Generative Art

George Legrady © 2020
Experimental Visualization Lab
Media Arts & Technology
University of California, Santa Barbara

"*Computational Aesthetic and applications*" Yihang Bo, etc. (2018)

Sequence of Automation Complexity (p.10-11)

1) Full human participation, activating software (Adobe software applications?)
2) User provides various attributes/parameters, software generates results automatically (like fractal designs)
3) Generative: Encode artist style into rules and algorithms (Cohen?)
4) Transformational: New image is created out of an existing image which is reformulated algorithmically (image processing filtering)
5) AI: Collection of existing images are analyzed then iteratively processed, then reduced dimensionally to produce a new image

https://link.springer.com/article/10.1186/s42492-018-0006-1

Philip Galanter

"Generative art refers to any art practice where the artist uses a system, such as a set of natural language rules, a computer program, a machine, or other procedural invention, which is set into motion with some degree of autonomy contributing to or resulting in a completed work of art."

http://www.philipgalanter.com/downloads/ga2003_paper.pdf

What is Generative Art?

Complexity Theory as a Context for Art Theory

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Abstract

In this paper an attempt is made to offer a definition of generative art that is inclusive and provides fertile ground for both technical and art theoretical development. First the use of systems is identified as a key element in generative art. Various ideas from complexity theory are then introduced. It is noted that systems exist on a continuum from the highly ordered to the highly disordered. Citing examples from information theory and complexity science, it is noted that highly ordered and highly disordered systems are typically viewed as simple, and complex systems exhibit both order and disorder. This leads to the adoption of effective complexity, order, and disorder as organizing principles in the comparison of various generative art systems. This inclusive view leads to the somewhat surprising observation that generative art is as old as art itself.

Randomized Autonomous Systems

- In 1787, Mozart wrote “Dice Game” each sequence selected from 11 precomposed segments selected by dice throw
- “According to the Laws of Chance”, Jean Arp (1933) https://www.tate.org.uk/art/artworks/arp-according-to-the-laws-of-chance-t05005
- Cut-up technique eat author William Burroughs and Brion Gysin: https://en.wikipedia.org/wiki/Cut-up_technique
- “Music of Changes”, John Cage, indeterminate music, composition through random selection of sounds compositions, and the I Ching (a symbol system used to identify order in chance events) https://en.wikipedia.org/wiki/Music_of_Changes

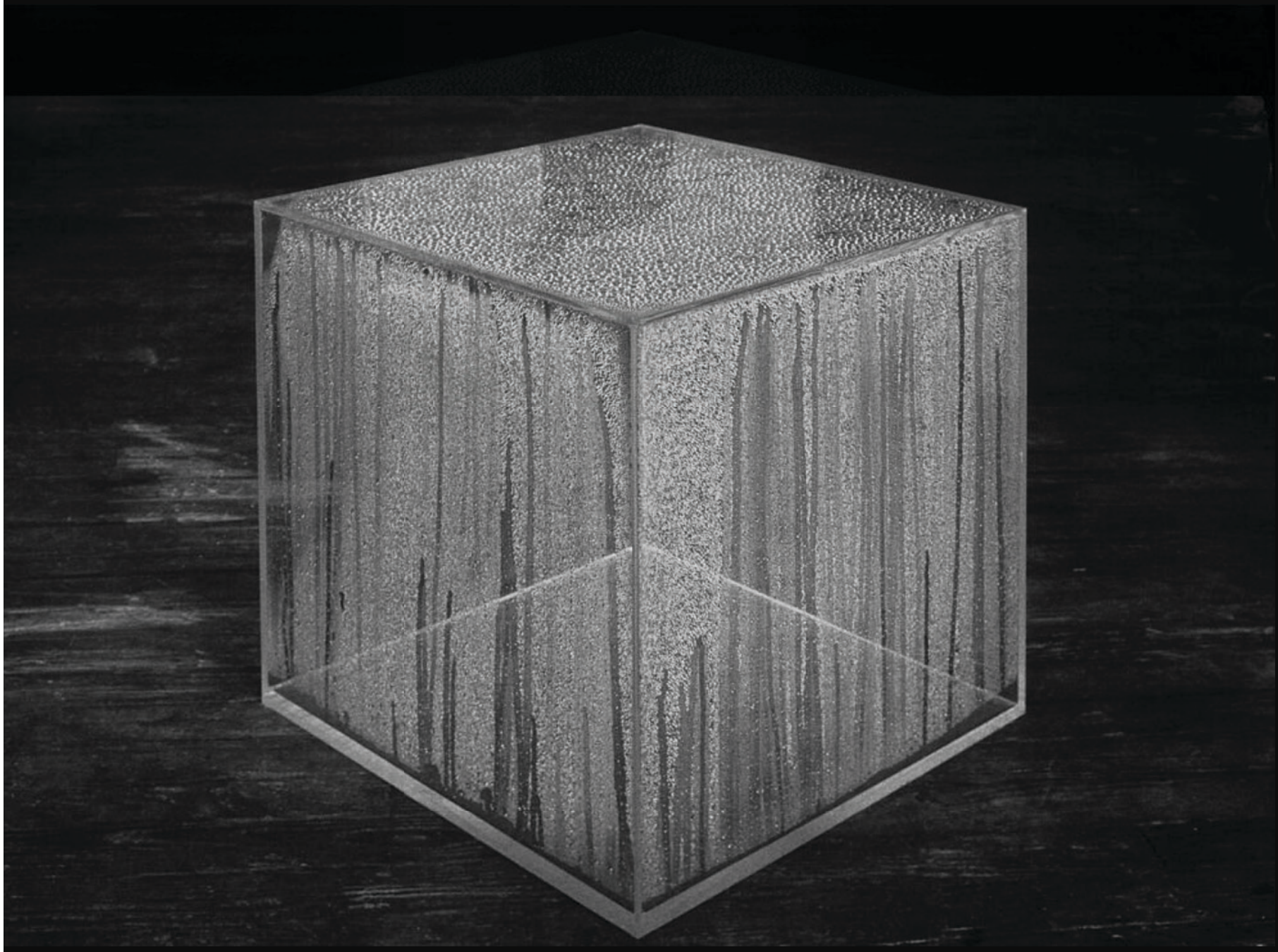
https://en.wikipedia.org/wiki/Systems_art (Related methods)

System Art & Related Methods

- System Art (Subset of Conceptual Art), influenced by cybernetics and systems theory.
- Cybernetics: Explores regulatory systems, their structures, constraints and possibilities, such as feedback https://en.wikipedia.org/wiki/Cybernetics
- Systems Theory: The study of interrelated and interdependent parts https://en.wikipedia.org/wiki/Systems_theory
- Emergent behavior: Properties or behaviors which emerge only when the parts interact (school of fish, beehive, water crystals/fractals) – functioning as a collective https://en.wikipedia.org/wiki/Emergence

