Visual Resources

ISSN: 0197-3762 (Print) 1477-2809 (Online) Journal homepage: www.tandfonline.com/journals/gvir20

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To cite this article: Sonia Landy Sheridan (2006) Generative Systems at the School of the Art Institute of Chicago, 1970–1980, Visual Resources, 22:4, 315-324, DOI: 10.1080/01973760601010291

To link to this article: https://doi.org/10.1080/01973760601010291

Published online: 04 Jan 2011.

Visual Resources
Vol. XXII, No. 4, December 2006, pp. 315–324

Routledge
Taylor & Francis Group

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Sonia Landy Sheridan

An artist/educator discusses the program Generative Systems, which she founded at the School of the Art Institute of Chicago in 1970. She describes why and how it was founded as a quest for an art process appropriate for emerging social/technological change. She explains how she gradually interwove her art work and teaching in this personal quest. A broad overview of Generative Systems is accompanied by a discussion of noted artists and scientists who cooperated with the program.

Keywords: Sheridan, Sonia Landy, 1925-; Generative Systems; Generative Art; Art/science/technology programs; Copier art; Computer art; Art and change

Over three decades ago a new program was created at the School of the Art Institute of Chicago in the heartland of the United States. It attracted students from around the globe: from Europe, South America, Asia, Canada, as well as from many parts of the United States. They brought with them to Chicago their distinctive cultures, aesthetics and ideas. When they returned home, those distinctive intellectual and artistic characteristics had been shaped by their immersion in the program and process called "Generative Systems" and in that way made it a global phenomenon.

What is Generative Systems, and how did it come into being? It originated in my personal quest for an art process appropriate to the technological and societal context of that era. By the 1960s, scientific discoveries were transforming our conceptions of time and space. New imaging devices were giving us views of inner and outer space never before seen. For example, first appearing in public about 1963 was a photograph of chromosomes, a basic component of life (Figure 1). It seemed to me that an awareness of genetics, time and motion had to be as crucial to art as it was to science; indeed, artists of all eras have had to come to grips with the science of their time. In the early 1960s, however, schools of fine art seemed remote from the

ISSN 0197-3762 (print)
DOI: 10.1080/01973760601010291

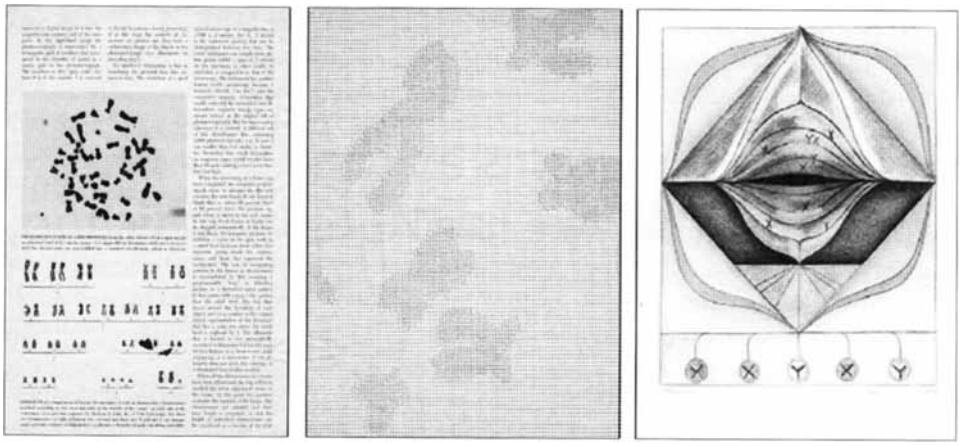

Figure 1 *'Chromosomes'* Left & Center: *Scientific American* article. Right: Ink painting. Collection Fondation – Langlois, Sheridan Archives (Courtesy of the Author).

prevailing technological and social currents that were transforming the world. While the industrial and commercial worlds had access to instant communication tools such as film and video, most art schools continued to work with and promote the use of nineteenth-century tools. As artist and teacher, I, too, first tried to deal with new scientific developments by using those traditional art tools: pens and brushes. For example, I used pen and brush to draw imaginative genetic mutations, transformations and metamorphoses. I created similar projects for students, using those same traditional tools.

