

# Review of "Thinking Machines: Art and Design in the Computer Age, 1959-1989"

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Installation view of Thinking Machines: Art and Design in the Computer Age, 1959-1989. The Museum of Modern Art, New York, November 13, 2017–April 8, 2018. © 2017 The Museum of Modern Art. Photo: Peter Butler

## EXHIBITION REVIEW

*Thinking Machines: Art and Design in the Computer Age, 1959-1989*, Museum of Modern Art in New York City from November 13th, 2017 to April 8th, 2018.

As much as computing technologies are completely interwoven into our lives today, we take their use in creating art for granted. However, this application was not always obvious, and could not be realized

without the shared interests and creativity of both computer scientists and artists in the early days of computing. This evolving relationship between computer technology and art is examined in the exhibition *Thinking Machines: Art and Design in the Computer Age, 1959-1989*, on view at the Museum of Modern Art in New York City from November 13<sup>th</sup>, 2017 to April 8<sup>th</sup>, 2018. Containing pieces mainly from the MoMA's own collection, this exhibition aims to introduce a wide audience to the roles of

computing in art. By taking a broad approach to a large topic in a narrow space, *Thinking Machines* generally achieves its goals of educating casual visitors about the variety of computer arts, though some savvy viewers may wish for a more comprehensive overview.

Situated in a single large room, the exhibition is visually divided by a three-sided partition in the center of the space, occupied by Beryl Korot's multimedia installation, *Text and Commentary* (pictured). The rest of the art pieces and computational artifacts are presented in a chronological order progressing clockwise from the entrance. Upon entering, the visitor is greeted with an early computer animation, Charles Csuri's *Hummingbird* (1968), in which a pixelated drawing of a hummingbird decomposes along invisible axes, scrupulously undoing itself line by line before re-forming. These images are preceded by the words "A COMPUTER FILM," followed by a description of the animation process, a necessary inclusion in the early days of computer animation. Other pieces of note on display include audio from John Cage and LeJaren Hiller's computer-aided composition, *HPSCHD*, an ambitious 1960s project that used programming in musical composition and video projection. Notes from Cedric Price's unfinished "Generator Project" (1978-1980) cover a portion of the back wall, sketching an architectural vision for AI-controlled modular structures that never came to pass, yet presaged similar modern attempts to create "adaptive, flexible, and ultimately responsive architecture." Lee Friedlander's black and white photo series of computer users from the 1980s presents portraits of workers illuminated by the computer terminals where they spend their days. There are also computer-generated graphics from many other artists during these decades, including works by Waldemar Cordeiro and Vera Molnár, as well as various computing artifacts on display, from punchcards and early computer terminals to PCs and supercomputers.

The exhibition seems designed to broaden visitors' perceptions of computer technology's relationship to art. The inclusion of media as diverse as poetry, music, kinetic sculpture and architectural floorplans showcases the scope of artistic interactions with computing and technology during this time period. This variety no doubt subverts many viewers' expectations of what "computer art" looks like.

Furthermore, many pieces are accompanied by notes and plans from the artists as they visualized and designed their projects. These details dispel any preconceived notions that computer-generated art requires less intention and intellectual labor than other artistic processes. Displaying the reams of computer scripts that artist Stan VanDerBeek printed out and annotated to meticulously plan the video art *Poem Field* (1967), or Cage and Hiller's flowcharts for the programs used in *HPSCHD* (1969), heightens appreciation for the thoughtfulness necessary in using computers to create art, especially in the early days of programming.

Perhaps the most radical interpretation of computation can be found in Beryl Korot's *Text and Commentary* (1976-77), which dominates the center of the exhibition space. Entering the alcove past a line of woven black-and-white textiles, the viewer is confronted by five black-and-white videos displaying close-up views of the hands of a weaver working at a Jacquard loom. On the left and right walls hang a series of images whose meaning is not obvious. Upon approaching the right wall, what appear from a distance to be black-and-white photos of woven textile dissolve into careful schematics for weaving patterns drawn by hand on a tiny grid. On the left wall is a bewilderingly detailed plot that turns out to be Korot's own frame-by-frame, five-at-a-time visual drawings of the videos that are playing in the installation, the entire half an hour of each film broken down into painstaking 10-second intervals. The schedule for the videos echoes the precision of the textile patterns and the algorithmic work of the weaver, all culminating in the production of the textiles hanging on display. This presentation of the plans for the art, the record of the process of creation, and the plans for that record all together invites the viewer to see the strong comparisons between the patterns within, demonstrating a fundamental principle of computation: that breaking down a truly complex process into menially simple tasks is not only necessary, but it is also intellectually challenging. By recontextualizing the traditional "women's work" of weaving in this way, Korot's multichannel video installation challenges the perception of this process as a mere "mindless" task.