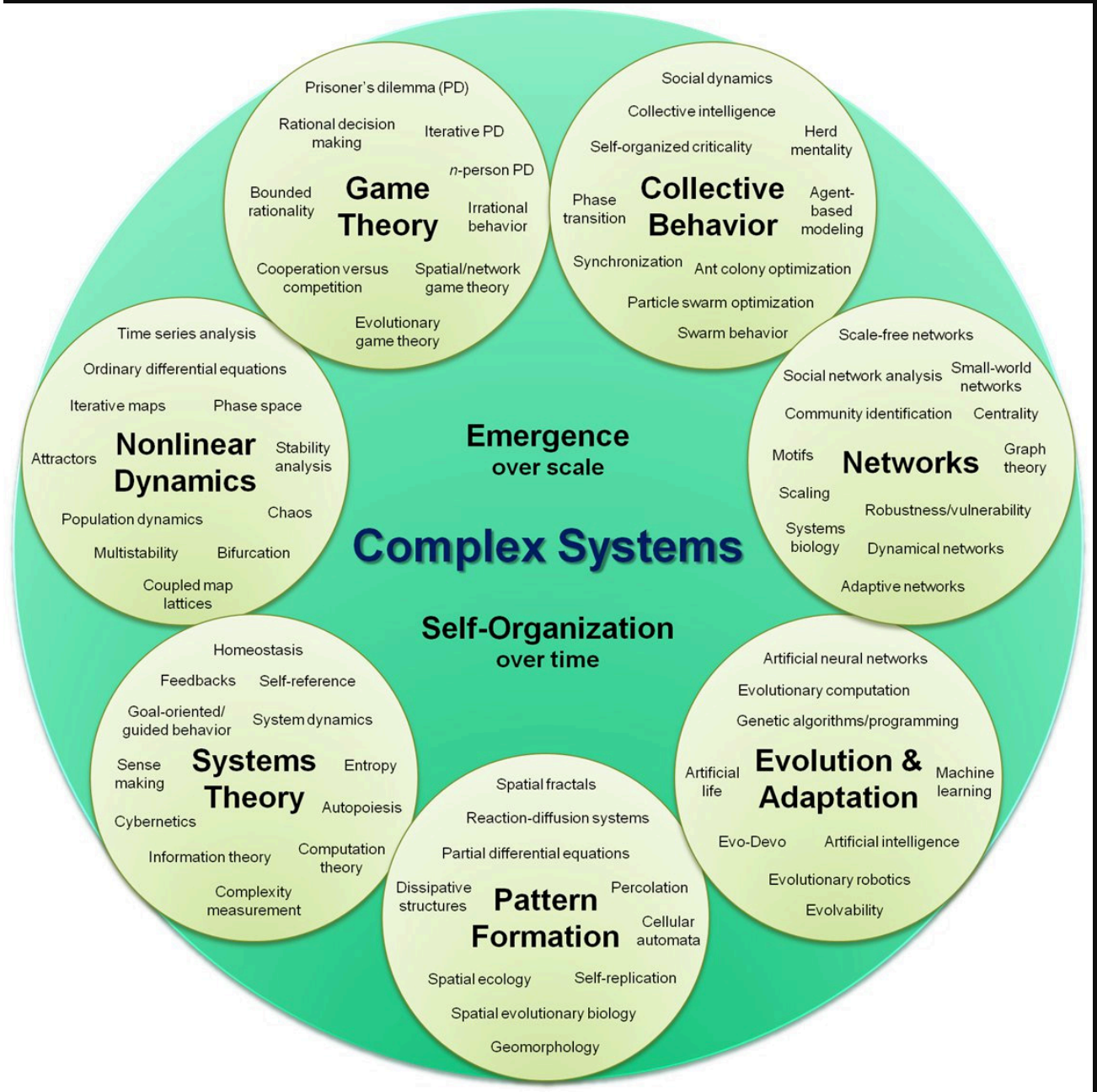
https://en.wikipedia.org/wiki/Systems_art

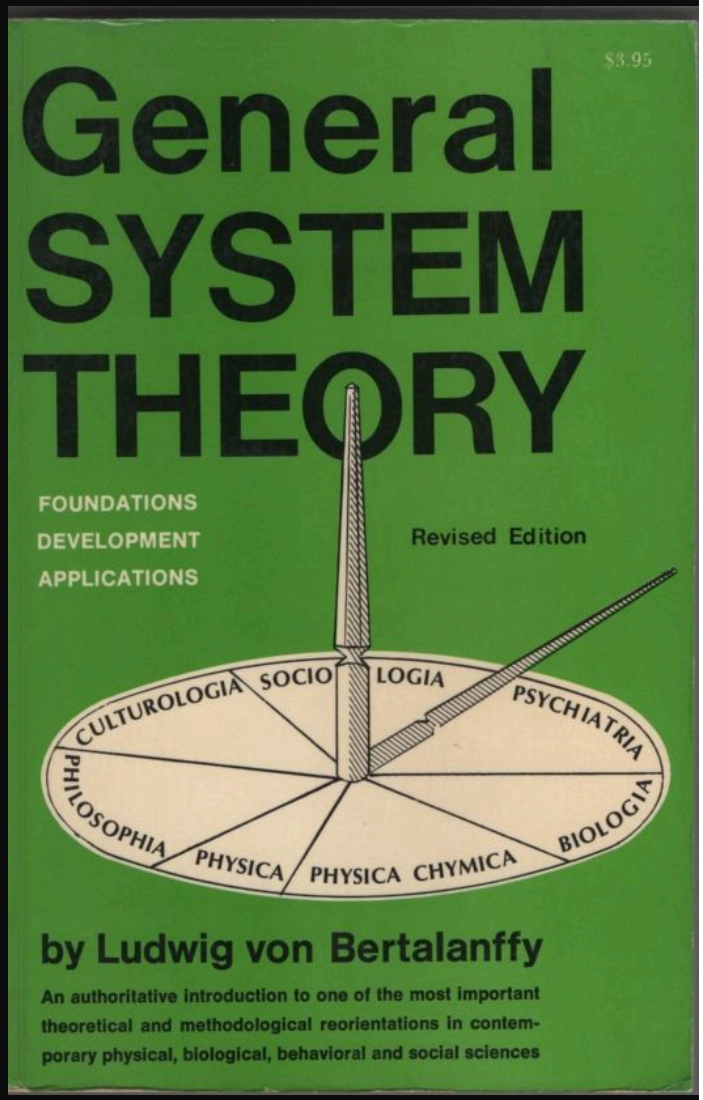
“Condensation Cube”, Hans Haacke (1965)



https://www.macba.cat/en/art-artists/artists/haacke-hans/condensation-cube

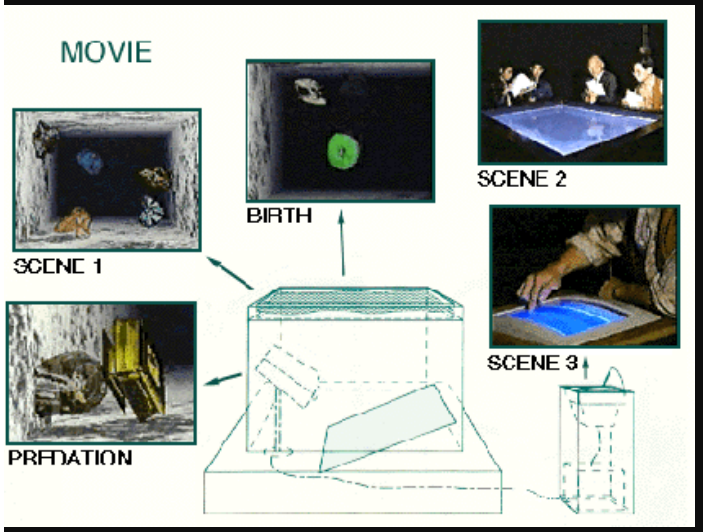
“General Systems Theory”, Ludwig von Bertalanffy (1968)





https://en.wikipedia.org/wiki/Systems_theory

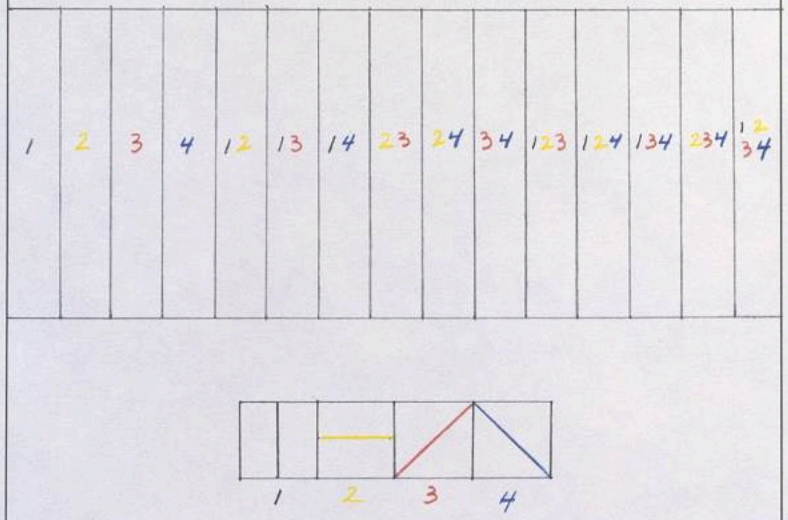
“A-Volve”, Christa Sommerer, Laurent Mignonneau (1992)



http://www.interface.ufg.ac.at/christa-laurent/WORKS/FRAMES/TOPFRAMES/A-VolveTop.html

“A Wall divided into 16 Equal Parts”, Sol Lewitt (1970)

DIAGRAM



This is a diagram for the Sol LeWitt wall drawing number 49 . It should accompany the certificate if the wall drawing is sold or otherwise transferred but is not a certificate or a drawing.

