

The House of Arts, Brno; Jean Sammet Collection; and IPSJ Convention

Máté Szabó
Carnegie Mellon University

Amanda Wick
University of Minnesota

Hiromichi Hashizume
National Institute of
Informatics

In this edition of Events and Sightings, Máté Szabó describes “Computer Graphic Re-visited,” a virtual reconstruction of the 1968 Brno exhibition; Amanda Wick details the Deed of Gift from Jean Sammet, an important figure in computer programming languages; and Hiromichi Hashizume discusses the Information Processing Society Japan Convention.

COMPUTER GRAPHIC RE-VISITED

“Computer Graphic Re-visited”—an exhibition curated by Jana Horáková and Jiří Mucha at The House of Arts, Brno, Czech Republic—was on preview 3 to 10 October 2017,¹ with exhibition 21 March to 22 April 2018.²

“Computer Graphic Re-visited” is a virtual reconstruction of one of the earliest exhibitions devoted to computer-generated graphics, which took place in February 1968, in the entrance hall of The House of Arts in Brno. The exhibition was later on view in Jihlava during March and in Gottwaldov (now Zlín) during April of the same year. It was the first such exhibition in the Eastern Block, preceding the Tendencije (Tendency) 4 exhibition, entitled “Computer and Visual Research,” held in Zagreb in August of the same year.^{3,4} It also preceded the famous “Cybernetic Serendipity” exhibition in London, which opened its doors in August of that year.⁵

The virtual reconstruction was on display for the 50th anniversary of the exhibition, from 21 March to 22 April 2018 in the same space, in the entrance hall of The House of Arts in Brno. A preview of the virtual exhibition was already available from 3 to 6 October 2017, as part of the agenda of the 4th International Conference on the History and Philosophy of Computing (HaPoC; <https://hapoc2017.sciencesconf.org>). This review is based on this preliminary version, which was attended by the author, and supplementary material kindly provided by the curators.



Figure 1. Frieder Nake, one of the original participants, “re-visits” the Computer Graphic exhibition from 1968.

Frieder Nake, upon receiving pictures from the opening event of the preview of Computer Graphic Re-visited on 5 October, remarked that, “The ones where I am literally blindfolded by the VR-headset are the most exciting. The man whose job it is to see now sees things that make him feel being lost! What a fantastic invention of the human mind.”

The original “Computer Graphic” exhibition featured around 80 works from Charles Csuri, Frieder Nake, Georg Nees, A. Michael Noll, Leslie Mezei, and Lubomír Sochor. The only Eastern European artist was Sochor from Czechoslovakia.⁶ He was also the only one to use an analog computer to create his graphics. The exhibition was curated by Jiří Valoch, who was then still a student. Valoch, an art critic who later worked as a curator at The House of Arts in Brno between 1972 and 2001, was a practicing artist himself, creating visual and concrete poetry at the time, and conceptual art later.^{7–10}

According to the catalog of the exhibition, Valoch saw computer-generated graphics as part of the concrete art movement: “the graphics themselves undoubtedly significantly enrich the considerably extensive contemporary scale of ‘concrete art’” as “all of the graphics [on display] are characterized by one common feature—an ambition to create aesthetic structures, minimally dependent on a human as a creator.”¹¹ Valoch emphasizes the role of the computer during the process to show how the artists become distant from their own work: “the artworks presented during our exhibition are works of programmed art through and through. they were not created exclusively by man. he only wrote the program, the processing was conveyed to an automatic computer. the execution of this processing into graphic form was given to a drawing machine.”¹¹ (Quotations from the catalog reproduce its orthographic style in which beginnings of sentences are not capitalized.)

Frieder Nake voiced a similar opinion, describing the process of creating computer graphics in the catalog: “a man designs a computer program. the computer works precisely according to the program and delivers the punch card. the punch card is further processed by an automatic drawing machine and is ‘translated’ into the final graphics.” Since the drawing machine “does exactly what the punch card instructs it to do,” Nake emphasizes, “the punch card already represents a special form of drawing.”¹¹ Interestingly, this sentiment gets a nod during the “re-visit” as the artworks are not even plotted on paper anymore.



Figure 2. (a) 3D virtual headset on the pedestal and (b) the virtual reconstruction of “Computer Graphic” by Jiří Mucha, including details of the contemporaneous surroundings of The House of Arts of Brno.

Upon entering “Computer Graphic Re-visited,” the visitor’s attention is immediately drawn to the pedestal in the middle of the large, almost empty entrance hall, which holds a virtual reality (VR) headset and a mouse. In the fully immersive 3D simulation, the VR headset tracks the head movement of the user, and they can “walk around” in the rather large space with the help of the mouse, clicking on the floor instead of taking actual steps. As the image shown in the VR headset is also projected onto a screen placed behind the pedestal, multiple people can enjoy the exhibit at the same time, though the headset clearly offers a quite different experience (Figure 2a). Since the entrance hall contains columns, stairs, a projector screen, and a pedestal with the VR equipment, the person using the headset is guided by a museum staff member.

