

BROADWAY 1602

**EXPERIMENTS IN ART
AND TECHNOLOGY
(E.A.T.)**

**COMPUTER
PROCESSED
IMAGES**

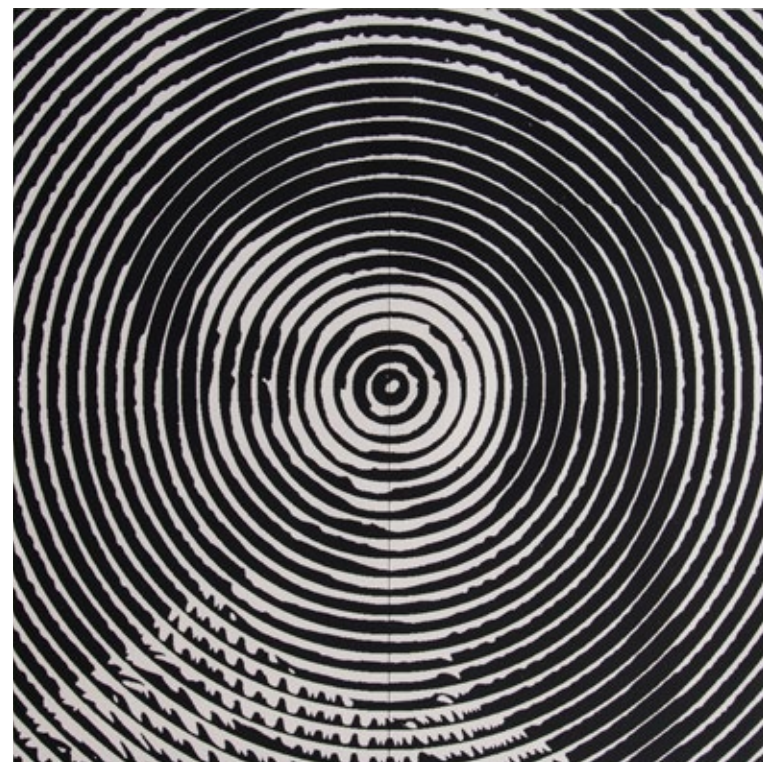
EXPERIMENTS IN ART AND TECHNOLOGY (E.A.T.) COMPUTER PROCESSED IMAGES

Bell Laboratories, New Jersey, was one of the two leading centers for computer science and art activities. The non-profit organization Experiments in Art and Technology (E.A.T.) had been founded in 1966 by the Bell Labs electronic engineers Billy Klüver and Fred Waldhauer, and the artists Robert Rauschensberg and Robert Whitman.

In the early 1960s digital computers became available to artists for the first time (although extremely costly and cumbersome, and programs and data had to be prepared with the keypunch, punch cards then fed into the computer; systems were not interactive and could produce only still images). The output medium was usually a pen plotter, microfilm plotter, line printer or an alphanumeric printout, which was then manually transferred into a visual medium.

In 1963, computer scientist Ken Knowlton developed at Bell Labs the BEFLIX (Bell Flicks) programming language for bitmap computer-produced movies, created using an IBM 7094 computer and a Stromberg-Carlson 4020 microfilm recorder.

In 1966, Knowlton and Harmon were experimenting with photomosaic, creating large prints from collections of small symbols or images. The reclining nude was based on a photograph of dancer and choreographer Deborah Hay. Hay worked at the time with Merce Cunningham and the Judson Dance Theater. The Nude represented the first experiment to scan a photograph into a computer and reconstitute it with a gray scale,



using 12 discreet levels of gray, produced by mathematical and electronic symbols. The scanning process established a certain level of gray in a certain area of the photo and replaced it with one of the symbols. This process was used to try to establish the minimum amount of information the human eye needed to resolve an image. From the microfilm a 12 feet photograph was printed.