CERTIFICATE

This is to certify that the Sol LeWitt wall drawing number 49 evidenced by this certificate is authentic.

A wall divided vertically into fifteen equal parts, each with a different line direction and color, and all combinations.

Red, yellow, blue, black pencil
First Drawn by: Chris Hansen, Nina Kayem, Al Williams
First Installation: Jewish Museum, New York, NY. June, 1970

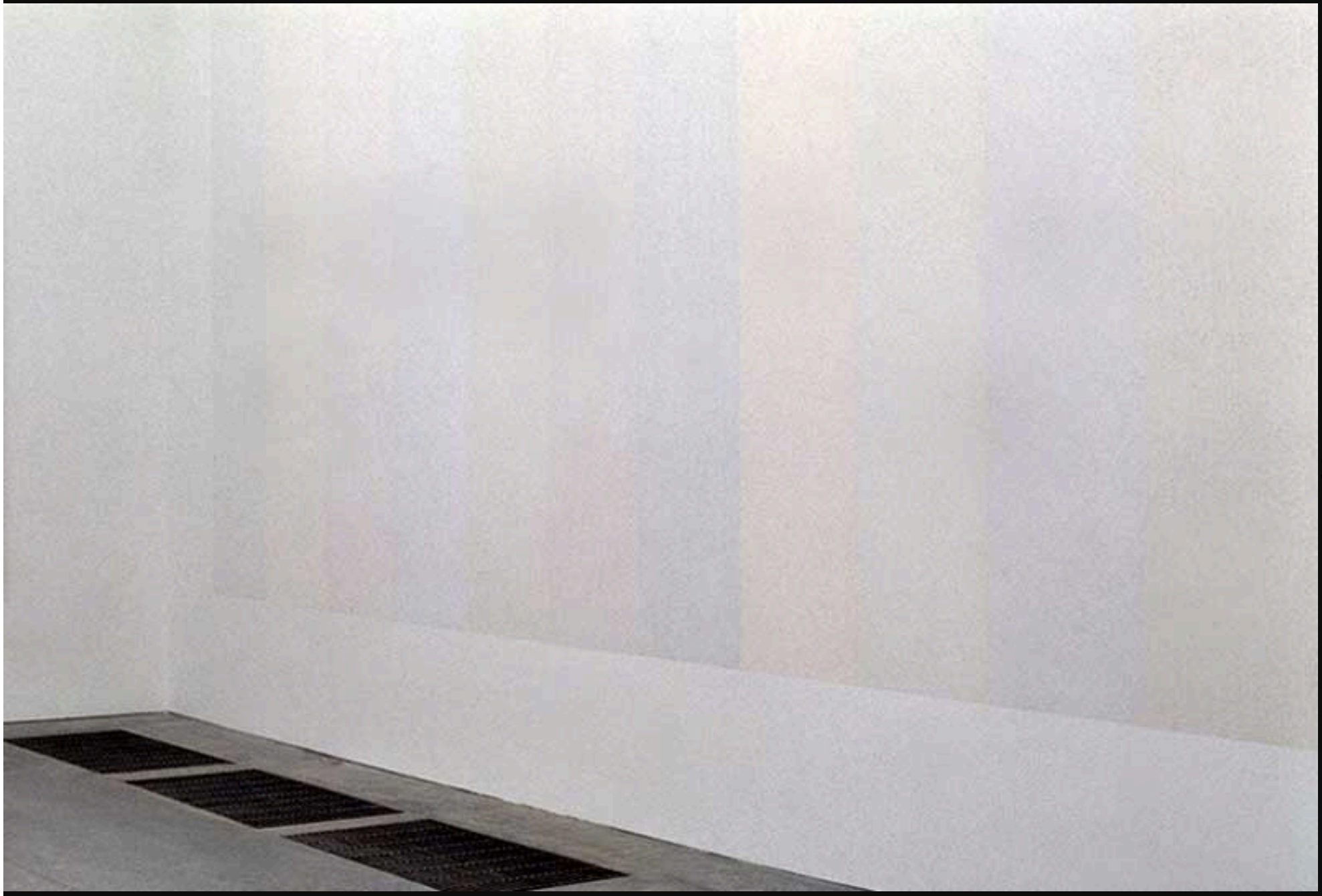
This certification is the signature for the wall drawing and must accompany the wall drawing if it is sold or otherwise transferred.

Certified by Sol LeWitt
Sol LeWitt

Date

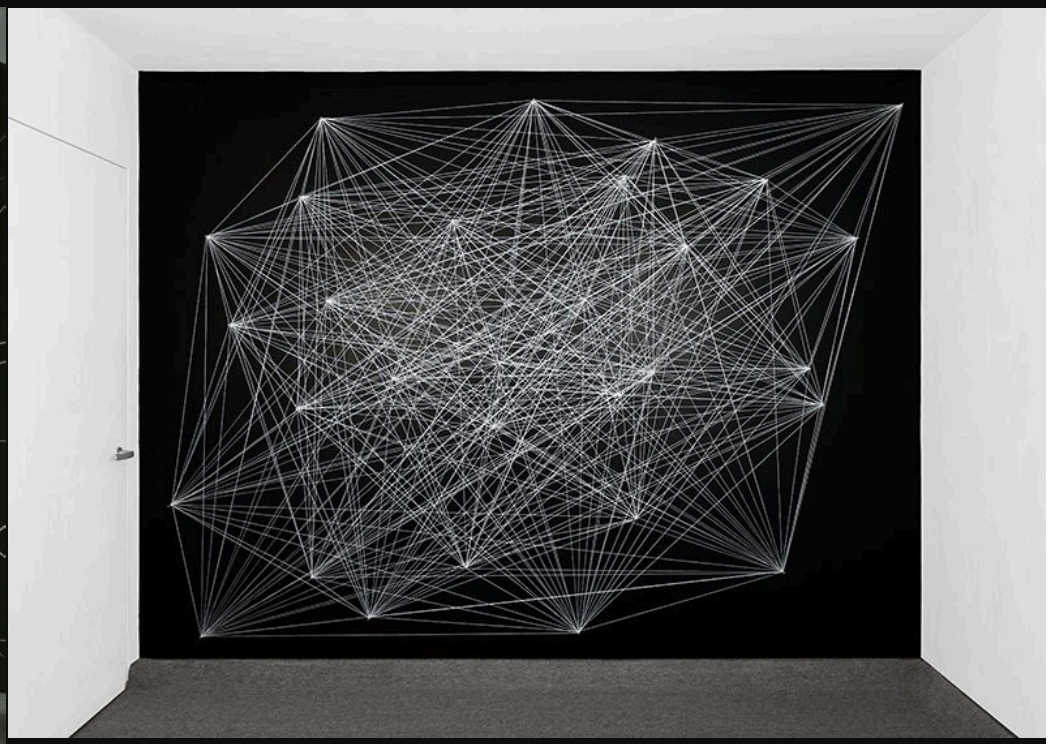
https://www.tate.org.uk/art/artworks/lewitt-a-wall-divided-vertically-into-fifteen-equal-parts-each-with-a-different-line-t01766

“A Wall divided into 16 Equal Parts”, Sol Lewitt (1970)

