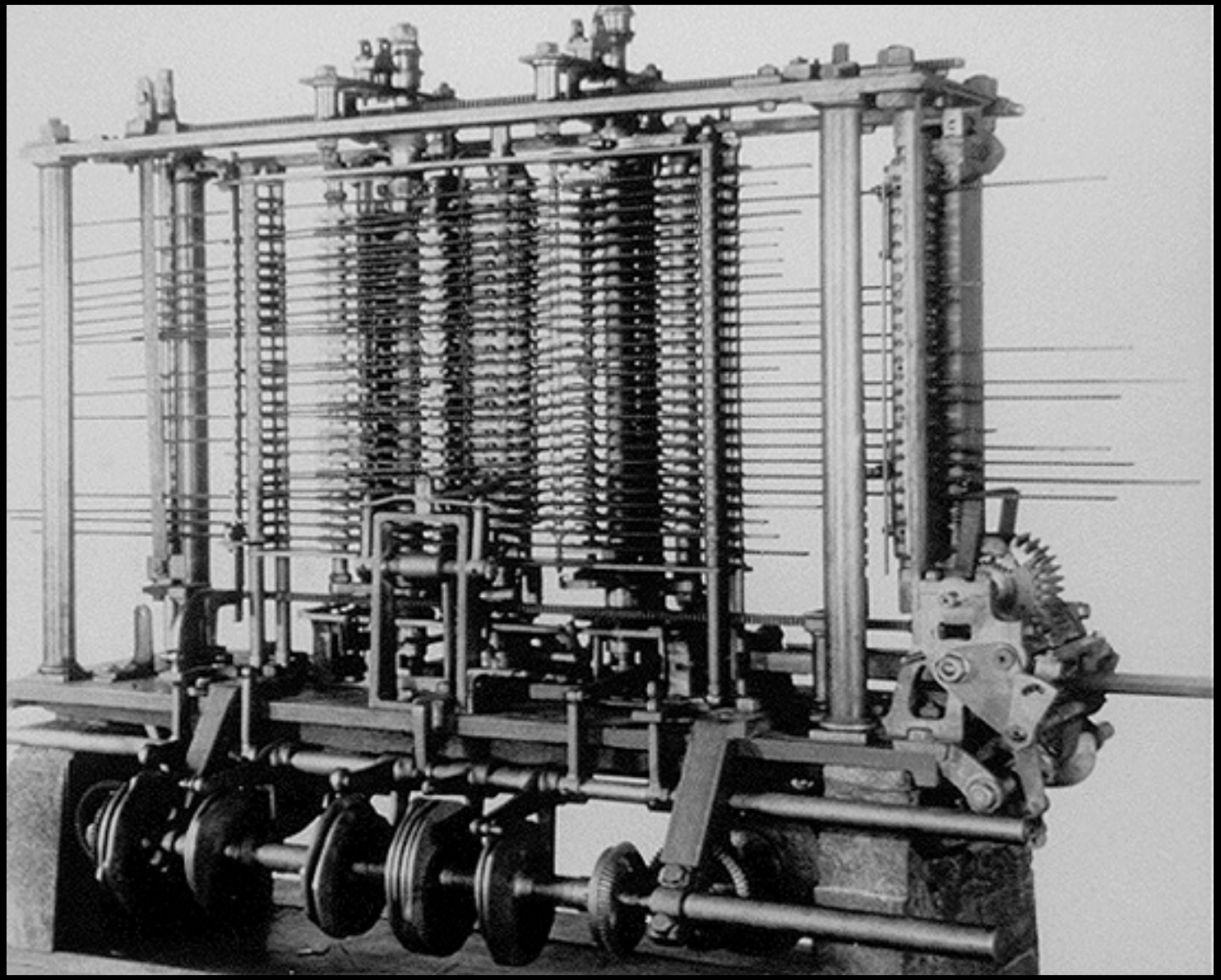
AHST 4342-001
History of Media and New Media Art
Fall 2014
Dr. Charissa N. Terranova
University of Texas at Dallas
Arts & Humanities
Monday-Wednesday 2:30-3:45
Class Location: AH2 1.204

October 13, 2014

The Digital Image: Coded Form and Electronic Production

Although it has been argued that technologically reproduced art lacks the **aura of an individually** hand**crafted** original, many uses of electronic technologies to produce form, whether **algorithmically** or by duplication, conflate conventional notions of originality, creativity, and objecthood.

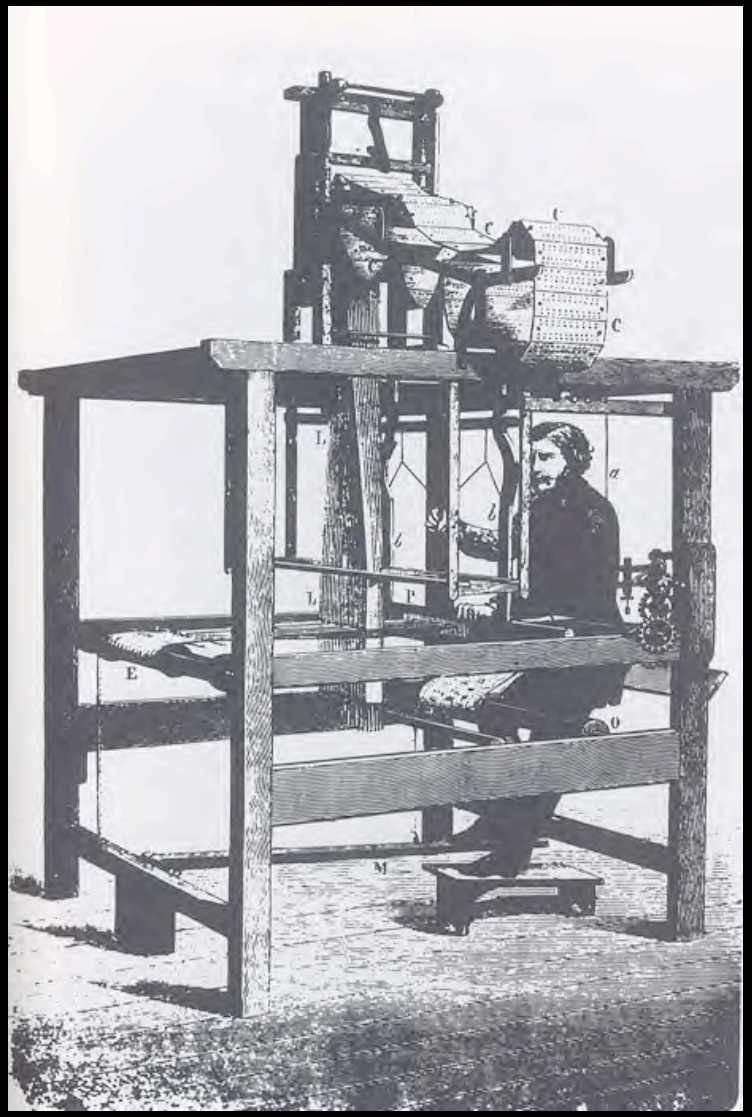
Ed Shanken, *Art and Electronic Media*



Babbage Engine 1822/1999

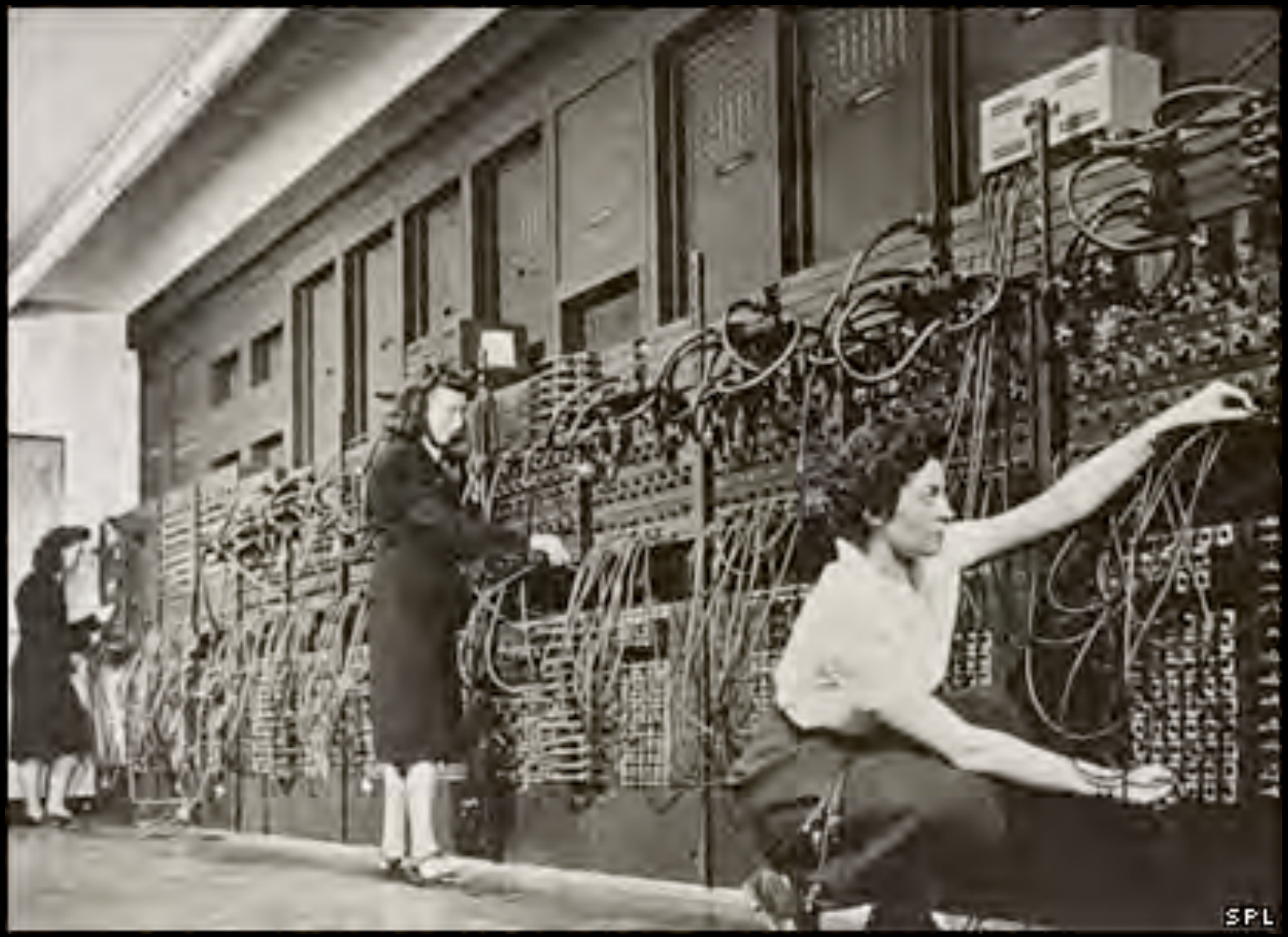
http://www.computerhistory.org/babbage/

Charles Babbage [1791-1871]



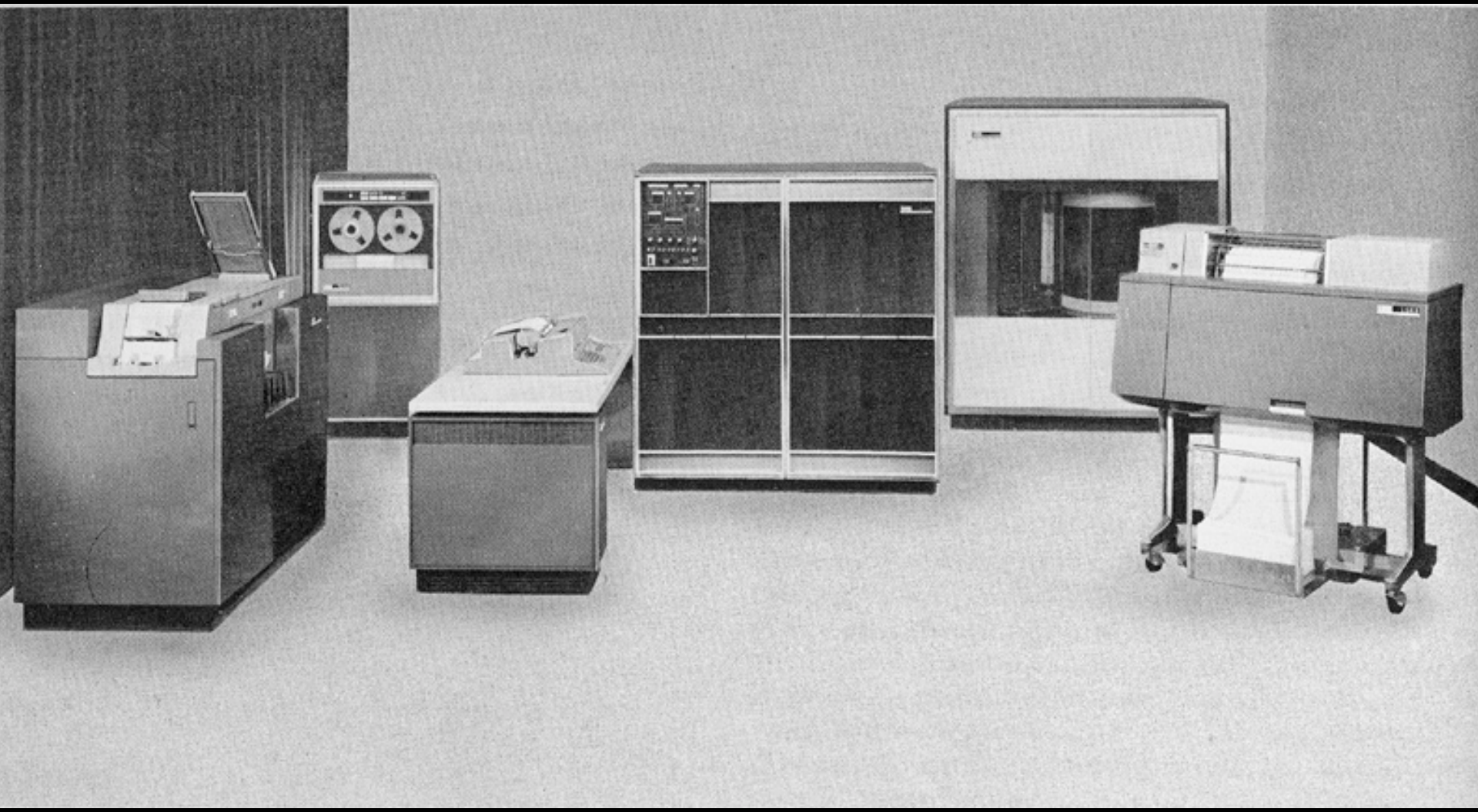
Drawing of a Jacquard loom with punch card.