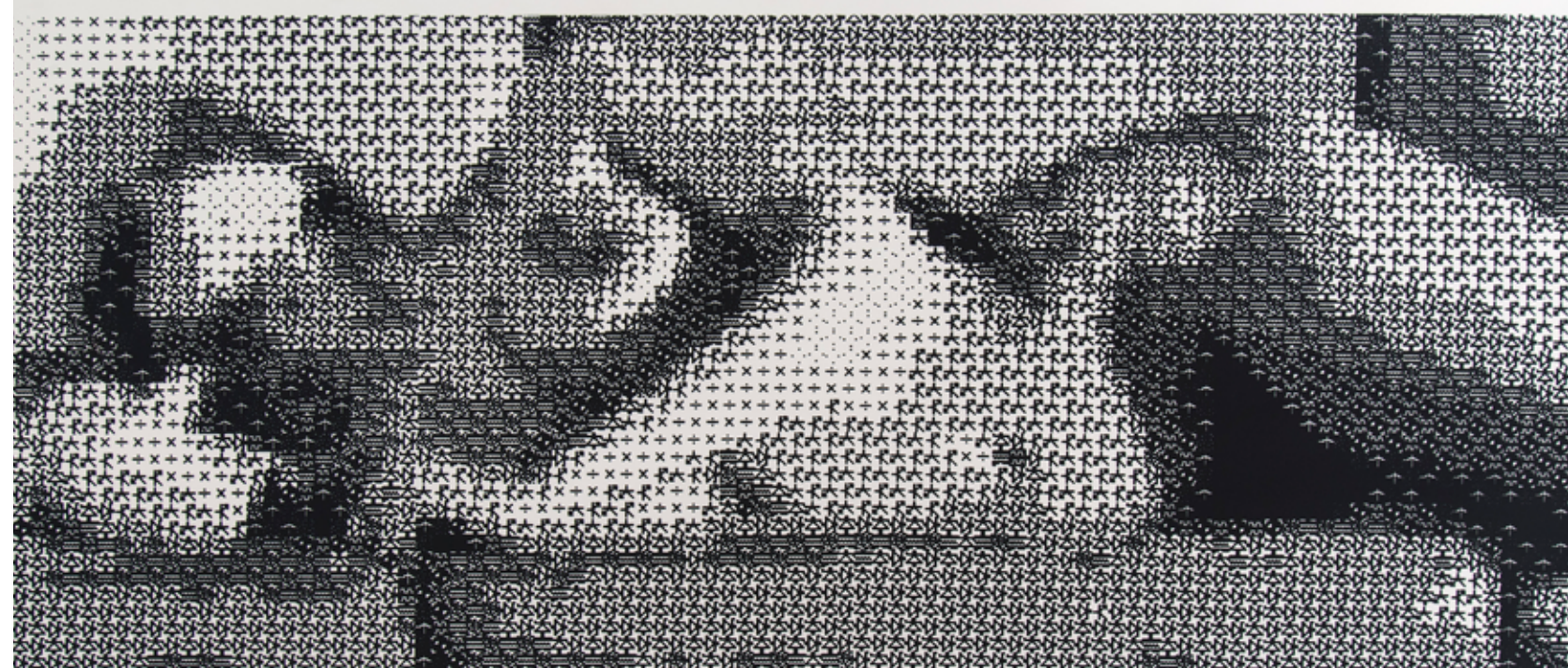
The image found fame when it featured in a press conference in Robert Rauschenberg's loft announcing E.A.T.'s "working alliance" between industry labor/technology and the art community. The New York Times featured the press conference on 11 October, 1967: "Art and Science Proclaim Alliance in Avant-Garde Loft", by Henry R. Lieberman. As the stories went on, the "Computer Nude" was to become also the first frontal nude allowed to be published in the New York Times.

In the same year Billy Klüver (E.A.T.) collaborated with Knowlton and Harmon to publish a number of black and green silk screen prints of the "Computer Nude" (formatted at 4 and 6 feet wide).

The Nude was further exhibited at one of the earliest computer art exhibitions, Pontus Hulten's legendary show The Machine as Seen at the End of the Mechanical Age, held at the Museum of Modern Art in New York City in 1968/69. The original 12 foot Computer Nude was donated soon after its creation into the Public Collection of the Philadelphia Museum of Art.

IMAGES

Above: *Green Target* (left) and *Black Target* (right), 1968, Silkscreen prints in green and black and white, signed in print on lower right corner: COMPUTER PROCESSED IMAGE BY MANFRED SCHROEDER COPYRIGHT © 1968 BELL TELEPHONE LABORATORIES; **Opposite:** *Computer Nude*, 1966, Silkscreen prints in green and black and white, signed in print on lower right corner: © 1967 Knowlton /Harmon; **Cover:** *One Picture is with a Thousand Words*, 1968, Silkscreen prints in green & white, signed in print on lower right corner: COMPUTER PROCESSED IMAGE BY MANFRED SCHROEDER COPYRIGHT © 1968 BELL TELEPHONE LABORATORIES



The other two computer motifs published by E.A.T. in 1968 were *One Picture is Worth a Thousand Words* and *Target* designed by Manfred Schroeder, a physicist at the Bell Labs. Schroeder became interested in computer graphics during his time as the director of the Acoustics and Speech Research Laboratory. He collaborated with Leon Harmon and Ken Knowlton using computers to create images that could not otherwise be drawn or painted. His aim was to generate pictures that would be perceived as totally different depending on the viewing distance. His prize-winning *One Picture is Worth a Thousand Words* is composed of the very sentence becoming an overall dense text pattern which - seen from a distance - takes on the shape of a human eye. Schroeder also designed the poster for the Brooklyn Museum show "Some More Beginnings—Experiments in Art and Technology" (1969) which was displayed at the entrance to the museum composed of text announcing the show.

PUBLIC COLLECTIONS

Philadelphia Museum of Art (the first 12 photo prints of "Studies in Perception, I" was donated soon after its creation to the collection*) V & A, London (a 1997 later laser print was given to the museum's collection of Computer Art)



"Harmon and Knowlton decided to cover the entire wall of a senior colleague's office with a large print, ... Only by stepping back from the image (which was 12 feet wide), did the symbols merge to form the figure of a reclining nude. Although the image was hastily removed after their colleague returned, and even more hastily dismissed by the institution's PR department, it was leaked into the public realm, first by appearing at a press conference in the loft of Robert Rauschenberg, and later emblazoned across the New York Times. What had started life as a work-place prank became an overnight sensation."

-(V&A)



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