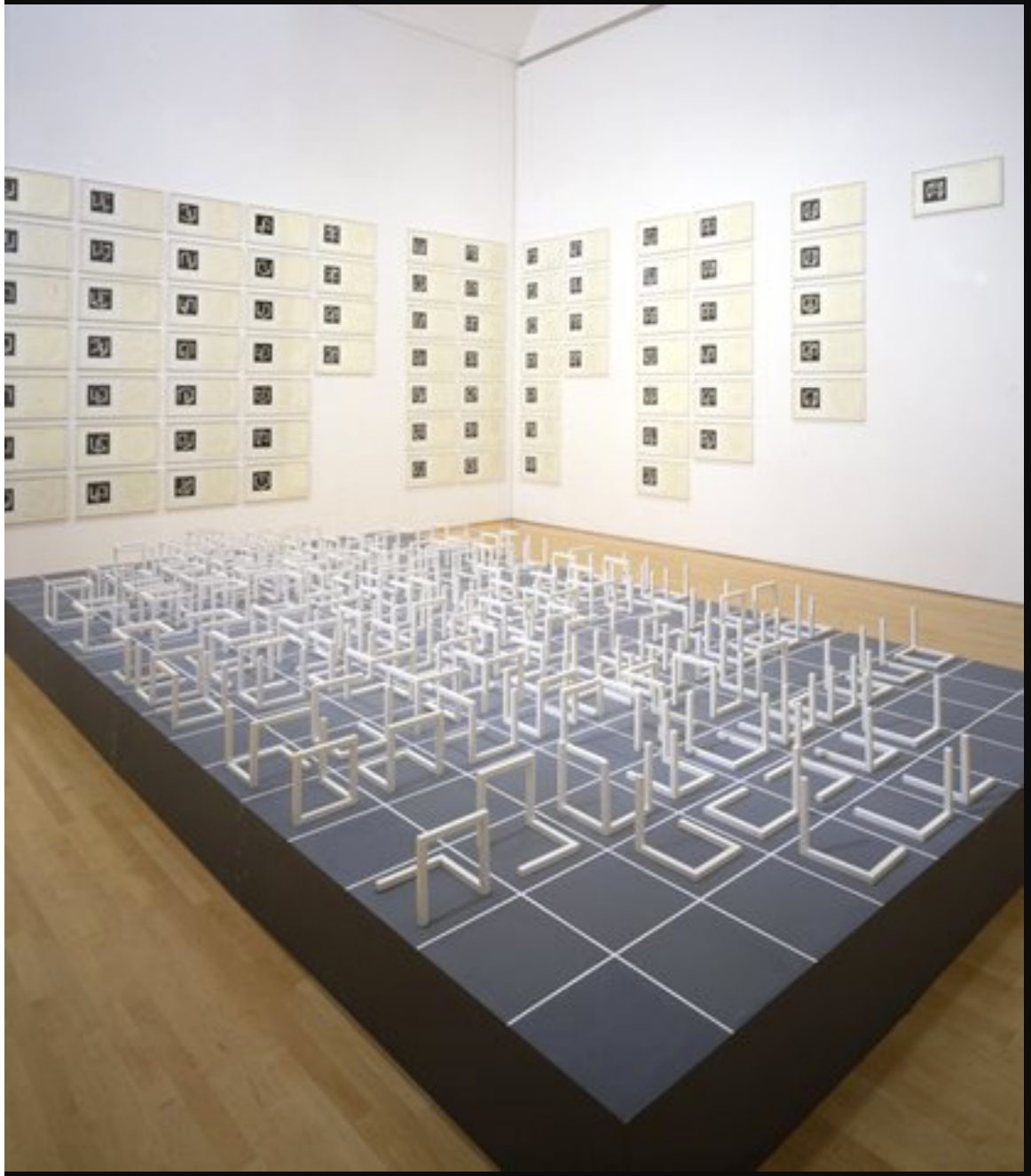


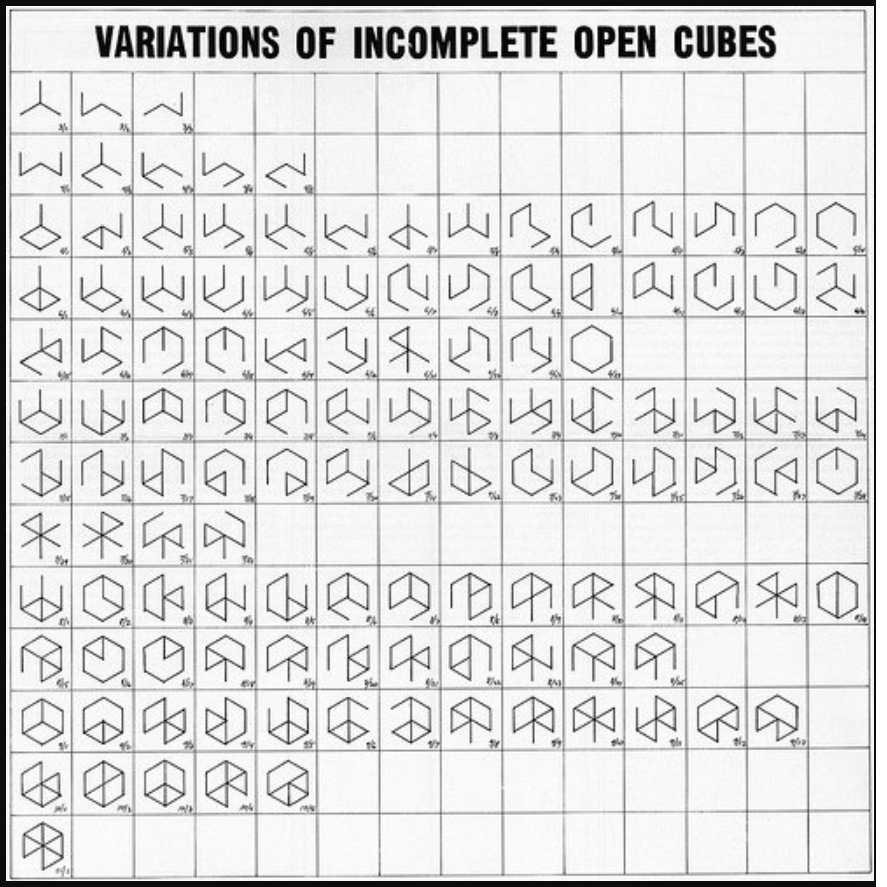
https://www.tate.org.uk/research/publications/tate-papers/14/ideas-in-transmission-lewitt-wall-drawings-and-the-question-of-medium

“Wall Drawing”, Sol Lewitt (1976)



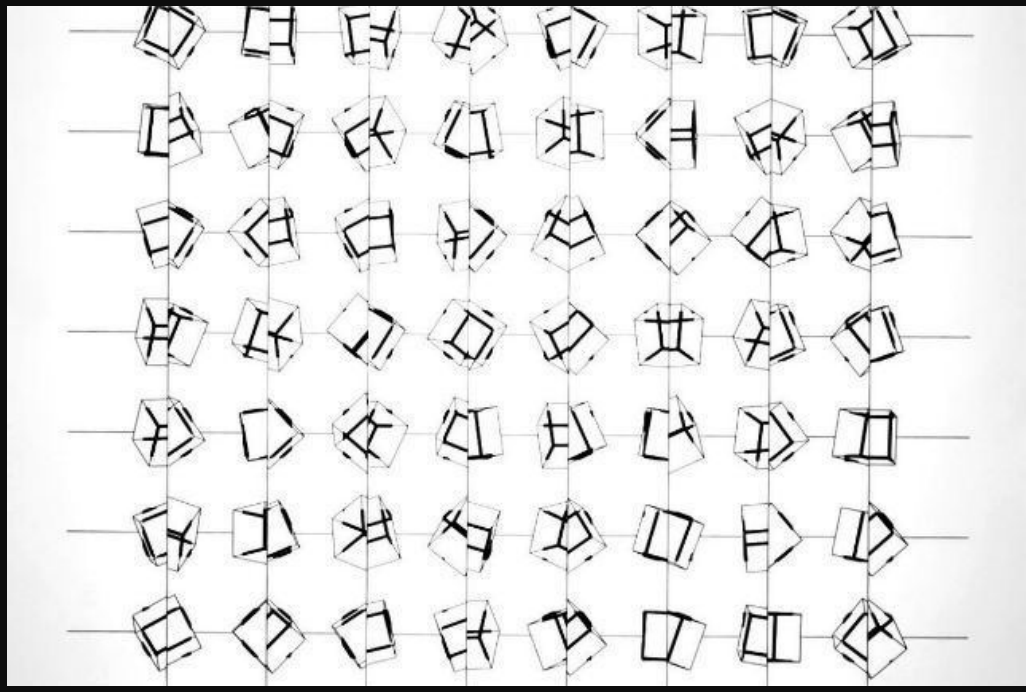
“Variations of Incomplete Open Cubes”, Sol Lewitt (1974)