It was the social upheavals that convulsed American society in the 1960s that forced me to look for more appropriate tools. In the late 1960s in Chicago there was widespread protest against the Vietnam War. I and many other artists and students wanted to use our particular talents to support these protests (Figure 2). As a consequence, we suddenly needed the capacity to communicate quickly and dramatically with the public that we were trying to influence. We turned towards modern tools of communication, until then primarily employed by commercial organizations. At the same time, the School of the Art Institute began to move in a similar direction. In the brief period of five years in the late 1960s the School of the Art Institute of Chicago set up classes in photography, film and video.

I set up a somewhat different program. With the assistance of the Advance Screen Company in Chicago, I created a photo screening area that led me almost immediately to other commercial imaging systems such as the 3M Thermo-Fax. This made it possible for us to get images out to the public within a day. All of this made us more effective politically, but at the same time prompted us to think more deeply about the nature of art, of the artist's tools and of the teaching of art. I was struck by the paradox that the art world appeared to be ever more commercially oriented—the gallery system dominated much of art—yet on the other hand, it did not recognize art made with commercial tools as genuine, serious art.

Figure 2 *'Protest.'* Signs by Generative Systems students with a Cameron enlarger for silkscreens, Fondation-Langlois, Sonia Sheridan Archives (Courtesy of the Author).

Artists were wary, they did not wish to be swept up in a new technology at the expense of the "art," and therefore many opposed using for art purposes new communication tools designed for business use. They wanted industrial tools to be confined to industrial art schools. These concerns were not necessarily the fears of artistic Luddites; the instincts of the skeptics were often sound to the extent that, if used in the way they were designed to be used, the new tools offered little more than a highly constrained and mechanical art. Yet what could be done if they were used in ways for which they were not designed? I saw the need for a new area of study to examine the ways in which the kind of tools we use (manual, mechanical, electronic, photronic, etc.) determine our perceptions and how we record them (Figure 3; Table 1).

An approach to art education was required that would place modern communication tools in their proper place as an adjunct of the human mind and senses. It was also essential that such an approach build into its structure acceptance of change. This was one of the ways in which our thinking and our program anticipated the information age. It is in this context that Generative Systems emerged as a viable educational direction.

It is easy to see in retrospect how I was led to Generative Systems, but it was not so clear at the time. Generative Systems did not suddenly emerge in full bloom. It began in an empty closet-sized room without official sanction in 1969. In 1970 it became a regular course of study listed in the school catalogue as "Energy Bank." Originally it

