, the game can be seen as a sum of opportunities tipped one way or another by quantifiable but highly unpredictable factors. Cohen's nervous notations echo the stress of the passionate fan.

Eight-Bit Ant Farm by Remo Campopiano, Guy Marsden and Jonathan Schull is a collaborative effort of art, social science and engineering. The piece makes use of the behavior of a living social system (ant colony), electromechanically connected to eight by eight grids of ping-pong balls that react

via motion and color. Complexity abounds in the behavior of the ants, the choices in illustrating and activating the motion and colors of the grids and in the computer display.

<http://www.remo.net/complexity>

Simple and Complex

Manuel Baez's two sculptures dominate the show with their sheer size and irresistible charm. Their construction is simple. Hundreds of bamboo sticks, each the thickness of a matchstick, are cinched at intersections with white rubber bands. Baez invokes a set of rules for generation, exploiting the tensile strength of simple structures. In his larger piece, he ends up with a soaring structural backbone -- a hybrid-image of a DNA-like spinal cord -- with extending microelements. He observes a strict regularity in building the forms, but the materials themselves impose a playful irregularity. http://www.nyfa.org/nyfa_artists_detail.asp?pid=409

Hans Haacke's *Condensation Cube*, from 1963/1965, a Lucite box containing water with condensation on its sides, predates and predicts further study of complexity by artists. The work is spare but infinitely nuanced, focusing our attention on weather, the most familiar example of a complex system. http://www.macba.es/catala/04/04_02_190.html The inclusion of this work and early videos by Woody and Steina Vasulka gives context to the newer work.

Complexity raises interesting questions. The works exhibited are not merely explication or illustration. The wide range of work is testament to the breadth of the influence of complexity theory, but also to the refreshing, non-parochial approach taken by the curators. While complex systems may be self-organizing, no exhibition is. This excellent show was organized under the curatorial direction of Ellen K. Levy and Philip Galanter.

[Leonardo Digital Reviews is pleased to be able to report on this exhibition thanks to the collaboration of Adrienne Klein and Brian Schwartz]

ADRIENNE KLEIN is an artist, teacher, curator, and administrator. She has had nine solo exhibitions and has been included in more than fifty exhibitions in the United States and Europe. She teaches at the School of Visual Arts

in New York City.

A special area of Klein's interest is the intersection of art and science. She organizes events for The Graduate Center of The City University of New York's *Science and the Arts* program. She is Editor of the online bulletin of the organization Art and Science Collaborations, Inc. Klein received an Individual Artist Grant from the New York State Council on the Arts in 1998 to further her investigations in art and science.

Klein was Director of Rathbone Gallery in Albany, NY from 1988 to 1992. She has independently curated exhibitions for, among others, the Gallery Association of New York State, [Union College](#), and [New York University](#). Her exhibition for GANYS, [Graphic Alert](#), an international survey of AIDS posters, was exhibited at the Brooklyn Museum of Art in 1998.

Klein served on the Board of Governors of the New York Foundation for the Arts from 1992 to 1995.

BRIAN SCHWARTZ is Professor of Physics and Vice President for Research and Sponsored Programs at The Graduate Center of the City University of New York and is responsible for the innovative *Science and the Arts* Series. He is currently producing a musical play based on the novel *Einstein's Dreams* by Alan Lightman. He obtained his undergraduate degree from City College of New York and his Ph.D. degree from Brown University. He spent 12 years at MIT as a researcher and faculty member followed by ten years as an administrator at Brooklyn College. He was in charge of the centennial program of the American Physical Society celebrated in March of 1999 in Atlanta where he organized the first-ever physics festival. As a lasting centennial memento, he produced an artistic wall chart and web site for a timeline entitled *A Century of Physics*.

Schwartz was responsible for organizing symposia at the Smithsonian Institution and The Graduate Center addressing the play *Copenhagen*. For Spring 2003, he is producing events at the Graduate Center, in association with the exhibition *Genomic Issue(s): Art and Science* celebrating the 50th anniversary of the discovery of the helical structure of DNA.

Schwartz has edited 8 books and published over 120 scientific and educational article.

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