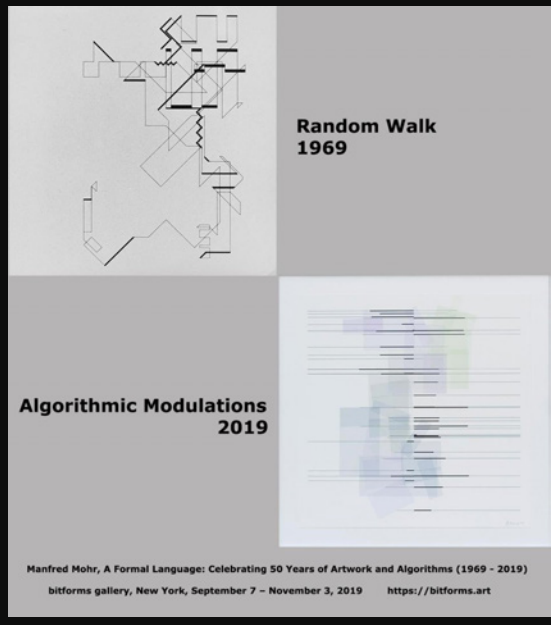




http://fiftytwopieces.blogspot.com/2009/03/sol-lewitt-incomplete-open-cubes-all.html

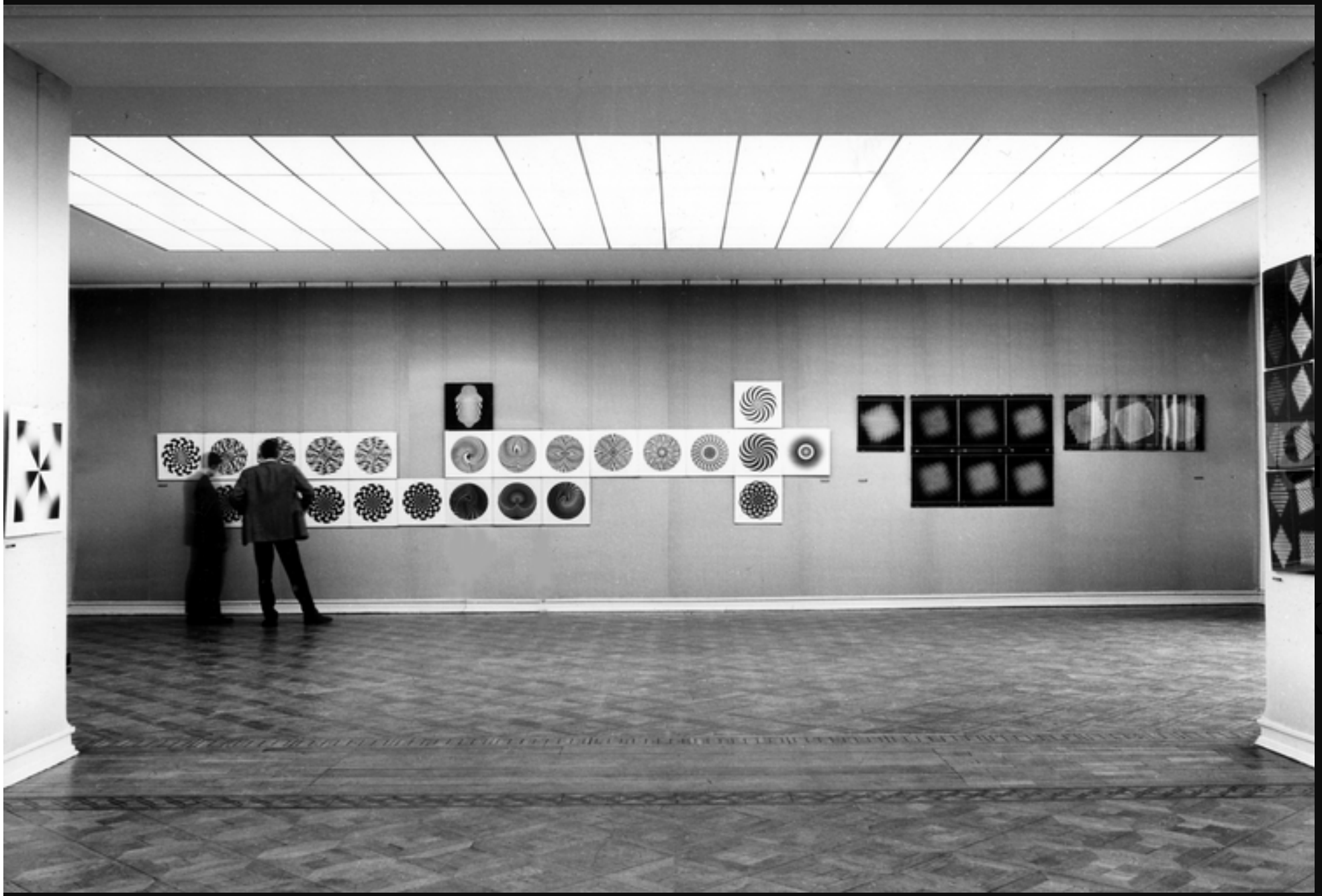
Manfred Mohr (1938, computer-based art since 1969)





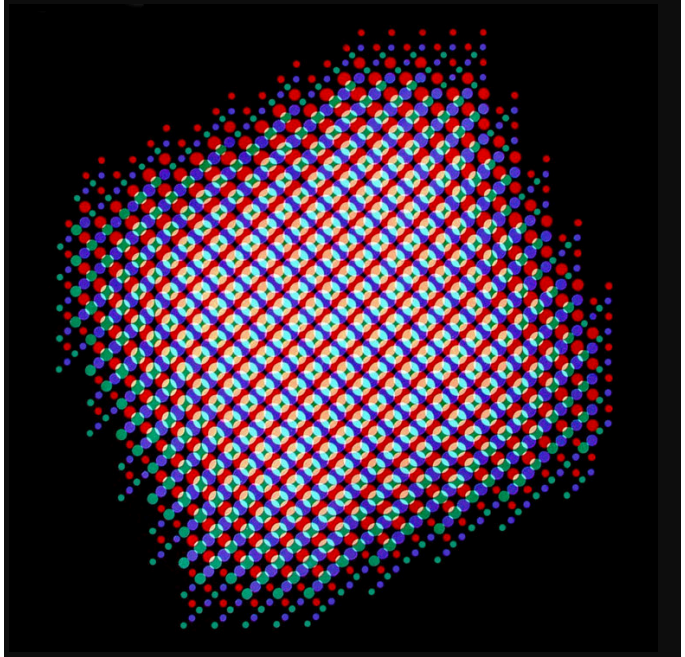
https://www.theguardian.com/artanddesign/2016/feb/12/manfred-mohr-the-man-who-taught-computers-to-make-art