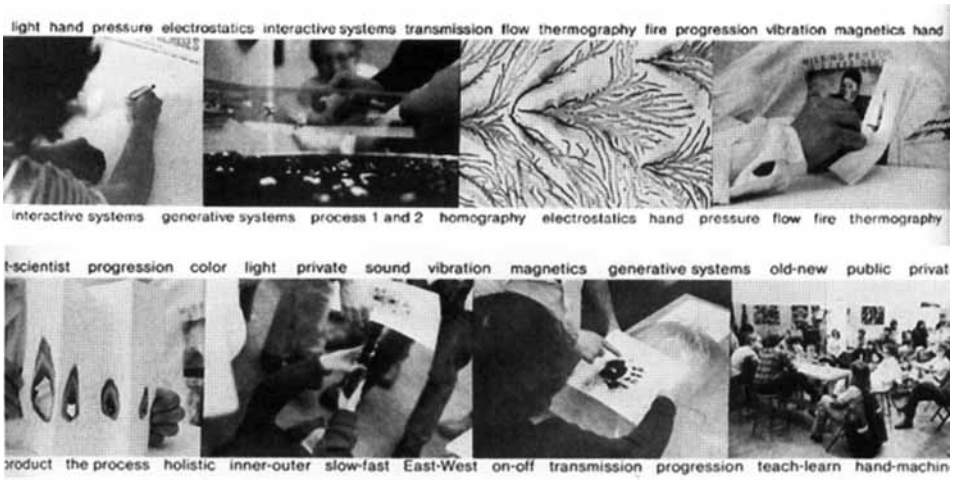

Figure 3 *Energy Imaging by Hand*, "Time Arts" ed. by Sonia Sheridan, School of the Art Institute of Chicago publication, Photograph by Michael Day, 1979. Fondation-Langlois, Sonia Sheridan Archives (Courtesy of the Author).

was to be called "Reproduction Systems" since we had acquired from the Minnesota Mining and Manufacturing Company the world's first color copier: the 3M Color-In-Color. As we were not interested in reproduction, we settled on the term "Energy Bank." When the students took more energy out of the bank than they put in, the name was changed, fortuitously, to "Generative Systems." At the time we did not anticipate that in thirty years Generative Art would become a significant field of global proportions.

We were truly an energy center. Since we used the Color-In-Color machine in practically every conceivable way except for simple reproduction, it was necessary to know the machine inside and outside. Through studying its mechanics and its underlying principles, we soon began to understand energy in a new way (Figure 4). New to us were the energies of electrostatics, magnetics and heat that were the basic components of the machine. When we soon after acquired a Telecopier (Fax), which used light, heat and sound as imaging devices we were able to add the dimension of imaging by sound to our energy repertoire.

I created a number of courses to develop easy familiarity with the principles and processes exemplified by the tools we used. For example, Process I allowed the students to experiment freely, without machines, with electrostatics, magnetics, heat, sound and transmission without respect to any art product. Process II gave the students access to the electronic equipment for experimental purposes where art sometimes was produced. Finally, I created a course called "Homography," in which students used any and all of manual, mechanical, electronic, photronic, sound and biological means of imaging. Ultimately Homography became a course in the visualization of time through these various means.

GENERATIVE SYSTEMS
the process

Manual, Mechanical and Electronic Time Systems

Slow-Fast, Input-Output, Stopped-Time, Continuous-Time, Transmission,2- or 3-dimensional Tactile Products: paper, cloth, ceramics, plastics, metals, wood.

CHEMICAL

Iron oxide
Zinc oxide
Oil inks
Oil paints
Water inks
Powders
Carborundum
Rosins
Gums
Soap
Grease
Wax
Thermal ribbons
Sublestatic dyes

AIR

Pump
Fan
Syringe
Breath
Spray
Vacuum

TRANSMISSION

Tin cans and waxed string
Telephone
Video
Satellite
Remote copier
Radio
Telegraph
Fiber optics
Laser

LIGHT

Sun
Fire
Incandescent
Fluorescent
Ultra-violet
Xenon
Laser
Fiber optics
Candles
Matches
TV screen
Flashlights
Fireflies

THERMAL

Matches
Candles
Wood, coal
Infra-red lamp
Xenon lamp
Hot wires
Hot rollers
Hot rods
Hot drums
Hot gelatin
Home irons
Waffle iron
Radiators
Light bulbs
Soldering iron
Incense
Body heat

SOUND

Water
Air
Glass
Metal
Wood
Hi-Fi
Musical instruments
Music box

ELECTROSTATIC

Corona
Scoratron
Selenium
Silk, wool
Fur
Plastic
Mylar
Glass

MAGNETIC

Magnetic brush and rollers
Assorted magnets
Iron oxide filings and powder
Nails
Magnetic tape and paper

Note: Add Freely to this suggested list!

Machines owned by the Generative Systems Department of the School of the Art Institute of Chicago

Any or all interacted with drawing, painting, printmaking, ceramics, weaving, textiles, sculpture, performance, film.