The Jacquard loom played an important role in the industrialization of weaving. Joseph Marie Jacquard, a French weaver, invented this loom in 1801. The technology was brought to America circa 1825. The Jacquard looms brought versatility to weaving and allowed for more intricate patterns to be produced. The main element of a Jacquard loom is a punch card which is a pasteboard with holds punched in it. The holes in the card correspond to hooks that can be moved up or down, which guide the ward thread over or under the weft.

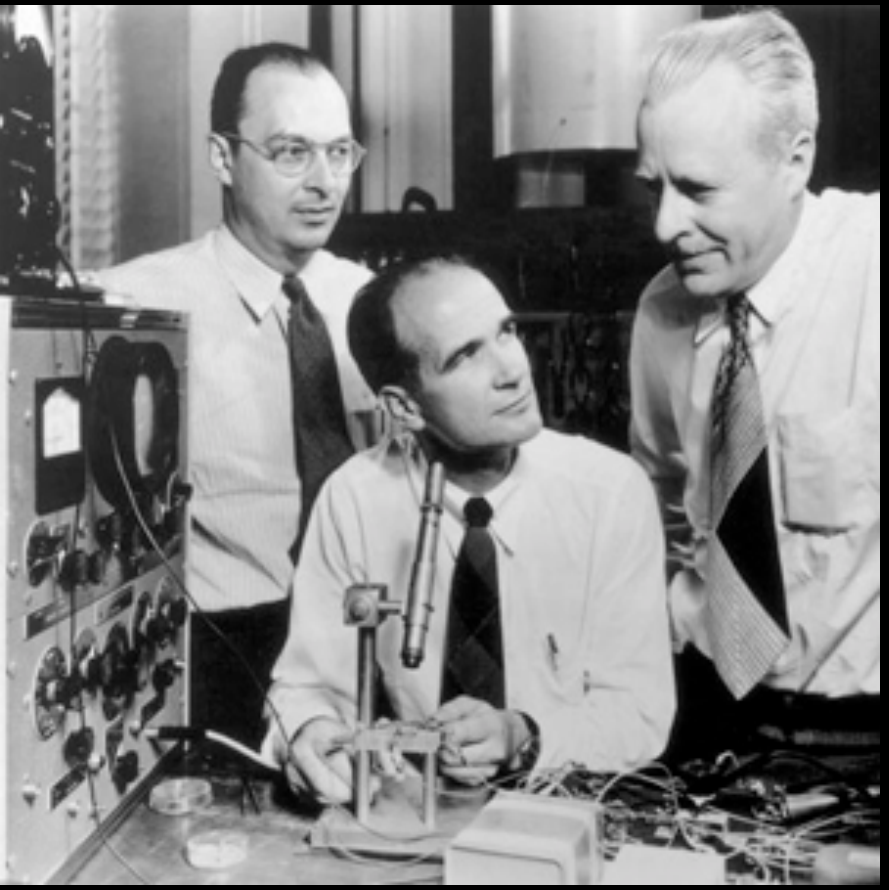


ENIAC [Electronic Numerical Integrator and Computer] Computer at the University of Pennsylvania, 1946, conceived by John Mauchly and J. Presper Eckert

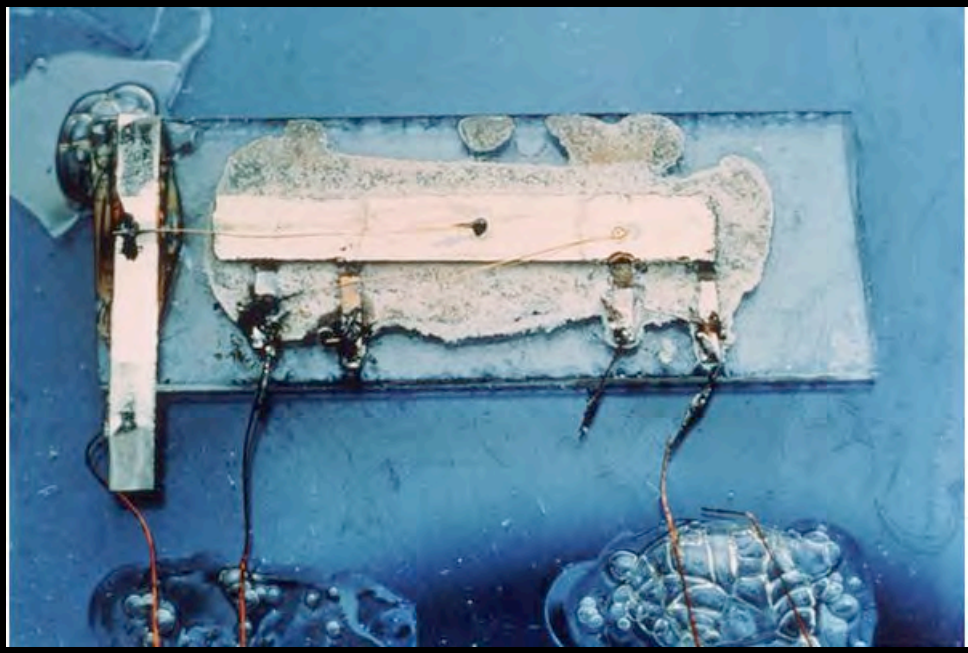
ENIAC vacuum tubes



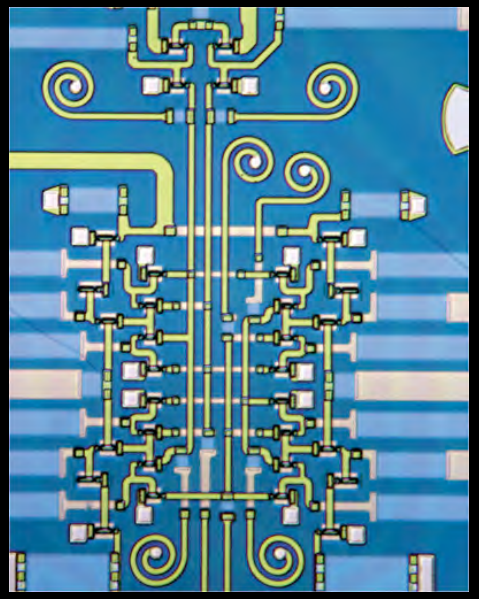
IBM 1401 Data Processing System, 1959



The Bell Labs team of John Bardeen, Walter Brattain and William Shockley won the 1956 Nobel Prize in Physics for their work in developing transistors.



Jack Kilby's original integrated circuit, 1958



Integrated Circuit 1958

Microprocessors and personal computers, 1970s

First Scanned Digital Image

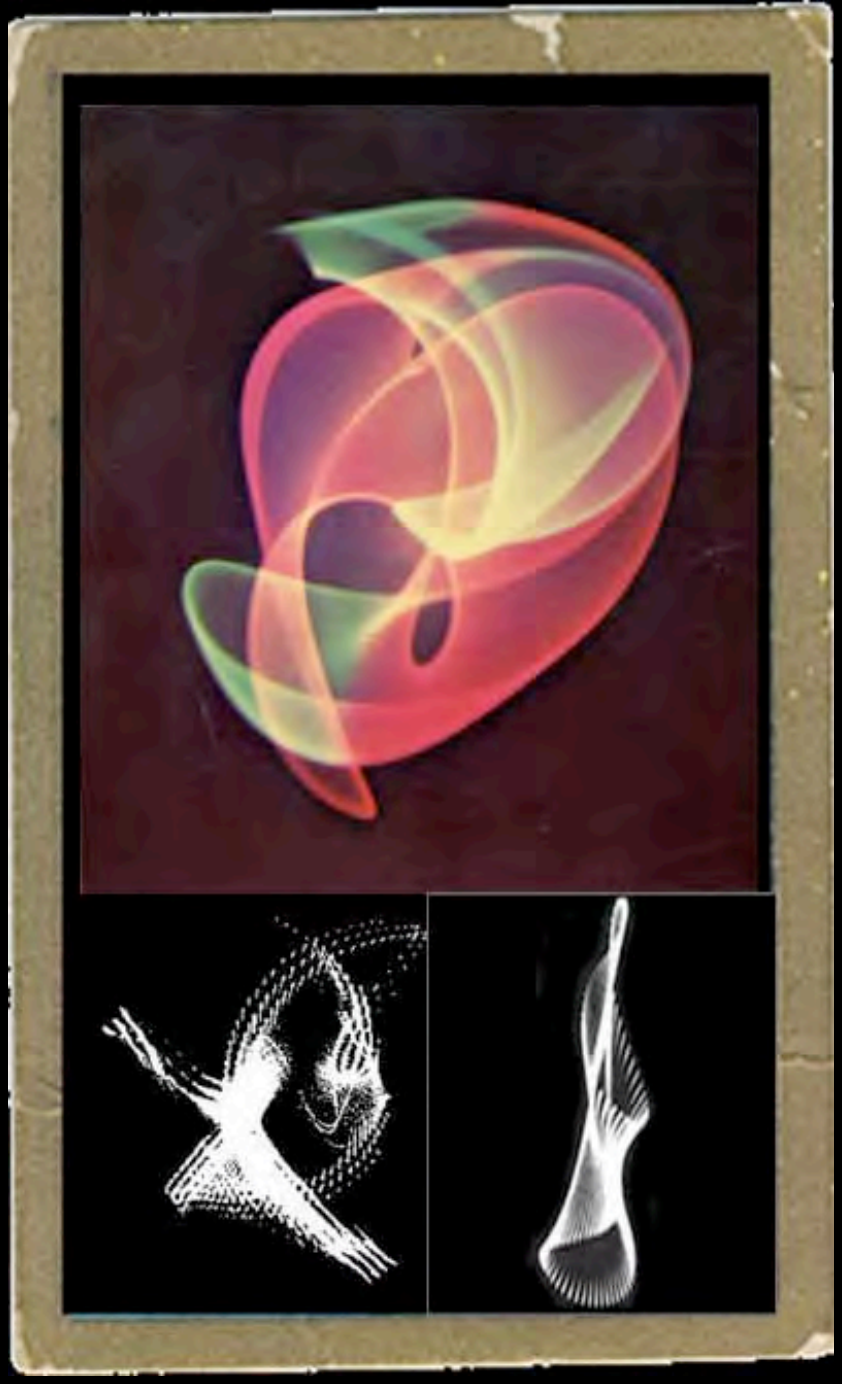
Standards Eastern Automatic Computer (SEAC) used to create the first scanned image

National Bureau of Standards Researcher R.B. Thompson at the controls of the scanner