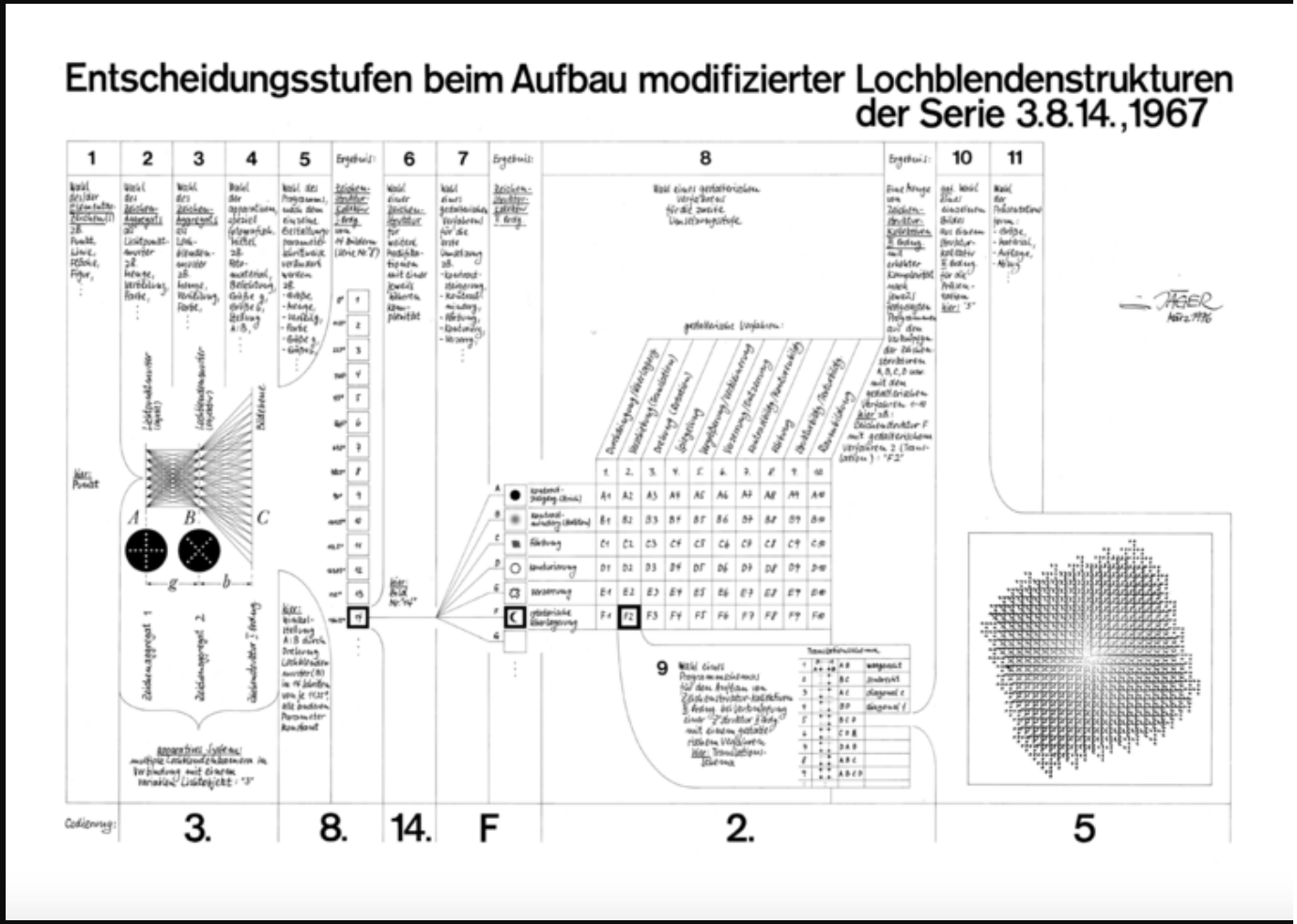
Generative Photography: Pinhole Structures – Gottfried Jäger (1968)



https://www.artnome.com/news/2019/8/18/generative-photography-an-interview-with-gottfried-jager

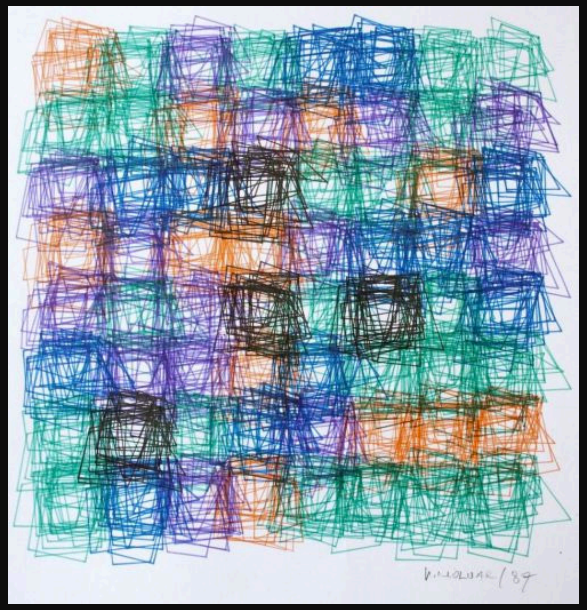
Generative Photography: Pinhole Structures – Gottfried Jäger (1968)

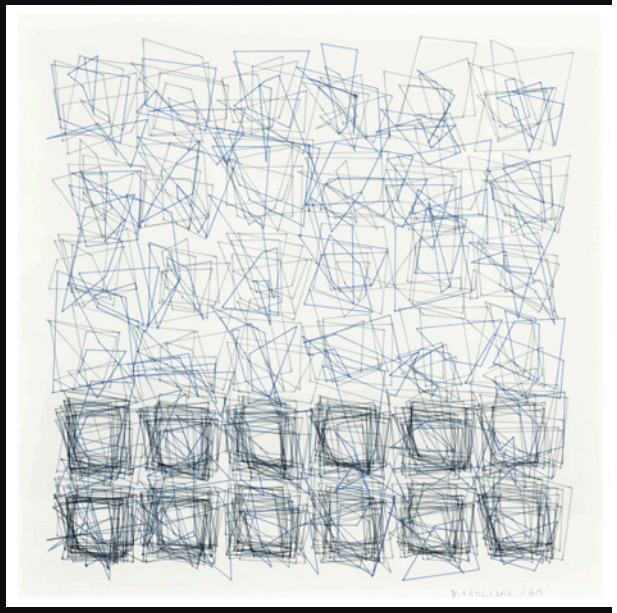


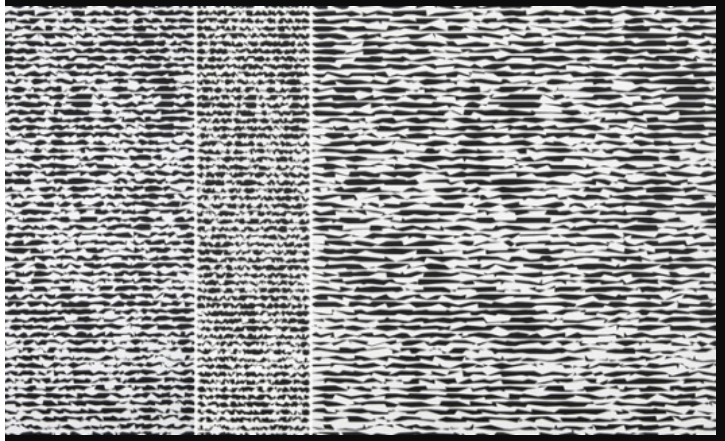


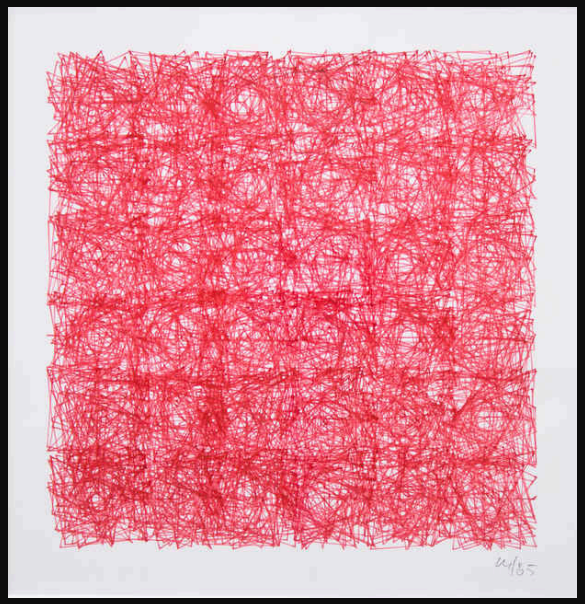
Decision-making stages in the construction of modified pinhole structures of the serie 3.8.14

Vera Molnar(1924-present)