BASICALLY THERMAL

Hand irons
Stoves
Small 3M 151 heaters
Xerox heaters
Val Economist vacuum heater—3M—30 x 40 inches
Thermo-Fax
Color-In-Color I
Color-In-Color computer
Radio Shack TRS 80 printer
Typewriter (Thermal ribbon)
Dual Spectrum—3M
Promat—3M

MAGNETIC

Xerox (beads)
VQC 1 (Mag roller)
C-in-C I (Mag roller)
Video
Sound Page

LIGHT

3M Microfilm printer (zinc oxide)
Haloid Xerox
3M Promat
VQC I
Dual Spectrum—3M

BASICALLY ELECTROSTATIC

Haloid Xeroxes
O/G Chroma
Apeco
VQC I
Color-In Color I and computer
Bell & Howell Microfilm printer

(transferred to school copy center—Xerox 6500)

SOUND

Sound Page
Magnafax
Microprocessors
Video
Tape Recorders

TRANSMISSION

VQC Remote copier—Magnafax
Telephone
Video camera and monitors (to Data Bank, Video and A/V Center)
Microprocessors

COMPUTERS

Radio Shack TRS 80
Student-built microprocessor

HOMOGRAPHICS
the product

Table 1 *'Generative Systems Area of Study'* "Time Arts," ed. by Sonia Sheridan, School of the Art Institute of Chicago publication, 1979. (Courtesy of the Author).

A major breakthrough came when John Dunn, my teaching assistant, built a Zenith Z2D computer to add to the Radio Shack 8K computer we had acquired in 1977. It was during this period that Dunn began his path toward the development of pioneer computer graphic systems for the PC that would lead to his founding of Time Arts, Inc. in Glen Ellen, California. After graduating, he continued to bring his new discoveries back to Generative Systems. This long-desired acquisition of computers took us into the next technological stage (Figure 5).

With the creation of a computer course and courses in Generative Air and in Performance, Generative Systems offered a full-time program, including graduate study. The philosophy and practice of the program evolved and matured into the forms that would characterize Generative Systems until 1980. It was an enormously dynamic and productive program, but others in the art school often misunderstood it. For example, because we used copy machines, we were labeled "copier artists." Yet not only were copy machines only one of many tools that we used, in fact we rarely used them to copy, to make exact reproductions. Rather, we used the principles upon