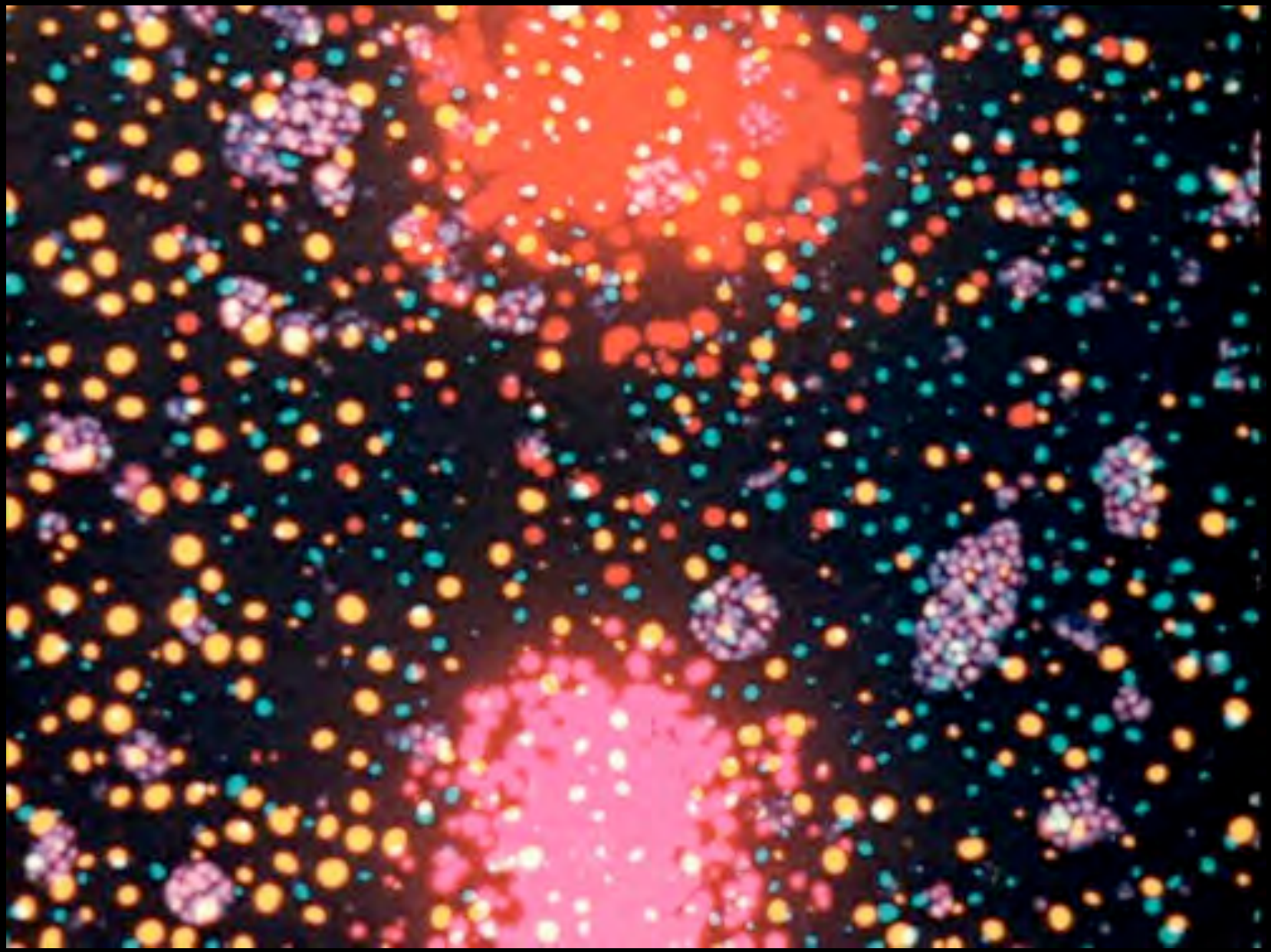
First Digitally Scanned Image of Walden Kirsch, son of Russell Kirsch, 1957, original 5 cm x 5 cm

First Digital Image in Art?