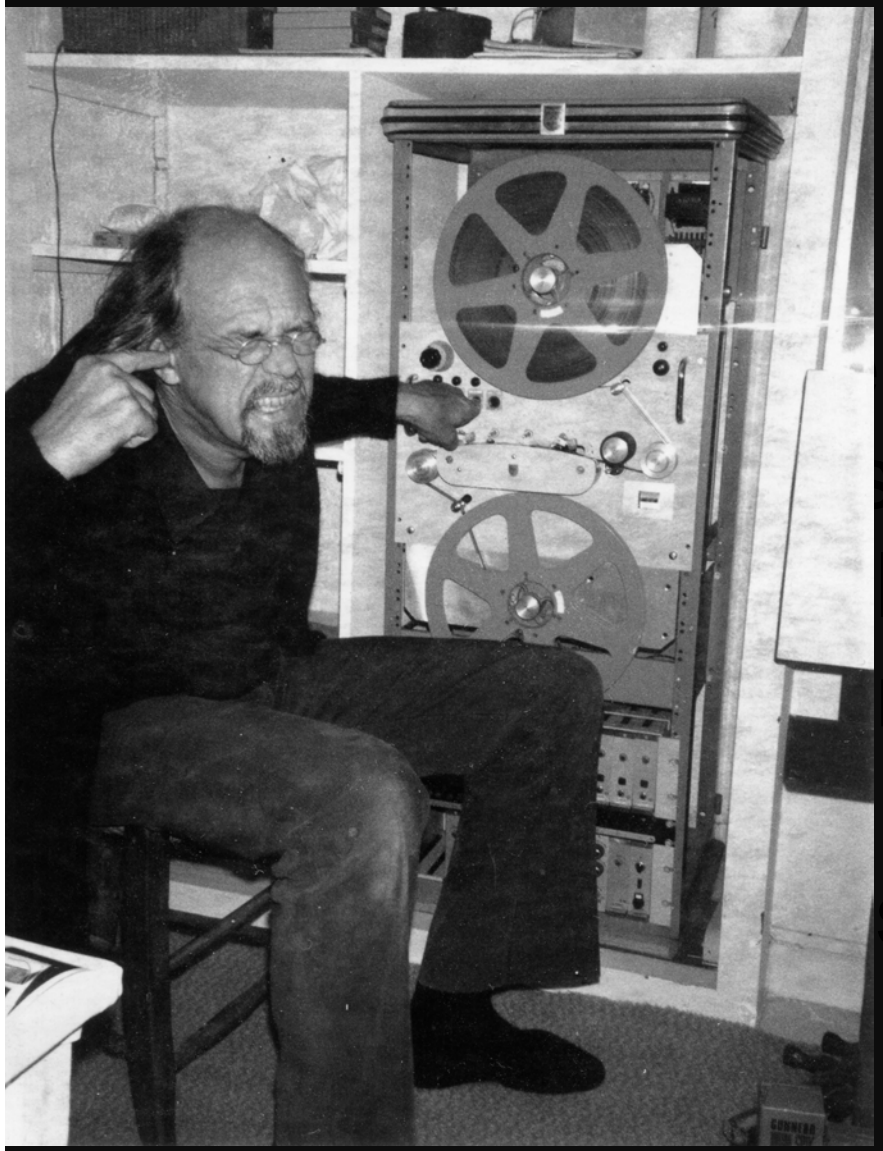


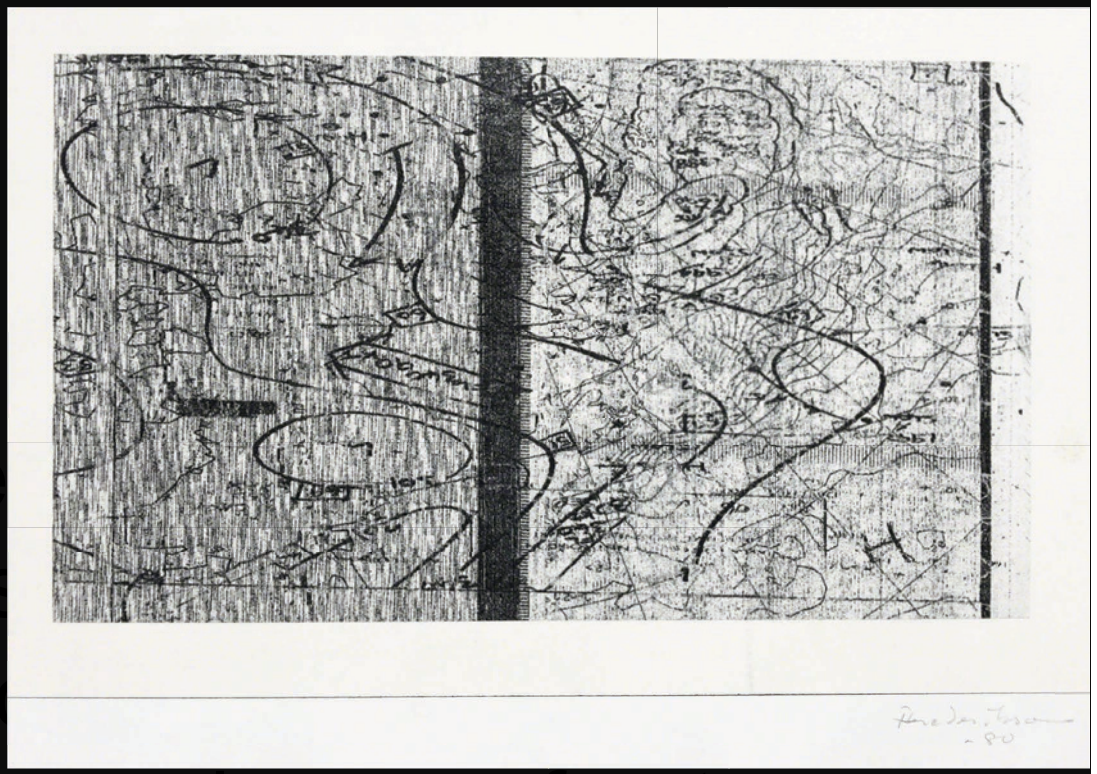


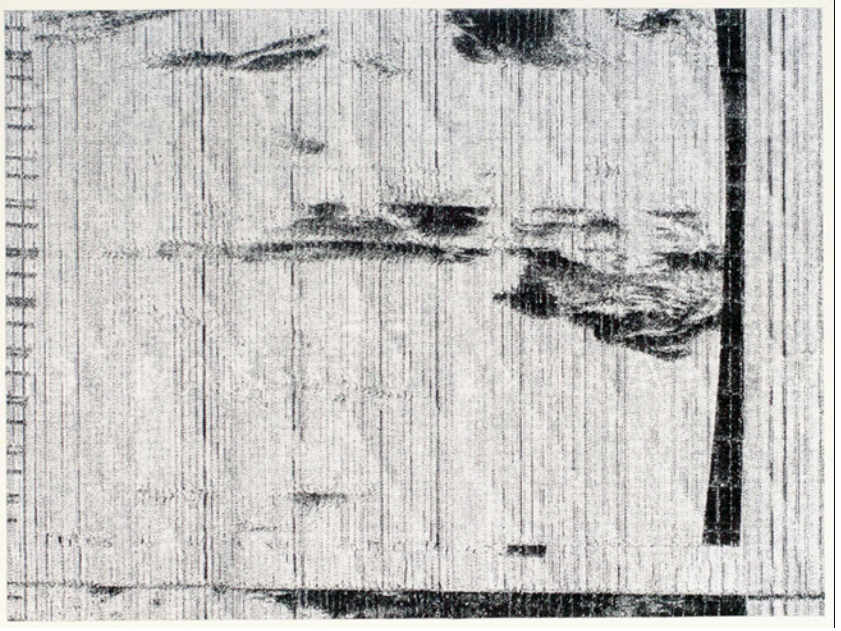


http://agenda.germainpire.info/view_entry.php?id=102846&date=20190307

ElectroStatic Works, Lars Fredrikson(1968)