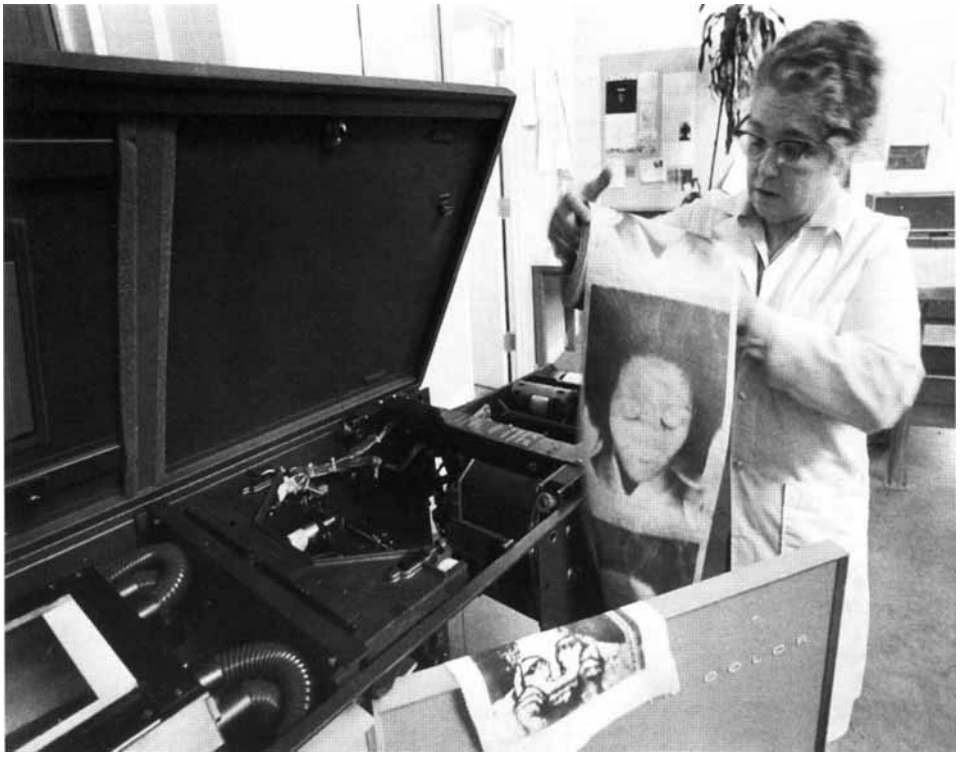

Figure 4 *'Sonia Sheridan Studying the 3M Color-In-Color Machine'* Generative Systems SAIC Lab; Collection of the Fondation-Langlois, Sonia Sheridan Archives (Courtesy of the Author).

which copy machines were based to create original images. Similarly, we used fax machines, but we rarely sent ordinary messages by fax. Instead, we used the sound transmission, which is at the heart of fax technology, to create sound-based images (Figure 6). Eventually, the study of sound became an important element of the

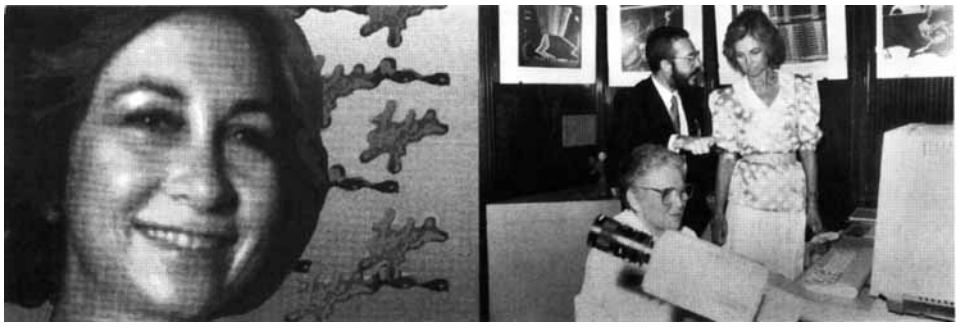

Figure 5 *'Queen Sofia Interacts with the Computer'* At *Processos* Exhibition, Museo Nacional Centro Reina Sofia, 1986 Collection of the Hood Museum Dartmouth. (Courtesy of the Hood Art Museum, Dartmouth College).

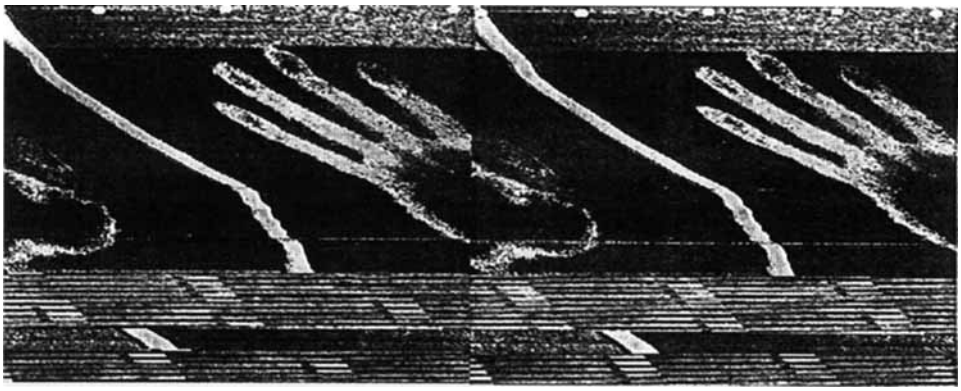

Figure 6 *'Hand'* 3M VQC black & white copier+3M VCR remote copier (Fax)+tape recorder. Collection of Fondation-Langlois, Sonia Sheridan Archives. (Courtesy of the Author).