To take the viewer back in time, the curators paid meticulous attention to the virtual reconstruction of the entrance hall of The House of Arts as it was in 1968 (Figure 3). With the use of historic floorplans and photographs, they recreated not only the entrance hall, but its surroundings as well (Figure 2b). Reconstructing the exhibition itself, however, posed a bigger challenge. There is no itemized list of the exhibited works, and only two photographs were found about the exhibition in Brno. To recover more information, the curators used accounts by the exhibiting artists, Valoch’s correspondence from the time, and photographs from the opening in Jihlava, where the exhibition traveled after Brno. The preview of the virtual reconstruction contained 20 pictures from four artists: Nake, Nees, Noll, and Sochor. The 50th anniversary exhibition featured works from Csuri and Mezei as well, and thus presented work from all the original participants. Besides increasing the number of computer graphics in the virtual reconstruction, the curators enriched the exhibition by including LCD screens displaying some of the graphics, Csuri’s 1968 computer film *Hummingbird*, computer music from Max Mathews,^{12,13} and computer poetry by Jiří Levý¹⁴ and Karel Pala¹⁵ to evoke the atmosphere of the opening in 1968.



Figure 3. (a) The virtual reconstruction of “Computer Graphic” by Jiří Mucha and (b) Frieder Nake in the virtual headset.

“Computer Graphic Re-visited” fits into the postmodern genre of so-called “remembering exhibitions.”¹⁶ This is the contemporary trend of evoking historically important past exhibitions, often through replicating or partially recreating them. What makes this project unique is “employing the technology of fully immersive virtual reality...with virtual 3D simulation”

(www.dum-umeni.cz/en/vystavy/detail/id/290), hence this project also falls under the domain of digital humanities, as research in art history is aided with high-tech tools. And as the curators Jana Horáková and Jiří Mucha remark, the focus on the recreation of the sensory experience of the viewer instead of showcasing the original graphics corresponds to the “sensory turn” in art history, which prefers mediating an experience to the traditional form of historiographical description.¹⁷

As mentioned above, “Computer Graphic Re-visited” will be on display March 2018 in Brno for the 50th anniversary of the original exhibition. By its nature, this exhibition is easy to move and set up, and the curators do plan to “tour” it, although there are no concrete destinations as of now. This unique experiment deserves attention and appreciation, as it reconstructs an exhibition from the first time in history that computing and art intersected. And it is rather fitting that one of the earliest pioneering computer graphic exhibitions is revisited in the form of virtual reconstruction, using the most cutting-edge computer graphic technologies of today.

JEAN SAMMET COLLECTION

In 1990, after a great deal of back and forth, the initial installment of Dr. Jean E. Sammet’s papers arrived at the Charles Babbage Institute Archives (CBIA). These papers included active working files for her own research, personal copies of corporate records from her time working at IBM, and some personal papers. All told, this installment comprised 178 cubic feet of material—with more to come as evidenced by one of the most complex Deeds of Gift ever executed by the Charles Babbage Institute (CBI) and the University of Minnesota Libraries.

The passing of Sammet in May 2017 left a startling absence in the history of computer programming languages; however, it also left a strong legacy in the form of endowments to her alma mater, Mt. Holyoke College, as well as the remaining installment of her personal papers to CBIA. The complexity of the Deed of Gift has meant that the initial installment remained unprocessed since it arrived in 1990; in fact, the boxes have never been opened.

Most people who knew Jean Sammet had three words to describe her—“force of nature.” And, as I observed from my readings of the Deed of Gift and communications between her and former colleagues at CBI, this seems to be an apt description. Sammet was a formidable woman, one who seems to have valued order and truth, and one who had very little patience for disorganization and unnecessary pomp, circumstance, and process.

When we at CBIA were notified of Sammet’s passing and the intention for the remainder of her materials to be transferred to the archives, we revisited the Deed of Gift to better understand the nature of the gift as staff turnover since the original signing meant that no one who authored the Deed of Gift or worked directly with Sammet was available for consultation. In the Deed of Gift, Sammet indicates that the final installment of her papers will consist of “three bookcases, 36 five-drawer file cabinets, and five shelving units of miscellaneous materials housed at a remote storage unit.” Interestingly, the Deed of Gift was signed by more than the usual donor/recipient institution signatories, a representative of IBM in recognition of the fact that a substantial percentage of her papers included corporate records that would typically have been retained by her employer.