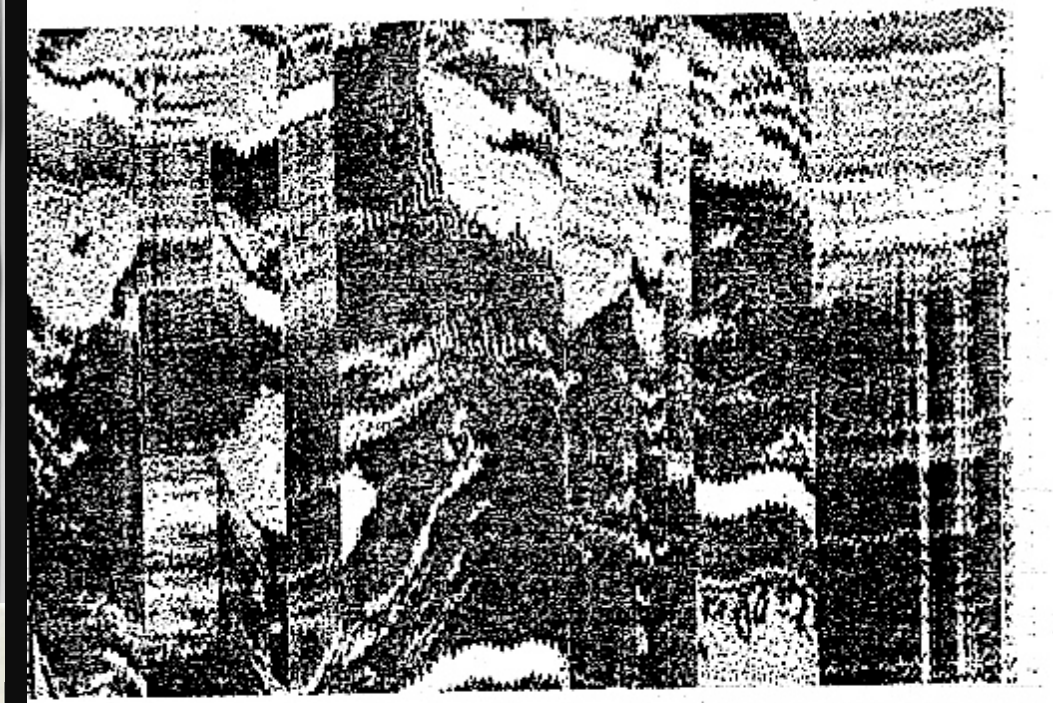


http://www.insituparis.fr/fr/artistes/presentation/8650/fredrikson-estate-lars

Generative Systems & Electrostatic works, Sonia Sheridan(1968)

d. Dip a leaf or similar flat object into the magnetic powder. Shake off the excess. Place on a sheet of paper below the plexiglass and rub the plexiglas with the fur until the leaf begins to move and the powder spreads about. Once you have observed and imaged this process try taping the leaf to the sheet of paper so that only the powder shifts. A clear image of the leaf should appear on the paper.

Examples:



Composite Joint Image

The sounds of raindrops in Iowa City, an infra-red photograph of the sun transmitted from Pittsburgh, and "sequential drawings" transmitted from Chicago produced this "composite joined image." The image was made by transmitting the three sets of signals, in a conference phone call, and picking up a "composite image" on "facsimile machines" located in the three cities.

https://www.fondation-langlois.org/html/e/page.php?NumPage=2048

generative art

a practical guide using processing

matt pearson

foreword by marius watz

MANNING

https://www.mat.ucsb.edu/~g.legrady/academic/courses/20f594/txt/generativeArt2.pdf

Dan Flavin, view of installation, Pink and Gold, 8' fluorescent lamps, 1967 (Museum of Contemporary Art, Chicago)

SYSTEMS ESTHETICS

30

Art Versus Silicon Valley: Are Artists Losing the Conceptual Advantage?

As startups looks towards increasingly abstract schemes, where is the art that answers to today's deeply networked structures?

BY GARY ZHEXI ZHANG IN **OPINION** | 24 SEP 18

In 1968, the conceptual artist and critic Jack Burnham published an essay entitled 'Systems Esthetics'. Burnham began with an acidic critique of the modernist formalism of the day, championed by the likes of Clement Greenberg and Michael Fried, comparing the artistic contributions of 'formalist invention' to the '"new" car of the automobile stylist'. For Burnham, the progression of the modernist art object, like the release of a new iPhone, was all icing and no cake, promising transcendence but always circling back to the same. Instead, he felt that the artistic practice should concern itself with the deep structures forming the cultures around it. Writing at the dawn of the digital age, Burnham argued that information, not objects, would form the structuring paradigm of the emerging socio-cultural environment. He wrote: 'We are now in transition from an object-oriented culture to a systems-oriented culture. Here change emanates, not from *things*, but from *processes*.'

https://www.frieze.com/article/art-versus-silicon-valley-are-artists-losing-conceptual-advantage

Related Articles

- Jack Burnham (1968), "Systems Esthetics", in: *Artforum* (September, 1968
- Edward A. Shanken, "Art in the Information Age: Technology and Conceptual Art," in SIGGRAPH 2001 Electronic Art and Animation Catalog, (New York: ACM SIGGRAPH, 2001): 8-15; expanded and reprinted in Art Inquiry 3: 12 (2001): 7-33 and Leonardo 35:3 (August, 2002): 433-38

Art in the Information Age: Technology and Conceptual Art

Edward A. Shanken

ABSTRACT

Art historians have generally drawn sharp distinctions between conceptual art and art-and-technology. This essay reexamines the interrelationship of these tendencies as they developed in the 1960s, focusing on the art criticism of Jack Burnham and the artists included in the *Software* exhibition that he curated. The historicization of these practices as distinct artistic categories is examined. By interpreting conceptual art and art-and-technology as reflections and constituents of broad cultural transformations during the information age, the author concludes that the two tendencies share important similarities, and that this common ground offers useful insights into late–20th-century art.

In the mid-1960s, Marshall McLuhan prophesied that electronic media were creating an increasingly interconnected global village. Such pronouncements popularized the idea that the era of machine-age technology was drawing to a close, ushering in a new era of information technology. Sensing this shift, Pontus Hultén organized a simultaneously nostalgic and futuristic exhibition on art and mechanical technology at the Museum of Modern Art in New York (MOMA) in 1968. *The Machine: As Seen at the End of the Mechanical Age* included work ranging from Leonardo da Vinci's 16th-century drawings of flying machines to contemporary artist-engineer collaborations selected through a competition organized by Experiments in Art and Technology, Inc. (E.A.T.).

E.A.T. had emerged out of the enthusiasm generated by *nine evenings: theatre and engineering*, a festival of technologically enhanced performances that artist Robert Rauschenberg and engineer Billy Klüver organized in New York in October 1966. E.A.T. also lent its expertise to engineering a multimedia extravaganza designed for the Pepsi Pavilion at the Osaka World's Fair in 1970. Simultaneously, the American Pavilion at Osaka included an exhibition of collaborative projects between artists and industry that were produced under the aegis of the Art and Technology (A&T) Program at the Los Angeles County Museum of Art.

Ambitious as they were, few of the celebrated artist-engineer collaborations of this period focused on the artistic use of information technologies, such as computers and telecommunications. Taking an important step in that direction, *Cybernetic Serendipity*, at the Institute of Contemporary Art in London in

protocols of computer software and the increasingly "dematerialized" forms of experimental art, which the critic interpreted, metaphorically, as functioning like information processing systems. *Software* included works by conceptual artists such as Les Levine, Hans Haacke and Joseph Kosuth, whose art was presented beside displays of technology including the first public exhibition of hypertext (*Labyrinth*, an electronic exhibition catalog designed by Ned Woodman and Ted Nelson) and a model of intelligent architecture (*SEEK*, a reconfigurable environment for gerbils designed by Nicholas Negroponte and the Architecture Machine Group at the Massachusetts Institute of Technology) [1].

Regardless of these points of intersection and the fact that conceptual art emerged during a moment of intensive artistic experimentation with technology, few scholars have explored the relationship between technology and conceptual art. Indeed, art-historical literature traditionally has drawn rigid categorical distinctions between conceptual art and art-and-technology. The following reexamination, however, challenges the disciplinary boundaries that obscure significant parallels between these practices. The first part describes Burnham's curatorial premises for the *Software* exhibition and in-

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