Figure 7 *'Sonia & Harold Edgerton'* SAIC graduate students, Greg Gundlach, Martha Loving, Susan Seed and Barbara Mackowiak give Sonia & Harold an April birthday party Fondation Langois, Sheridan Archives (Courtesy of the Author).

program, exemplified by the work of Lief Brush at the University of Minnesota, Duluth.

It is understandable that outsiders should try to label us by our tool technology. That, after all, was traditionally the way to identify art areas: oil painting, watercolor, lithography and so on. Yet in fact we never labeled our courses in that way because specific tools involved were only incidental. That is how we could have one student building a computer, another developing three-dimensional photography, a third working with sound transmission, a fourth manipulating heat sensitive papers and so on. The true identifying feature of Generative Systems was an attitude, an approach to the world in general and to art in particular. It was an attitude that rejected the notion of art boundaries, the idea that some subjects and techniques were appropriate for art and some were not. In our philosophy, the world and all its tools were fair game for subject or object.

The Generative Systems attitude was extremely sensitive to and receptive to change, to continual and dynamic change in the interrelationships among technology, social conditions and art. That attitude, of course, was particularly appropriate at a time when technological change was accelerating. Yet while we acknowledged and welcomed change, we did not reject traditional art, despite the accusations of our skeptics. We always saw ourselves as building on the past, not overthrowing it. We did, however, oppose the traditional mode of teaching art and sought to create a new system of art education that emphasized process and transformation, society and technological change; we wanted to bring the modern world into the ivory tower.

Figure 8 *'Dr. Douglas Dybvig'* Sonia asks 3M Color-In-Color inventor to try out the 3M VQC. Hood Museum of Art, Dartmouth College, Hanover, New Hampshire: Gift of the Artist.

Figure 9 *'Sonia & Robert Gundlach'* Sonia & Robert Gundlach, pioneer Xerox Scientist on early computer print system. Hood Museum of Art, Dartmouth College, Hanover, New Hampshire: Gift of the Artist.

As word of Generative Systems spread, it attracted artists, scientists and others who came to observe and often to work with us. 3M physicist Parvis Mahmoudi, MIT inventor Harold Edgerton, film pioneer Stan VanDerBeek, video pioneer Aldo Tambellini, University of Michigan art historian Diane Kirkpatrick, Art Institute of Chicago photography curator David Travis, and Nathan Lyons influential Director of the Visual Studies Workshop are just a few of the many who visited us or participated in one way or another (Figure 7).

In a program that used industrial tools, we found natural allies in industry—especially industries with an imaging component in their products. The 3M Corporation was particularly helpful, not only in providing imaging tools, but in allowing 3M scientists to advise us and help in other ways. Dr. Douglas Dybvig and Don Conlin, in particular, repeatedly aided the Generative Systems program generally and me specifically. They participated in major exhibitions with Generative Systems artists and made it possible for me to work in 3M Color Research and Central Research Laboratories (Figure 8).

Scientists of the Apeco Corporation (a company developing a wet electrostatic color copier) also rendered us great assistance. Rudy Guzik, an Apeco physicist, was

especially helpful. Robert Gundlach, noted Xerox scientist, lectured for us and helped with advice (Figure 9). Gundlach's son, Greg, subsequently joined our program as a student and began the work on three-dimensional photography for which he later acquired five patents. The support of industry was helpful not only directly by providing us aid and equipment, but also because it exemplified the multilateral relationships we thought necessary in the new art activity we were developing. Industry was where the action was in terms of technological advances, and that was where we wanted to be.

This article incorporates a good deal of material from an essay I wrote to be translated into Spanish for La Fabrica, *a catalogue published by Fundacion Telefonica (Madrid, 2000) for an exhibition of the work of Marisa Gonzalez. Gonzalez is a distinguished Generative Systems artist in Spain.*