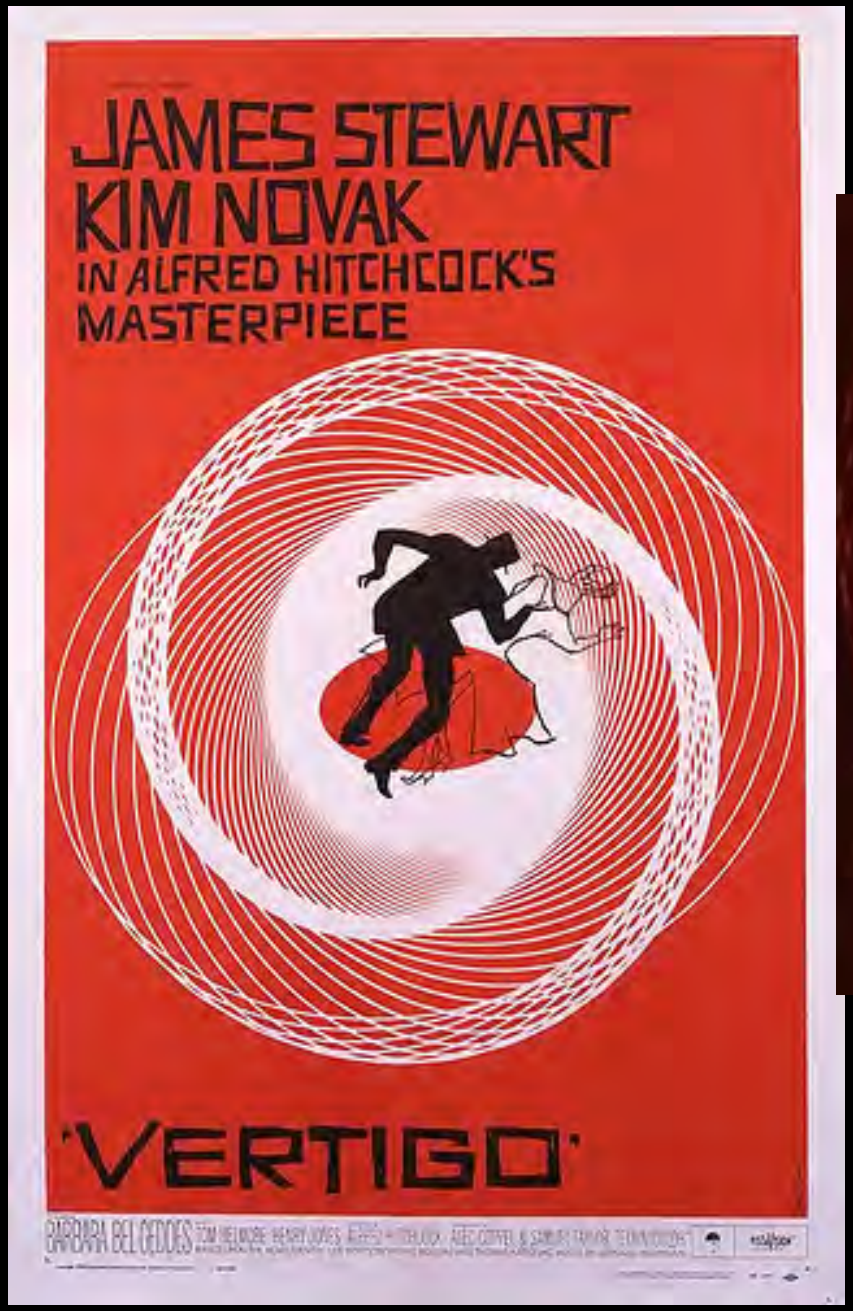
Ben F. Laposky with oscilloscope, 1956



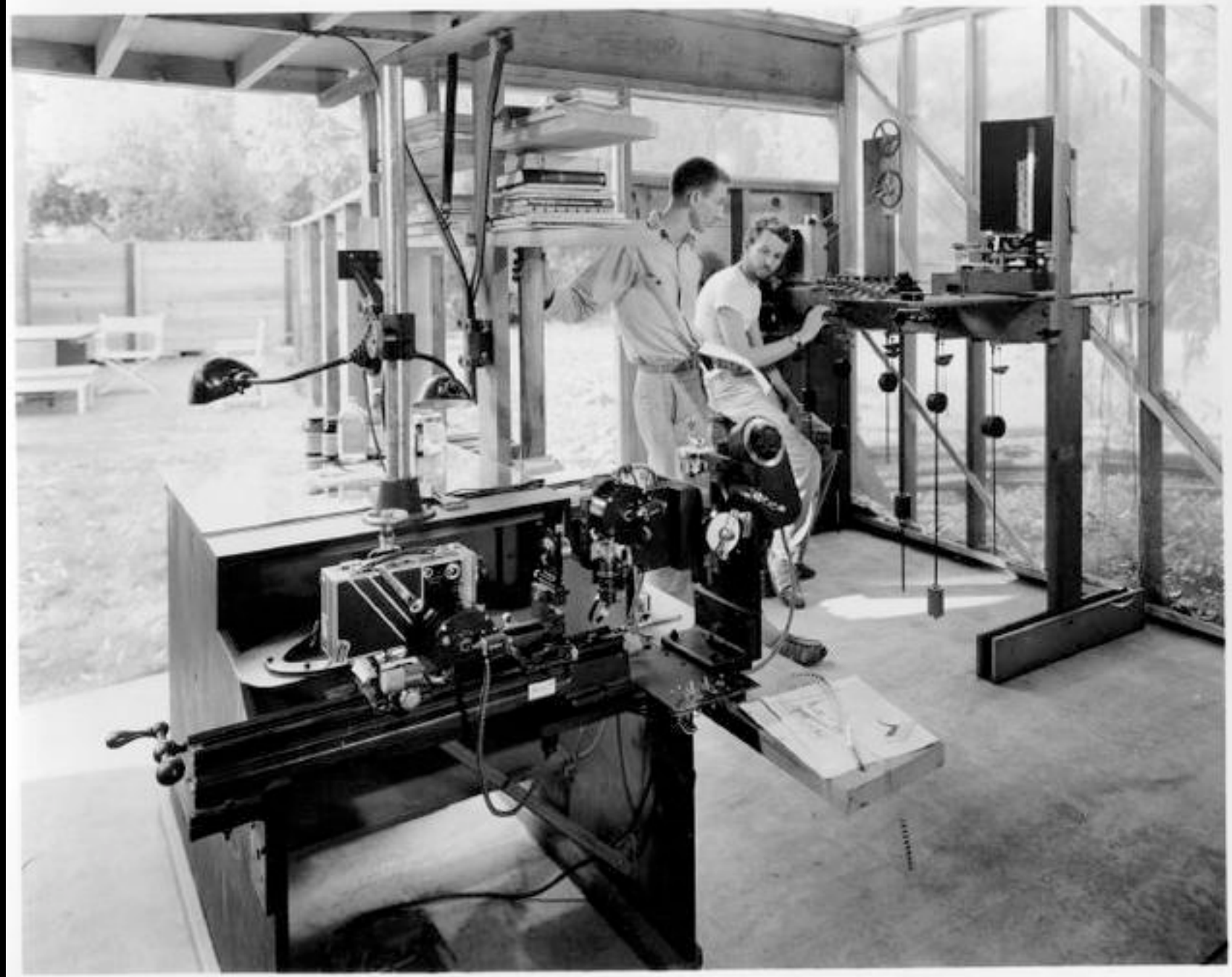
Ben Laposky, Oscillons, 1956

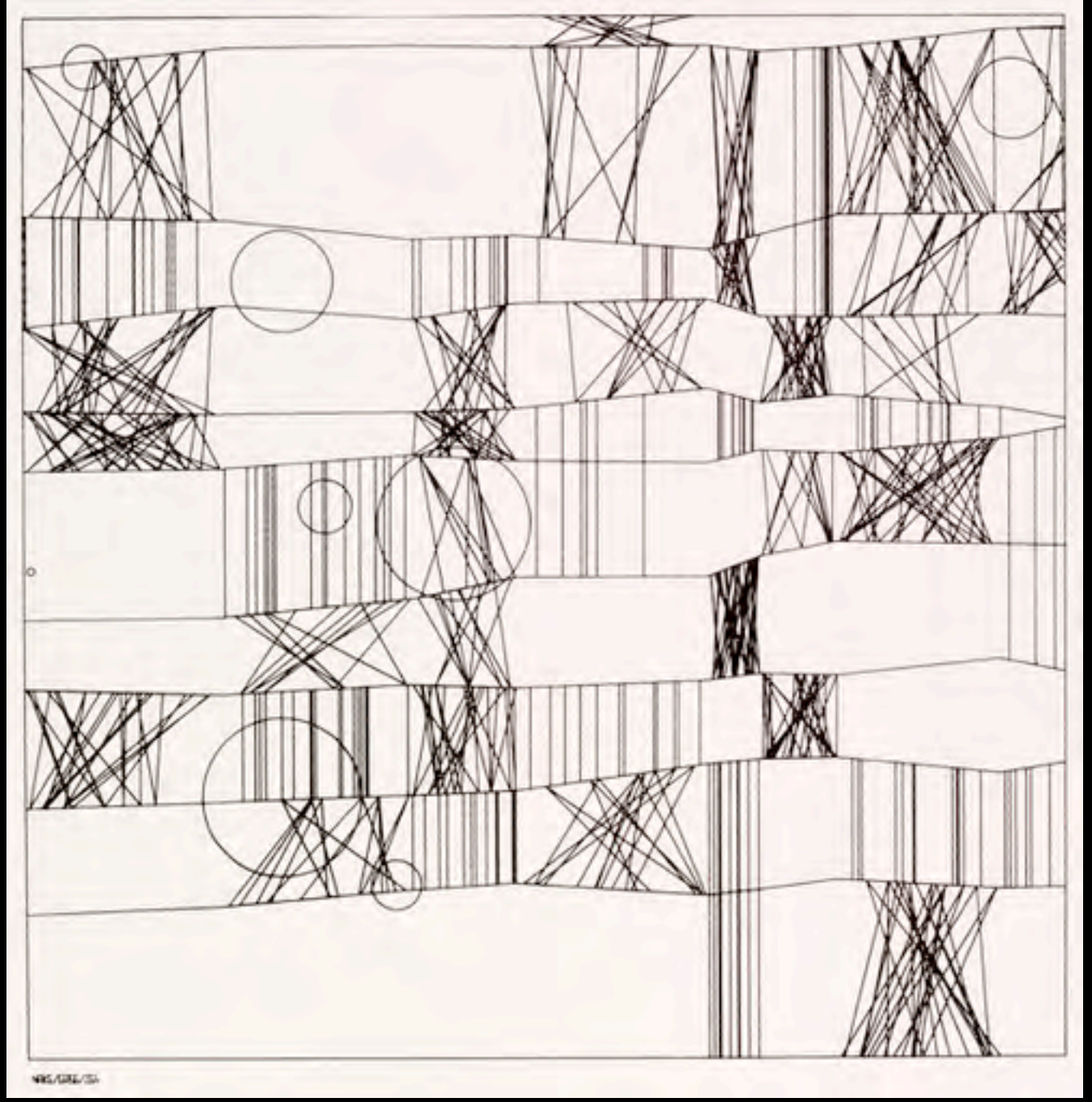


James Whitney, Yantra, 1950-57
http://www.youtube.com/watch?v=3lSnowrJvCM

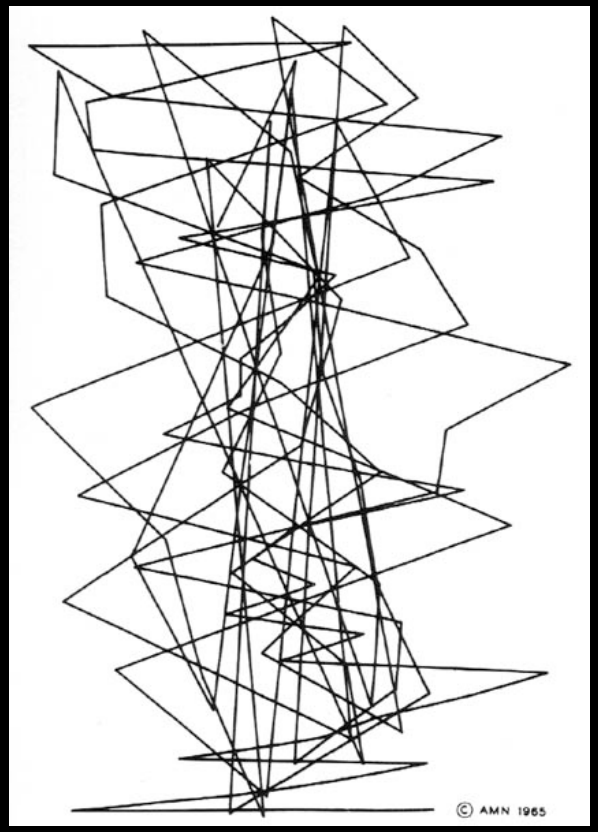


Saul Bass and John Whitney, Title Sequence to Alfred Hitchock's Vertigo (1958)
http://www.youtube.com/watch?v=5qtDCZP4WrQ

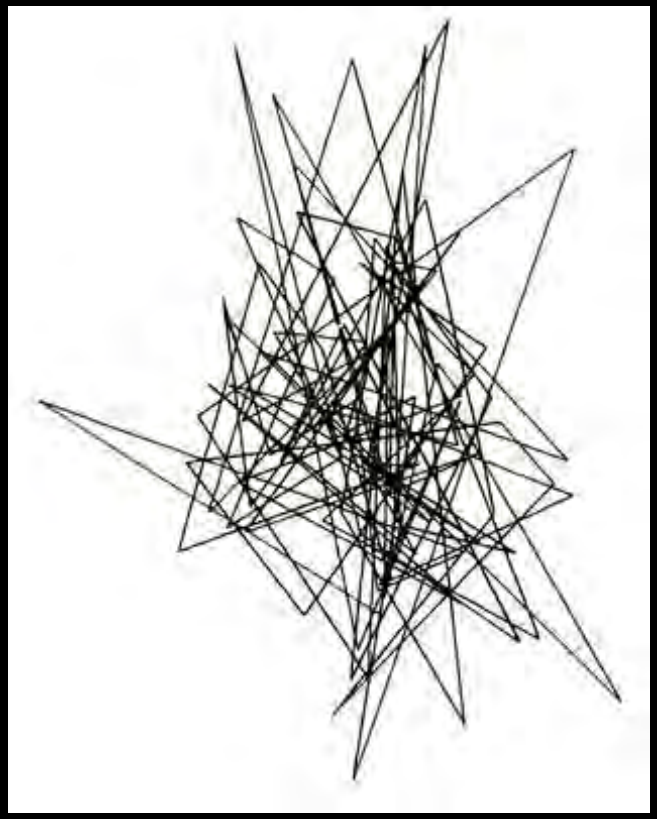




Frieder Nake, Homage to *Paul Klee* 13/9/65 No. 2, 1965



A. Michael Noll, Gaussian Quadratic, 1962



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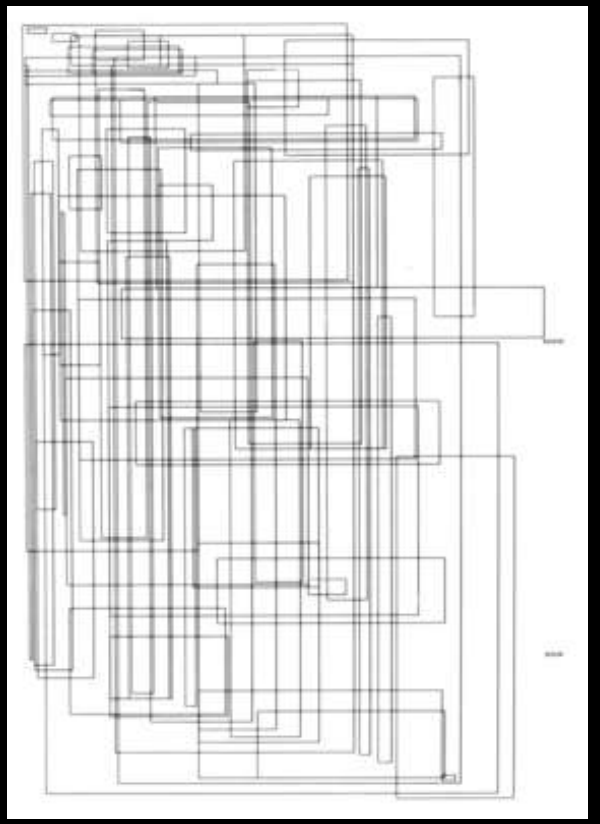
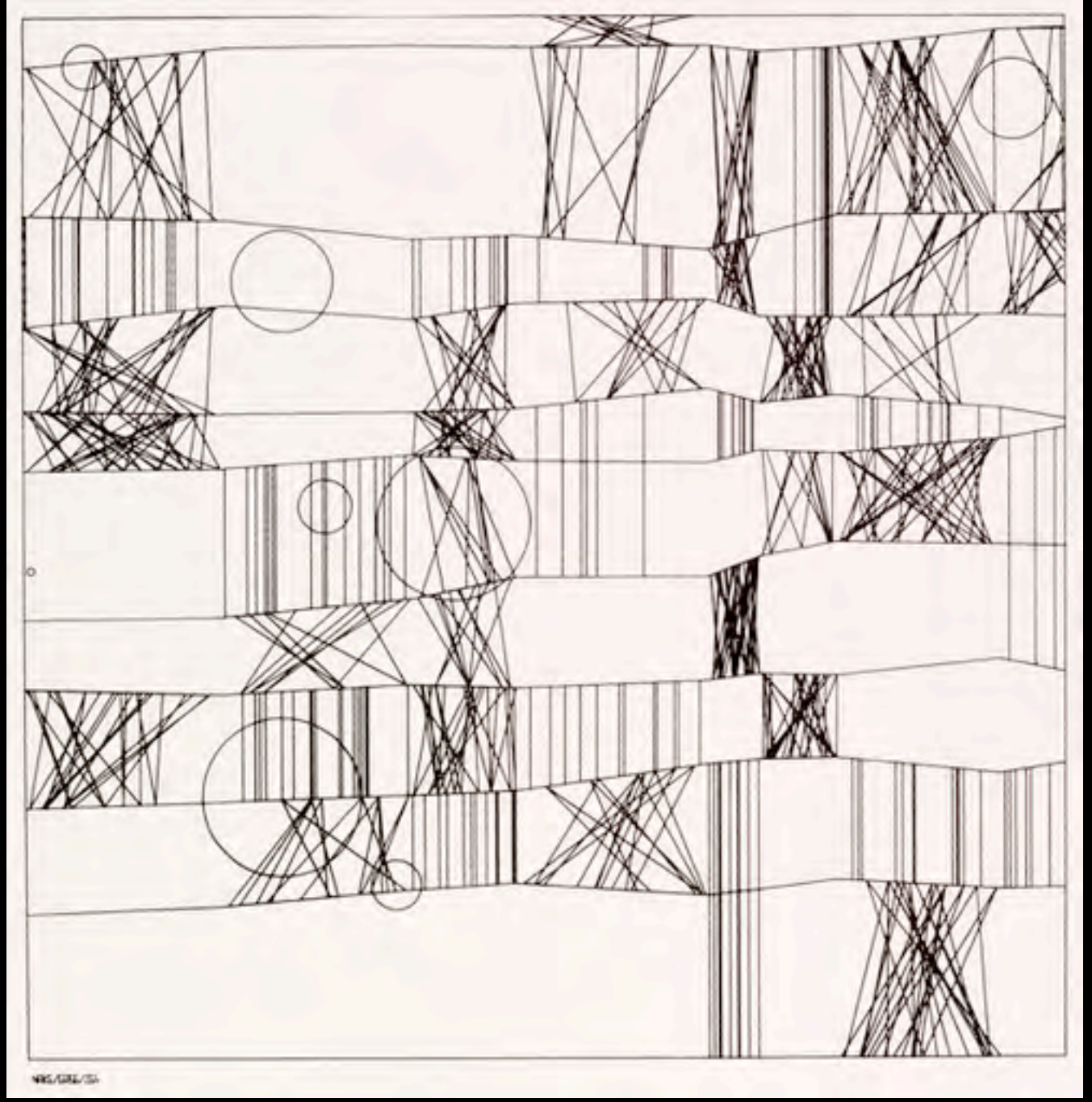


Georg Nees, Aberration Parallel to Axis, 1965

“Algorithmic Aesthetics”

[Frieder Nake]

The drawing machine made by the German Konrad Zuse on which Frieder had created his first work.