*Thinking Machines* recognizes that fostering appreciation for the pieces on display requires educating visitors about early computer technology.

This aim can be seen in elements like the description of how punchcards work that greets viewers on the wall facing the entrance, but the exhibit also elevates these tools beyond mere utilitarian concerns by presenting the pieces of technology as works of design and cultural importance in their own right. For example, on the same wall a large pink Mylar sheet displaying a circuit diagram, “V-952 Experimental Logic Chip” written across the bottom in a draftsman’s neat hand, looks like the layout of an impossibly complicated floorplan. The aesthetic elements of technology are emphasized by removing them from their original contexts; other notable artifacts on display, such as the CM-2 Supercomputer and Apple Macintosh home computer, are both important milestones in the history of computing as well as design icons, and are presented in mid-floor displays allowing visitors to circle around them. However, none of the art on the surrounding walls is explicitly connected to these artifacts thematically or by description, highlighting a recurring issue with the exhibition: it is often unclear whether a given piece was included in the exhibition to help the audience visualize the tools available to artists in that era, or to showcase it as a piece of design in itself. Sometimes connections that could be drawn between pieces are not made; for example, one interesting inclusion is a series of “Graphical Icon Sketches” (1980s) by graphic designer Susan Kare. These hand-drawn sketches reveal the low-tech origins of clever pixelated symbols standing for Boot, Exit, and Debug (in which a fly swatter descends on an insect), among others. However, nothing in the description of the artwork signals that Kare’s icons were used in the OS for some of the Apple machines on display just a few feet away. Failing to mention Kare’s influence on the design of the original Macintosh operating system in this context seems like a missed opportunity.

In general, this problem is exacerbated by the brevity of the wall text, which is few and far between. Although this may have been an intentional choice so as not to overwhelm the visitor with information, the unfamiliarity and scope of the subject matter requires context, and this curt approach stunts the development of larger narratives that the exhibition seemed to promise. The exhibition occupies a rather limited space, especially in contrast to the sizable

subject its title invokes. Also, some important artists and movements were either minimally represented or completely omitted, most likely because the exhibition only drew from MoMA’s own collection [1]. In addition, the exhibition does not have a catalog or any kind of merchandise associated with it.

All in all, this exhibition introduces the public to interesting themes in the history of computer art and artifacts that still resonate today. Some elements and themes could be more developed, but for those coming to the Museum of Modern Art to see Van Gogh, Picasso, and Duchamp, it serves as an engaging and educational starting point into a new frontier of art.

## ENDNOTES

[1] For example, concrete art as one of the main roots of early computer-generated art is not mentioned at all; New Tendencies movement is represented by a single poster; and the German “Stuttgart School” including the theorist Max Bense and artists Frieder Nake and Michael Noll, or the Japanese Hiroshi Kawano are omitted.

## BIOGRAPHICAL INFORMATION

Kendra Chilson has a Master’s of Science in Logic, Computation, and Methodology from the Philosophy Department at Carnegie Mellon University. Her research interests include decision theory and the ethics and regulation of artificial intelligence. Specifically, she is concerned with the interplay between norms of rationality and ethics in the development of artificial intelligence, and the possible ramifications of AI advancements for ethics, decision theory, and psychology. In Fall 2018, she will begin a doctoral studentship at the Digital Ethics Lab of the Oxford Internet Institute on the special topic of “Ethics and AI: Challenges and Opportunities.”

Máté Szabó earned his PhD in Logic, Computation and Methodology in the Philosophy Department at Carnegie Mellon University, where he is now a Postdoctoral Fellow. His main interests are in the history and philosophy of computing and mathematics. He is also interested in the cultural and societal impact of computers.