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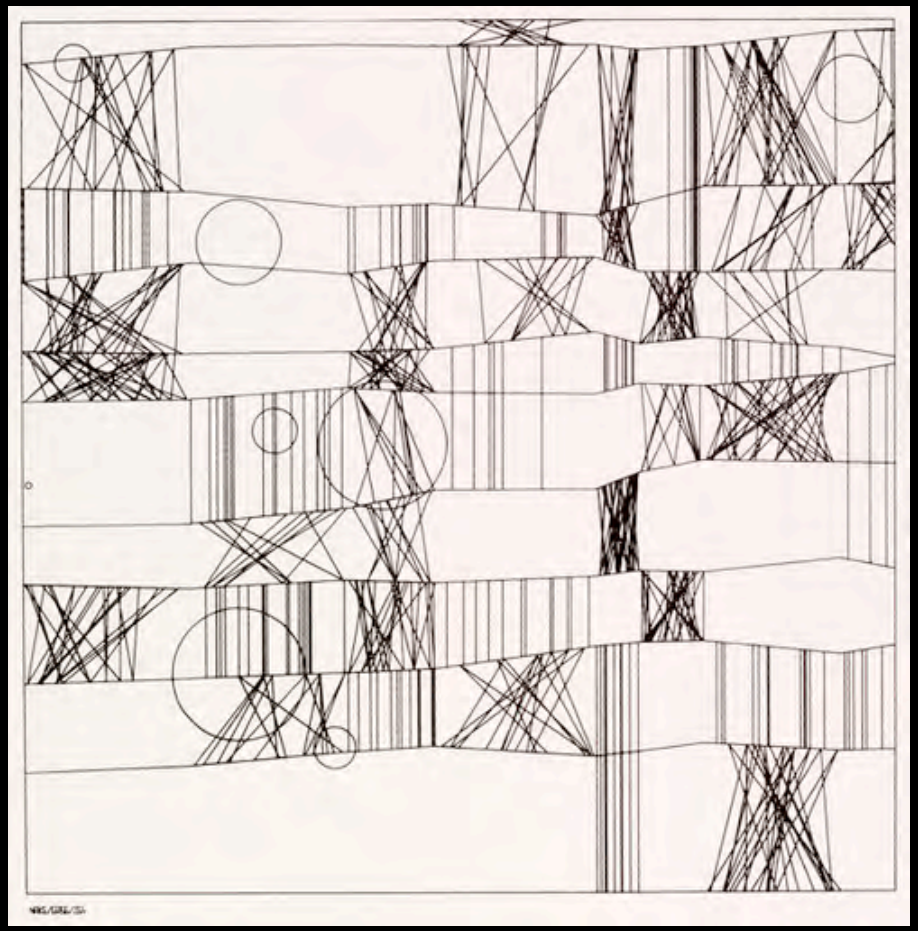
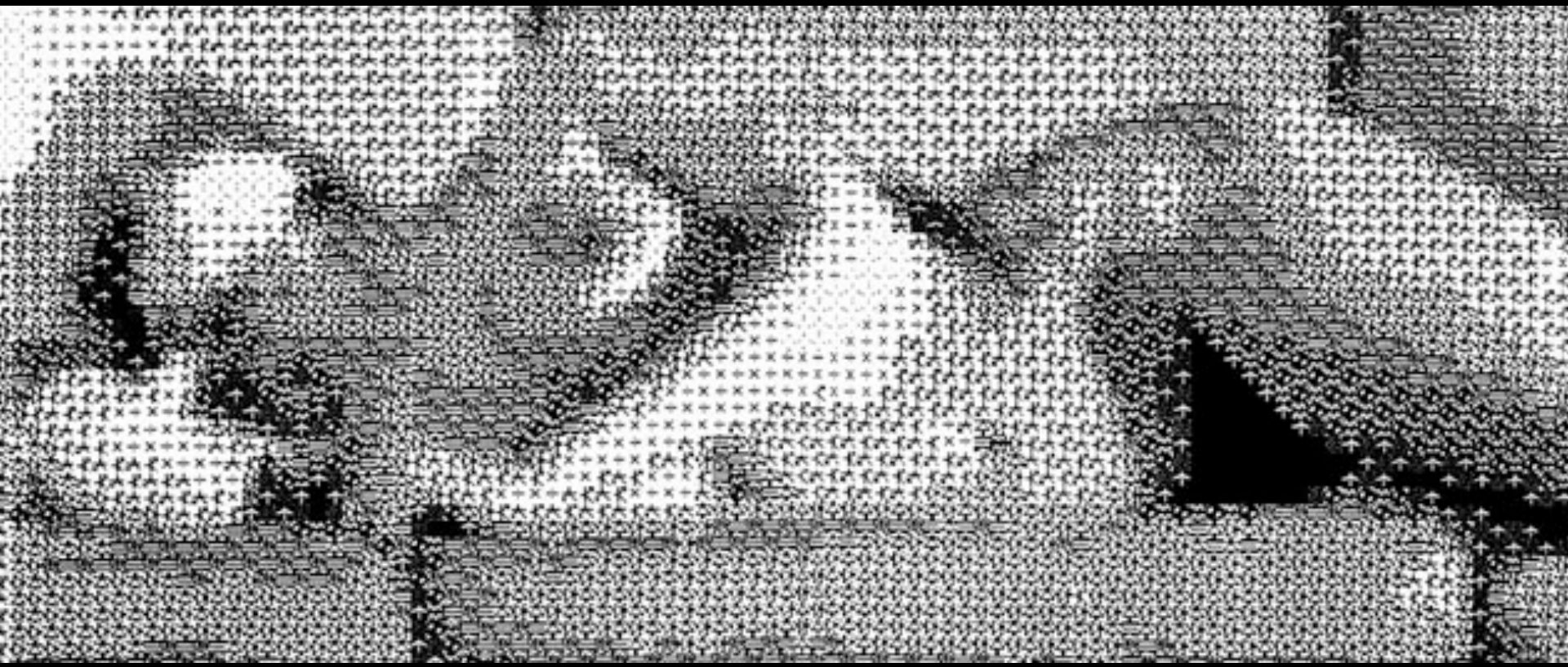


Frieder Nake, Hommage to *Paul Klee* 13/9/65 No. 2, 1965

Paul Klee, Haupt- und Nebenwege [Main and Sideways], 1929

Max Bense [1910-1990]

- *Information Aesthetic* (1957)
- The scientist's creative work to be swinging between "chaos and Gestalt" to reach a "whole" [Ganzes]
- There is "no substance without form" and "no reality without Gestalt idea", or "no ideality without matter"…
- Bense correctly stated that there are no specific aesthetic signs, rather aesthetic functions fulfilled in given contexts of interpretation. Firmly anchored in the realm of reality, Bense was obsessed with how much of the object represented in an art work is present and identifiable as such in the work. This is where he introduced the notion of semiotic information, i.e., degree of presence of the object in the material embodiment of signs participating in a work of art. The inverse of semiotic information is semioticity, i.e., degree of independence of the object from its representation. Later on, semioticity was to define the conventional nature of aesthetic artifacts.
- As Bense stated, art—and modern art especially—can no longer be grasped along classical lines with terms like proportion, symmetry or harmony, which stress contrasts and reject standards.
- Aesthetic process and physical world tend in opposite directions, and are different in principle: the world of physics is existent, that of aesthetics is constructed. Bense was convinced that a theory was lacking which could objectively evaluate this field and offer a ‹programming of the beautiful.
- His theory took the shape of an attempt to systematize basic aesthetic principles. The information aesthetics (1957) was based on the statistical analysis of art objects and consigns the subject—the recipient—to the background by substituting the usage of adequate rules in the aesthetic evaluation.
- Bense would later use the term “generative aesthetics,” which was to be understood as “the compound of all operations, rules and theorems through whose application to a quantity of material elements able to function as signs can deliberately and methodically generate in the latter aesthetic states (distributions and/or arrangements).”



Kenneth Knowlton and Leon Harmon, Studies in Perception 1, 1966

Stan Vanderbeek and Ken Knowlton, Poem Field No. 2, Life LIke, 1967
http://www.youtube.com/watch?v=BMaWOp3_G4A

Bell Labs, Murray Hill, NJ

BELL LABS MEMOIRS:

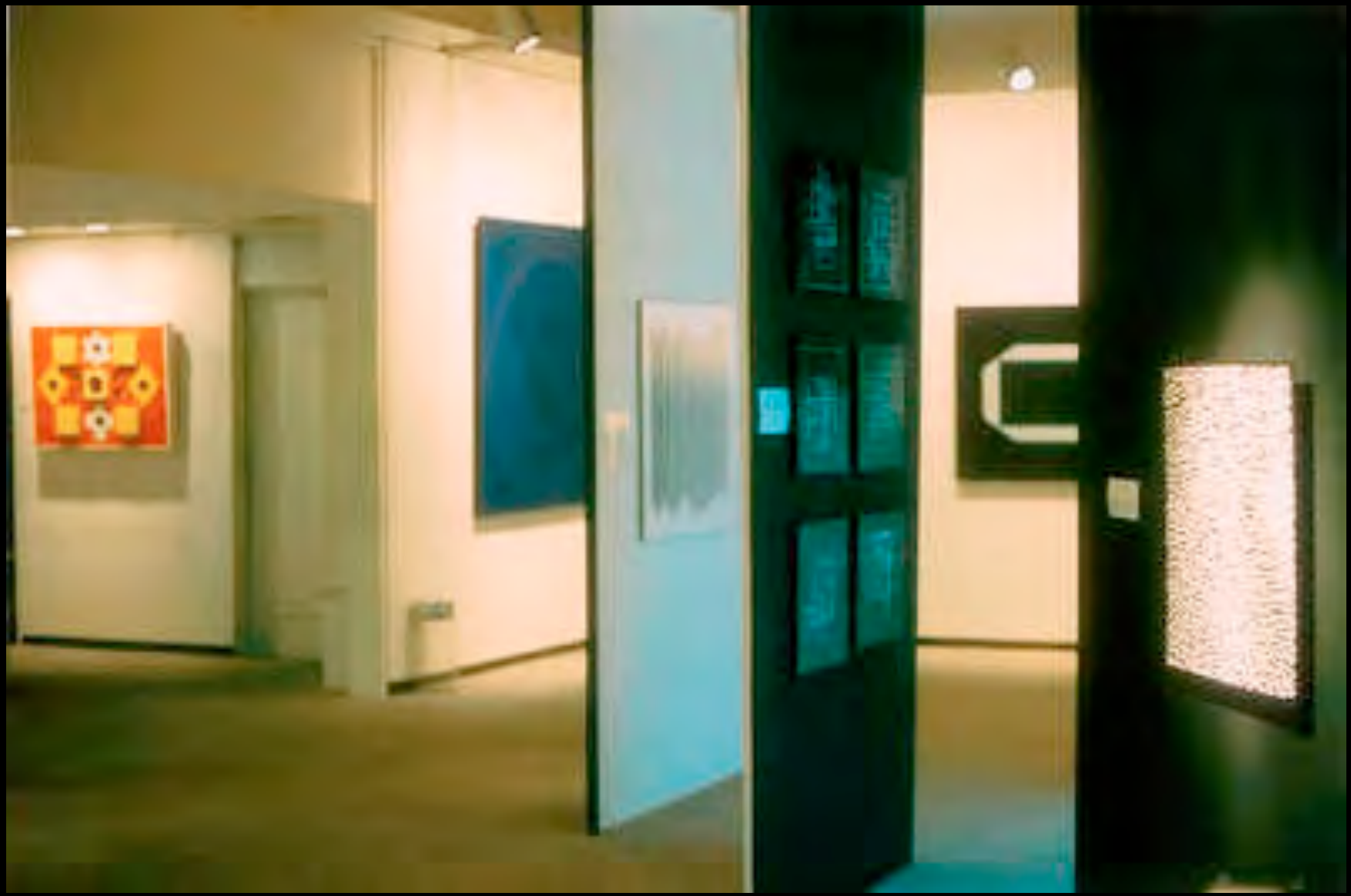
Voices of Innovation

EDITED BY A. MICHAEL NOLL
AND MICHAEL GESELOWITZ

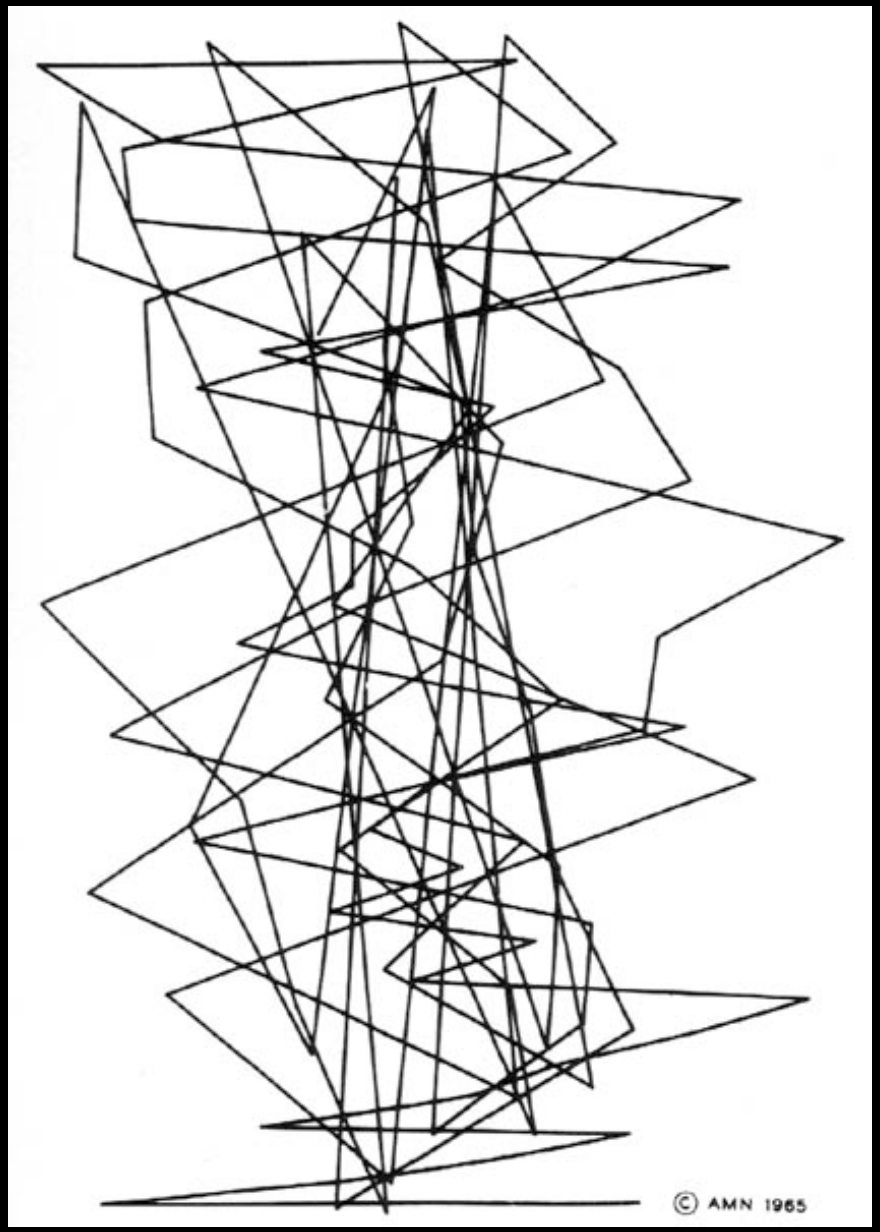
In the late 1960 and early 1970's, he constructed interactive three-dimensional input devices and displays and a three-dimensional, tactile, force-feedback ("feelie") device that were the forerunners of today's virtual-reality systems. He also was one of the first researchers to demonstrate the potential of scanned displays for computer graphics.

From A. Michael Noll's website
http://noll.uscannenberg.org/


howard HW wise gallery



Exhibition of works by A. Michael Noll and Bela Julesz at the Howard Wise Gallery in New York City in 1965



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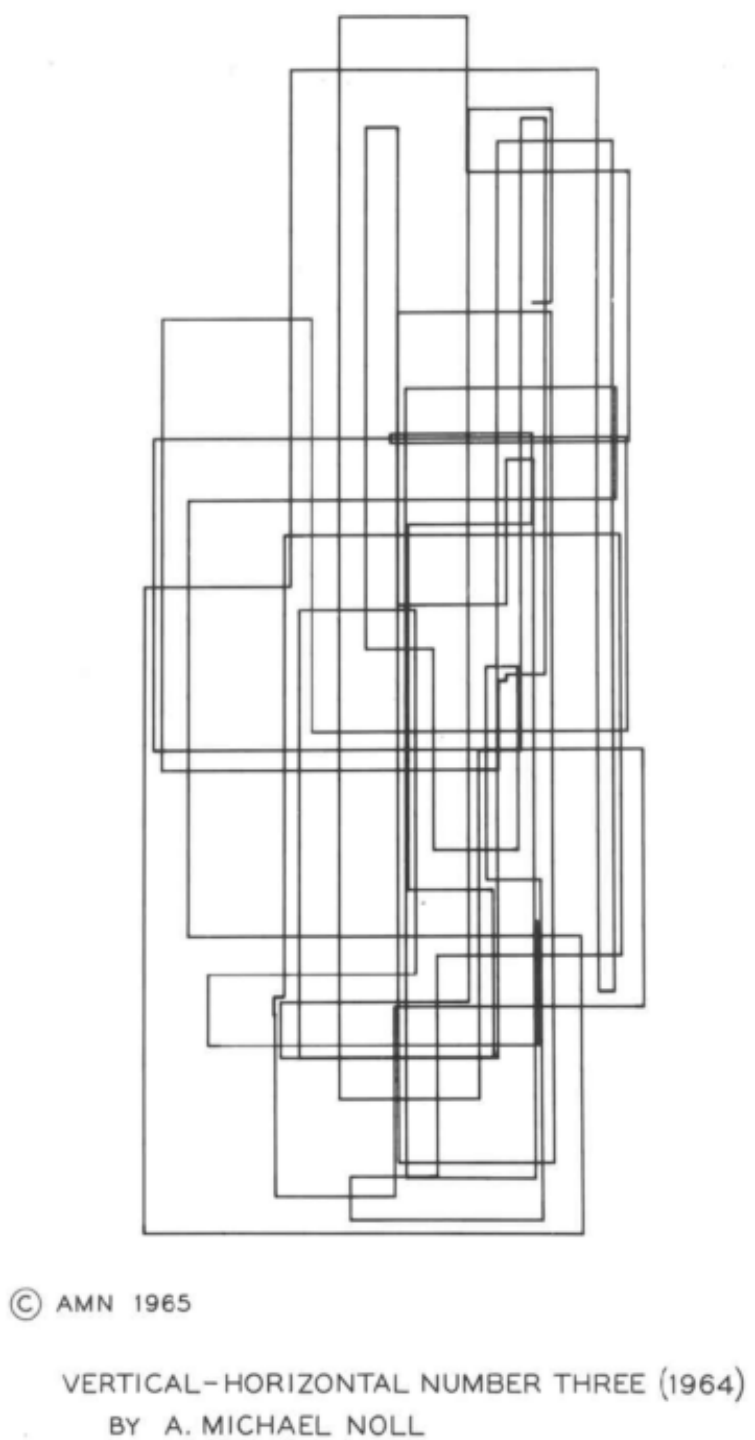
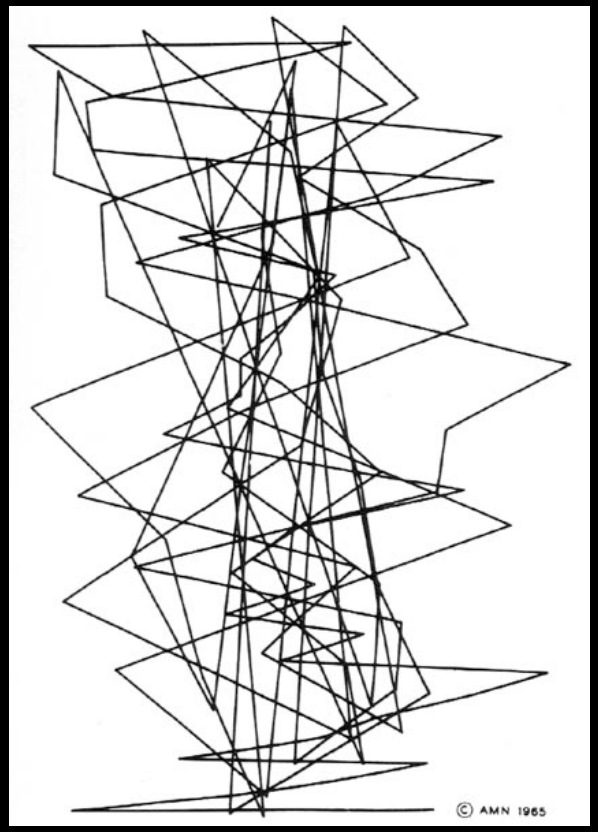


Mondrian

Noll



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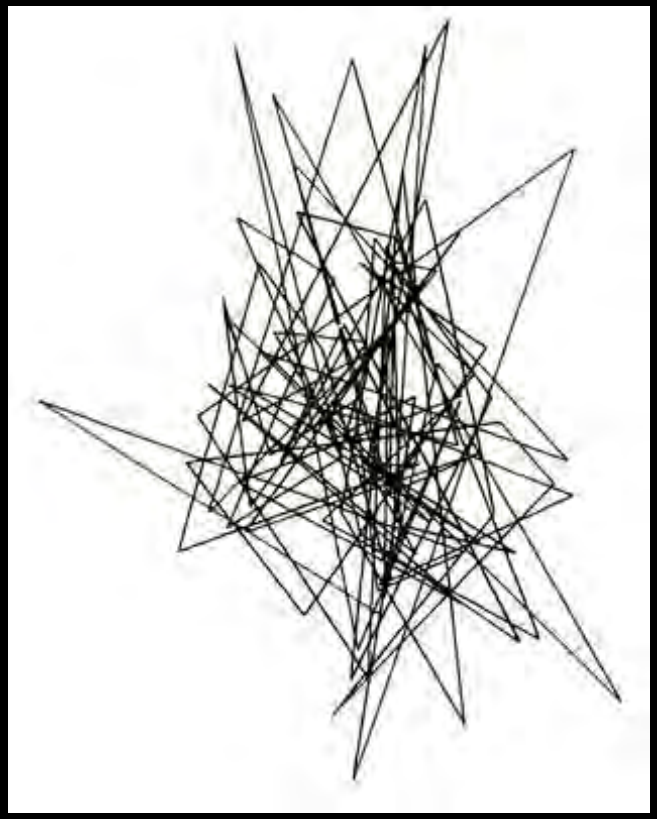

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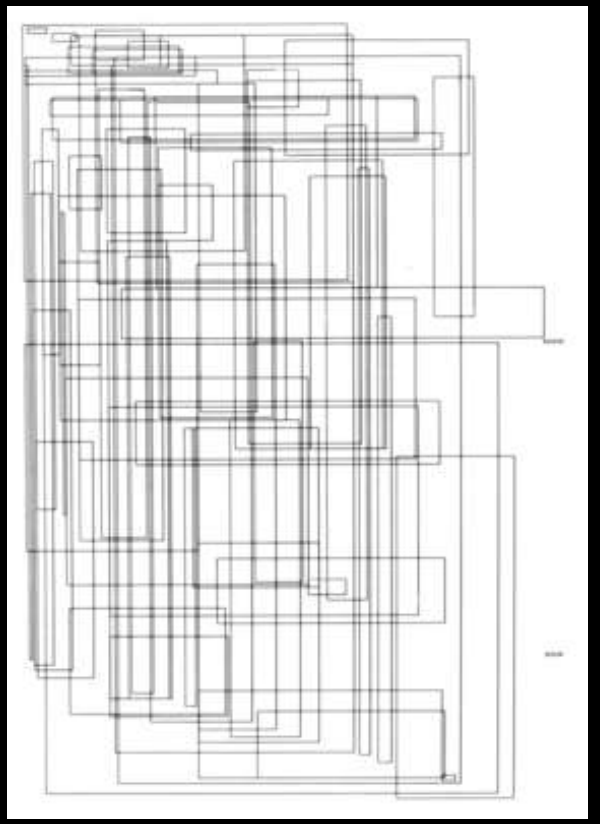

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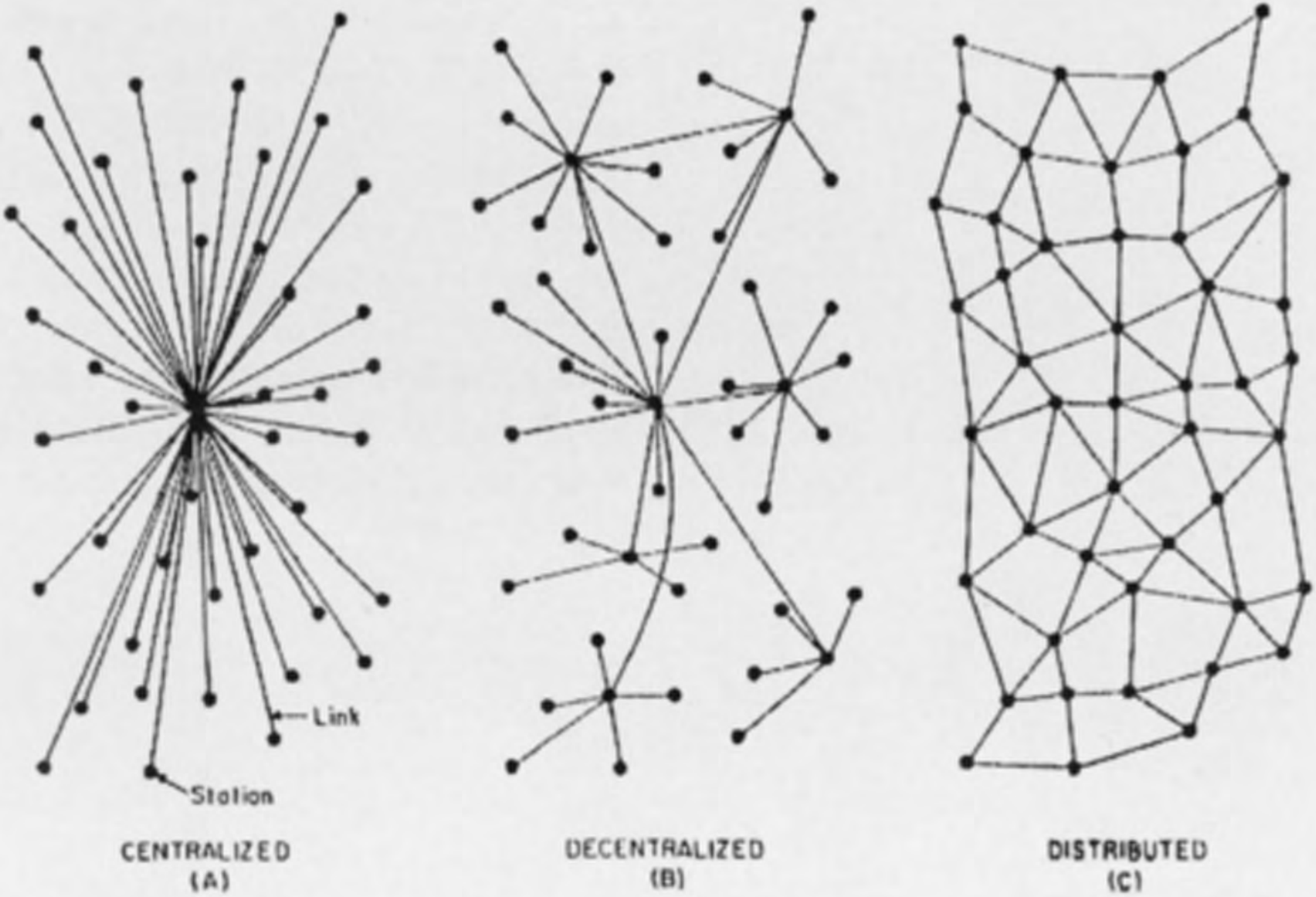
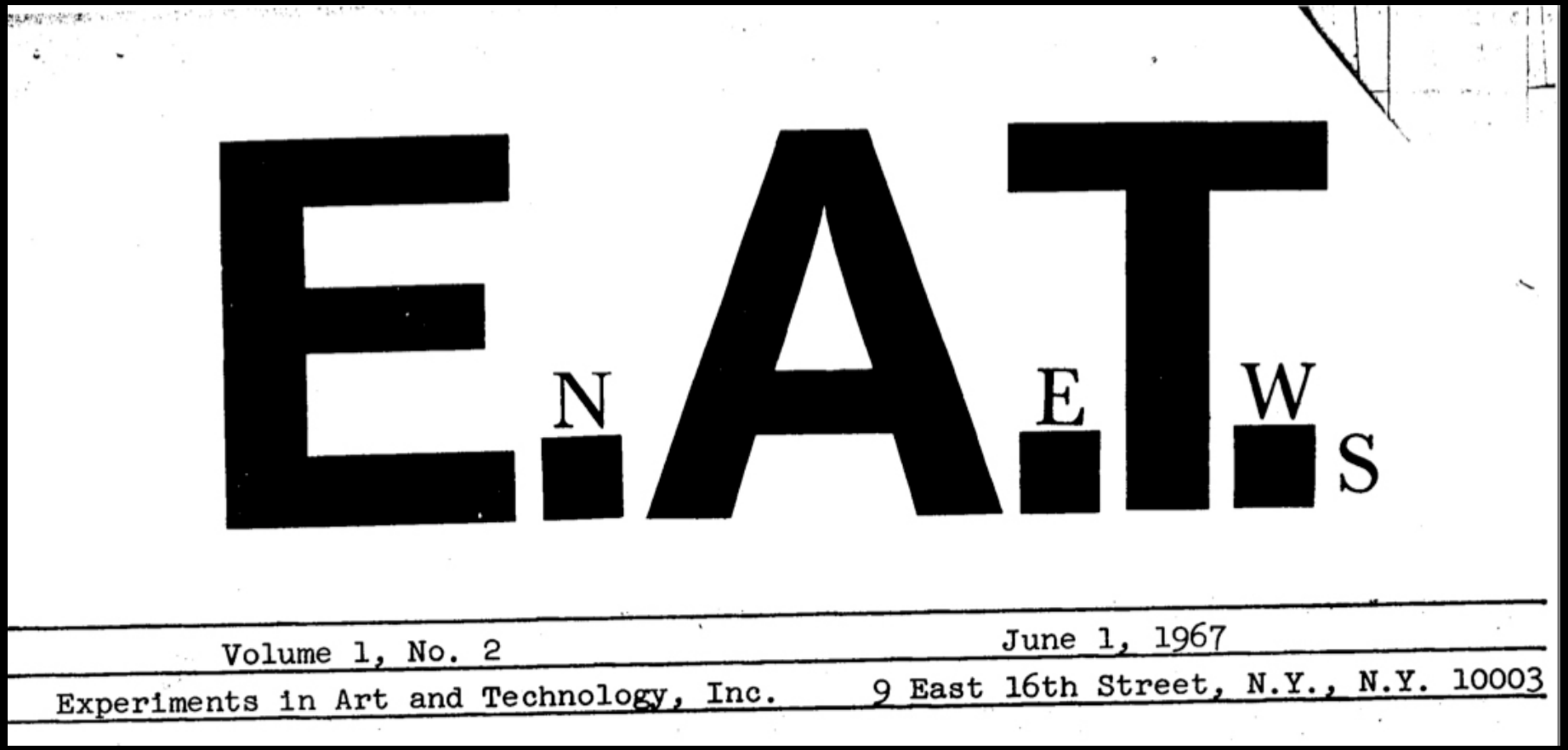


From Paul Baran, On Distributed Communications, 1964 [RAND Corporation]

“Variations V,” by John Cage for the Merce Cunningham Dance Company, 1964
Performed at the Philharmonic Hall at Lincoln Center on July 1964, Stan VanDerBeek showed films and Nam June Paik manipulated projected television images; Yvonne Rainer and Merce Cunningham performing on the right



Experiments in Art and Technology was founded in 1966 by engineers Billy Klüver and Fred Waldhauer and artists Robert Rauschenberg and Robert Whitman.

Billy Klüver, Fred Waldhauer, Robert Rauschenberg, John Cage, David Tudor, Yvonne Rainer, Deborah Hay, Robert Whitman, Steve Paxton, Alex Hay, Lucinda Childs and Öyvind Fahlström

E.A.T. PROJECTS OUTSIDE ART

December 8, 1969 — 235 Park Avenue South, New York, New York 10003

E.A.T. announces an exhibition, PROJECTS OUTSIDE ART — an exhibition of realizable projects in the environment — and requests submission of proposals.

Projects for the exhibition

—deal with such subjects as education, health, housing, concern for the natural environment, climate control, transportation, energy production and distribution, communication, food production and distribution, women's environment, cooking, entertainment, sports, etc.;

—use state-of the-art technology;

—recognize, in particular, the scale adequate for the problem undertaken, social and ecological effects, organizational methods necessary for realizing the projects;

EAT/John Cage, Variations VII, 1966

EAT/Lucinda Childs, Still from *Vehicle*, 1966

EAT/Robert Rauschenberg, Open Score, 1966

Each time Frank Stella and Mimi Kanarek hit the ball the vibrations of the racquet strings were transmitted to the speakers around the armory, and a loud BONG was heard.

http://www.youtube.com/watch?v=juo0OHsQTWE

John Cage, Merce Cunningham, Billy Cluver, et. al., Variations V, 1965
http://www.youtube.com/watch?v=Ca2iVll-N0g&feature=related

all the resources of physical science with its incompara-
ments (e.g. for polarization and spectroscopy) were to be utilized.

Although the chances that these dreams will assume a concrete shape in the near future are remote, it is possible even today to envisage the basic system of the future architecture of light.

The creative manipulation of light can be discussed under two main heads:

I. Light displays in the open air:

a) *The illuminated advertising displays* of today still generally consist of linear patterns on flat surfaces. It is now our task to enter the *third* dimension and to achieve real spatial differentiation in such displays by the use of special materials and reflectors.

b) *Gigantic searchlights and sky-writers* already play an increasingly important role in advertising displays (e.g. American firms, Persil), and

c) *Projections onto clouds* or other gaseous backgrounds through which one can walk, drive, fly, etc., is already possible today.

d) *Light displays* revealing a vast expanse of light with ever changing planes and angles, an interminable network of multicolored rays, to the spectator seated in an airplane will certainly form an impressive part of future municipal celebrations.

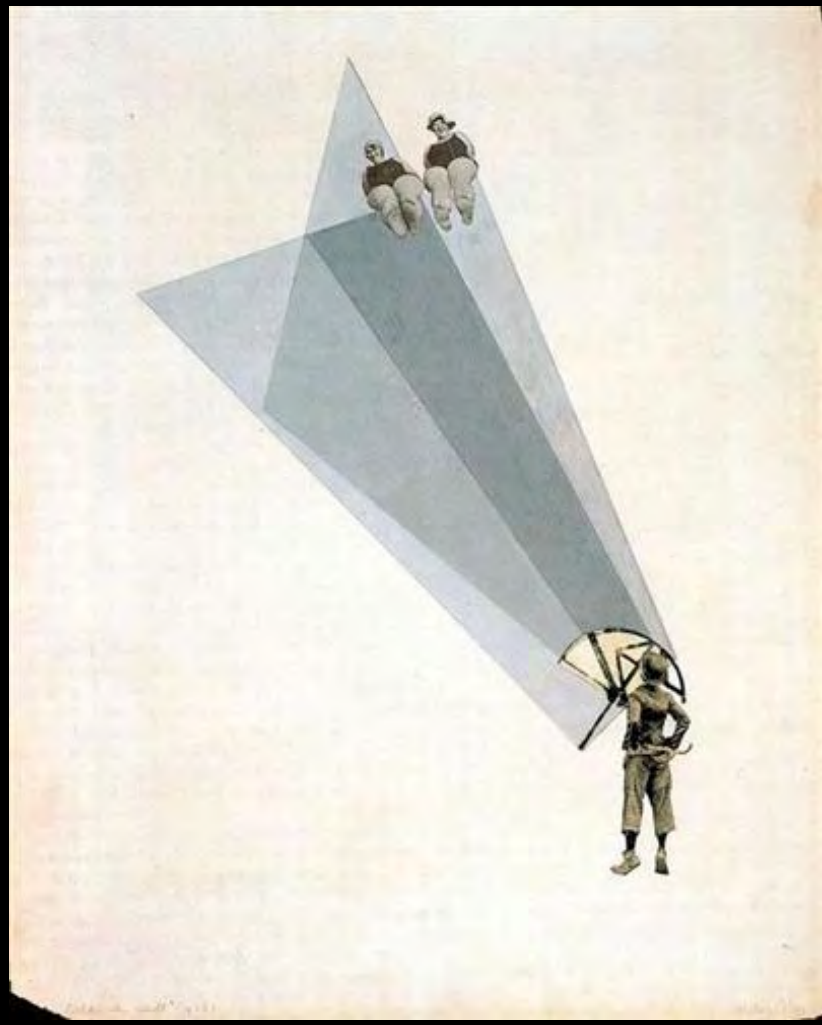
II. Indoor light displays:

a) *The film* with its unexplored possibilities of projection, with color, plasticity and simultaneous displays, either by means of an increased number of projectors concentrated on a single screen, or in the form of simultaneous image sequences covering all the walls of the room.

b) *Reflected light displays* of pattern sequences produced by such color projectors as László's color organ. Such displays may be of an open isolated nature or they may be multiplied by means of television.

c) *The color piano*, whose keyboard is connected with a series of graduated lamp units, illuminates objects of special materials and reflectors.

d) *The light fresco* that will animate vast architectural units, such as buildings, parts of buildings or single walls, by means of artificial light focused and manipulated according to a definite plan. (In all probability a special place will be reserved in the dwellings of the future for the receiving set of these light frescoes, just as it is today for a wireless set.)



László Moholy-Nagy, City lights,1926

Right: Letter to architect Kalivoda from L. Moholy-Nagy

and reflectors.

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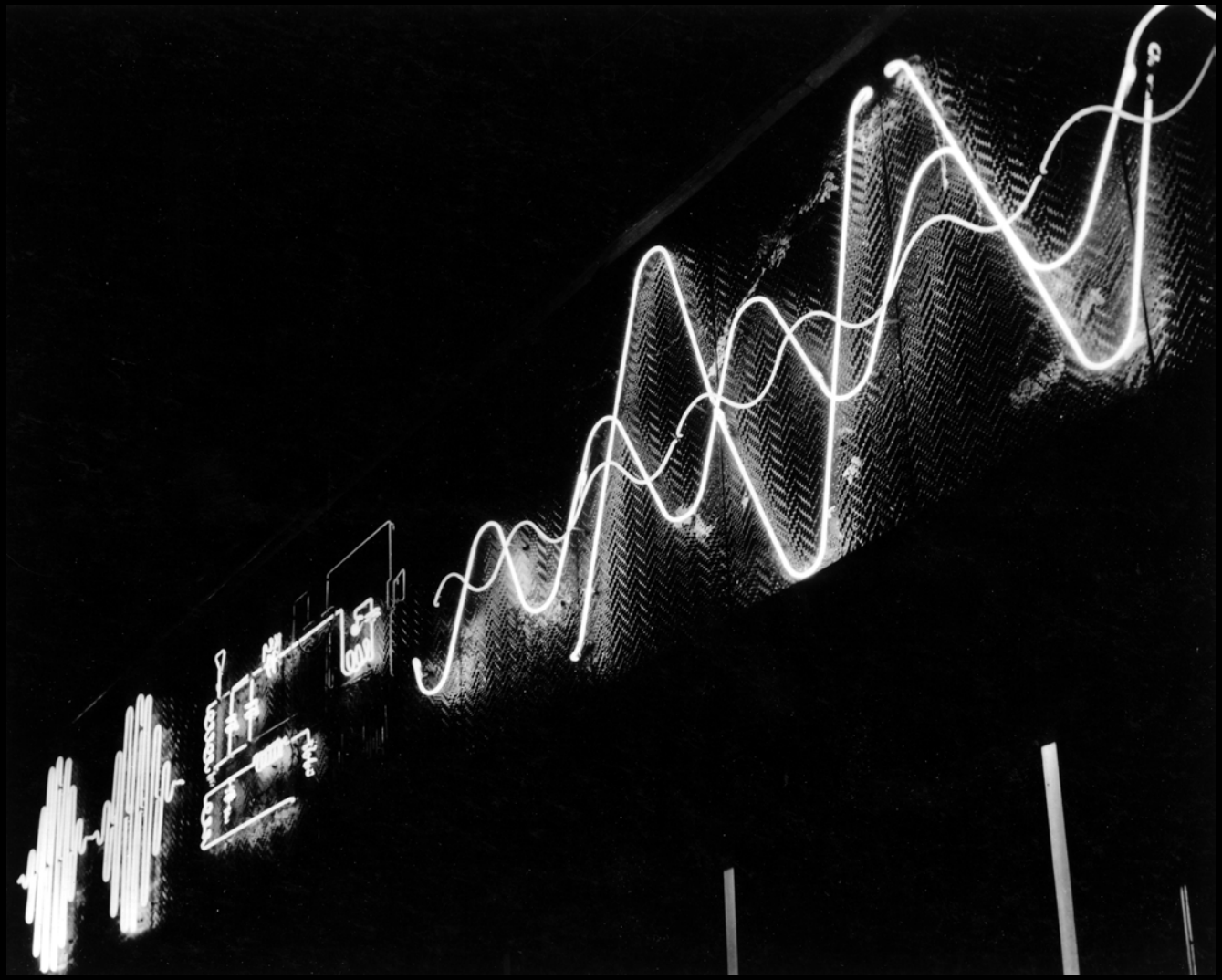
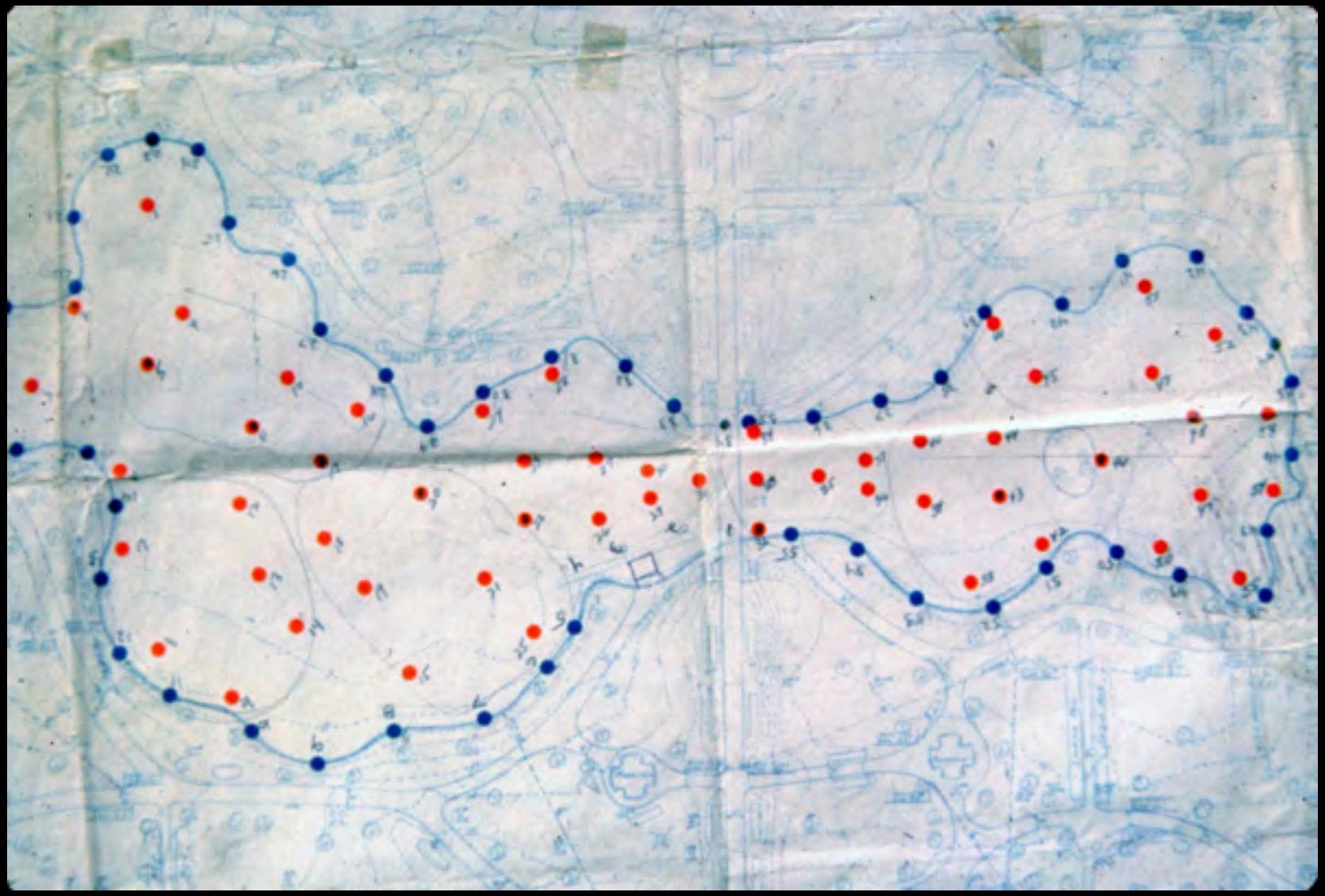
Letter to architect Kalivoda from L. Moholy-Nagy, Bauhausler, light artist, and pedagogue, 1934



György Kepes, Kinetic outdoor neon light mural for Radio Shack, Boston, 1949-1950

Gyorgy Kepes's programmed light mural in the KLM ticket office, 5th ave. New York 1959



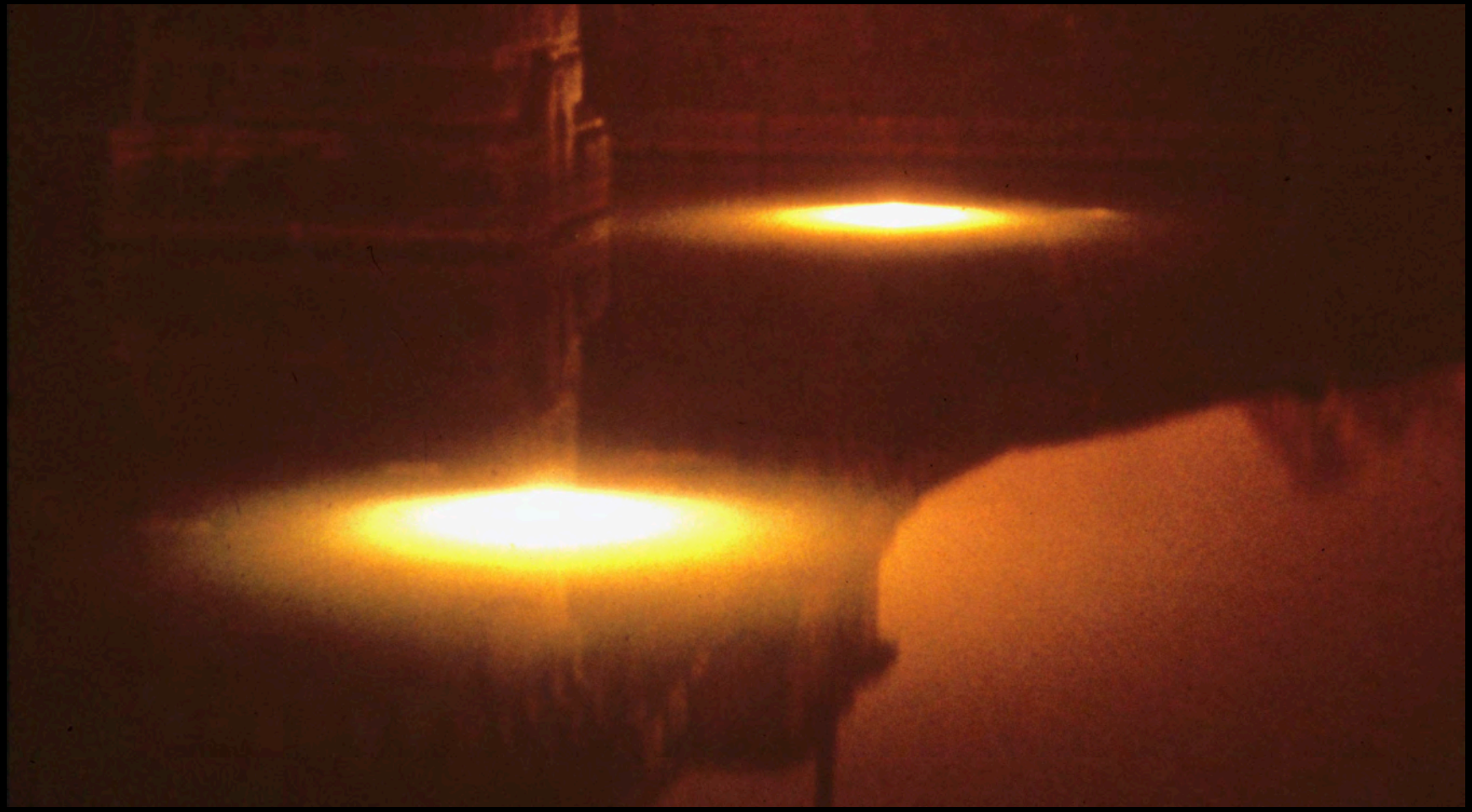
PULSA, Boston Public Garden, Experimental Lighting Demonstration, 1968

25 November 1968

SUMMARY REPORT ON EXPERIMENTAL LIGHTING DEMONSTRATION
PUBLIC GARDEN
OCTOBER 9 - OCTOBER 27

Our study is primarily concerned with the development of performance standards, the application of which should increase the probability of creating environments to support the needs of the people who use the city. Our initial proposals for the performance requirements for lighting are described in the preliminary goal statement (The Public Lighting of Cities, 16 February 1968, enclosed). The light and sound experience that operated in Boston during October, 1968, was an experimental test of some of these requirements.

The Public Garden is a vital part of the city's open space system that currently



Detail of PULSA’s Underwater Strobe Lights, 1968

Gyorgy Kepes, *Arts of the Environment*, 1972

CONTENTS

PULSA
THE CITY AS AN ARTWORK

The total history of man-made objects, including the present technology of communication and transportation, is an artifact system. The largest artifact system presently in existence is the city; but it will soon be superseded by global communication networks and other large-scale information systems. In order for these systems to be used successfully, new politics and procedures which are inherent in them must be employed.

The city *is* composed of soft information systems as well as hard architectural systems; the information systems are becoming more architectural, while the architecture is becoming less object-like and more systemic. The city is now a flexible, mutating object in the process of constant creation and destruction; future generations of cities may become something like artificial planets moving through space.

People evolve within the city, carrying, generating, and receiving information; they use architecture for protection from cultural as well as natural elements, as an extension of themselves, and as space to conduct and experience the rituals and ceremonies of life in a technological society. Printed circuit card designs and village plans from primitive societies can both serve as models for urban organization as a functional manifestation of the inhabitant's culture.

It is oversimplistic to view the city as a symbol of the dichotomy between the ideals of nature and man: the technologically polluted city as opposed to rustic wilderness. This false issue is seized upon rather than the real issues, such as converting from our wartime economy to the creative peacetime development of resources that might improve the level of life, the exploration of alternative life styles, and helping to establish global information systems.

Fig. 1. Pond, Boston Public Garden, Boston, Mass., October 8–27, 1968

Two distinct levels of sound-light activity were apparent in the city at night: the overall static, silent point-source illumination on urban structures and the noisy ribbons of striating vehicular flow. An interface was provided by the sound-light installation in downtown Boston's Public Garden. Fifty-five xenon strobes were submerged in the four-acre pond, and fifty-five polyplanar speakers were placed above water around the pond's perimeter. These output devices were programmed differently each night, with elements of analog and digital computers, a punch-paper tape reader, a signal synthesizer, and magnetic tape.

The intention was to integrate technological activities which characterize the functioning of the city with the city's physical structure. The demonstration reflected Pulsa's conviction that public art must treat all parameters of the urban and technological environment as potential media for artistic expression in order to introduce these concepts on a large scale into the cities of the future.

A. Elevated view over pond (lower left) of city of Boston at night.
B. Map of installation in pond and surrounding garden.
C. View across pond at night.

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The intention was to integrate technological activities which characterize the functioning of the city with the city's physical structure. The demonstration reflected Pulsa's conviction that public art must treat all parameters of the urban and technological environment as potential media for artistic expression in order to introduce these concepts on a large scale into the cities of the future.

A. Elevated view over pond (lower left) of city of Boston at night.
B. Map of installation in pond and surrounding garden.
C. View across pond at night.