Despite the clarity of the installments noted within the Deed of Gift, there is always a recognition that collections tend to expand in intervening years between original and final donations. This was not the case with Sammet’s collection. I visited the collection in situ at a storage company in Silver Spring, Maryland—once to ascertain any possible “expansion” from the original deposition and the condition of materials, and then a second time to do an initial survey and sort the materials to come to CBIA. When I arrived in Silver Spring to meet with the executors of Sammet’s estate and view the contents of the storage units, I was nervous. However, once the doors were opened, I was shocked. Shocked because there was almost exactly the same setup and amount of material listed in the 1990 Deed of Gift—any extra material seemed to have come from her executors as they prepared Sammet’s condominium for sale—and shocked because, aside from a thick layer of dust on cabinets and boxes, the papers and books were pristine. As I sorted through the materials in the file cabinets, boxes, and bookcases, it became immediately

obvious that this collection would be a game changer. Materials included Sammet's research material; drafts and notes of speeches, articles, and editorials; manuscript drafts of her publications; correspondence with other major figures in computing; and tantalizing hints of her strong personality.

Plans for shipping the materials to the University of Minnesota were formed and adapted numerous times as the task of moving the steel case cabinets, boxes, and bookshelf contents, became clearer. Once emptied, the cabinets would result in more than 200 boxes of new material, plus the 60 boxes of material from the shelves. When combined with the original 178-box installment, the Sammet collection would comprise 438 boxes of material, making it the largest collection of personal papers in the archives.

As a major figure in computing, but one often unrecognized when compared to other women in the field, Sammet's collection will be of enormous significance for researchers interested in documenting the acceptance of women in computing as well as in early records of IBM and the evolution in computer programming languages. A small bequeathment in Sammet's will will allow staff to process the now 438 boxes of material, and we look forward to sharing it with you in late 2018.

IPJSJ 80TH NATIONAL CONVENTION REPORT

The Information Processing Society Japan (IPJSJ) held its national convention at Waseda University on 13 March 2018. In the opening ceremony, the President, Professor Shoji Nishio, presented the Information Processing (IP) Technology Heritage plaques to four artifacts. Since the society started its annual heritage certification in 2008, more than 100 artifacts have been selected. You can access the list at <http://museum.ipsj.or.jp/en/heritage/index.html>.

2017 IP Technology Heritage Artifacts

- **Self-correlation coefficient calculator.** Self-correlation computation, which is akin to frequency spectrum analysis, had been costly before the fast Fourier transform (FFT) algorithm was developed. Professor Yoshifumi Tomoda of the University of Tokyo designed a new algorithm for seismic wave analysis. Following the algorithm Fujitsu implemented this machine using relays in 1954. Simplifying a seismic wave into binary form (positive–negative) reduced the computation cost down to 1/100.
- **NEAC series 2200 model 700 package.** The remaining module was from NEC's original mainframe computer released in 1968. Model 700 adopted a high-speed CML IC family to realize 0.5 microsecond integer/0.8 microsecond floating-point additions and subtractions. To achieve high reliability and maintainability, it incorporated diagnostic scan-paths inside the flip-flop ICs to generate system diagnosis data automatically in package tests.
- **NHK TV computer lecture course.** A TV lecture course on computer programming—produced and broadcast by NHK (Japanese national broadcast) educational channel from 1969 to 1975—contained hour-long programs on specific topics like automatic music composition or differential equation solution. Twenty-six lectures made a six-month semester. The program is still remembered by many senior computer engineers today who grew up when computers were rare.
- **Structured programming language.** Developed by Hitachi in the mid-1970s for a programming language of the company's system control computers, SPL's design target was to improve reliability and maintainability for the programs of large-scale embedded system applications, preceding the US Department of Defense's Ada language, which had similar application targets. Since development, it has been utilized by steel manufacturing systems, train control systems, and so on. Officially, the name is the abbreviation of *Software Production Language* to promote quality software production processes.

The Satellite Museum of Historical Computers

The IPSJ has also been certifying satellite computer museums since 2008, with the hope for a main museum of historical computers in Japan. This year, the Hitachi Omika Control Historical Materials Room was named the 10th satellite museum, where it exhibits the company's history, main products, control technology, and production technology for each application field chronologically.

Poetry and Truth from Japanese Computer Pioneers

Two computer science pioneers were invited to speak on the opening day of the IPSJ convention.

The first talk this year was Professor Katsuhiko Kakehi's "Light of ALGOL—Pursuing Programming Languages." Kakehi (Professor Emeritus, Waseda University) became a faculty member at the University of Tokyo right after graduating. His first job was translating FORTRAN language manuals into Japanese. He had to translate some terms like *IF clause* into Japanese using Chinese characters (as commonly done for scientific terms), but because of the ambiguity of Chinese character readings in Japanese, the translated term was read like *IF songs* (the Chinese character *clause* has another meaning *folk song*). As a computer language specialist, he engaged in the standardization of new languages like ALGOL, Ada, and so on. Later when he translated the Knuth's famous textbook *The Art of Computer Programming*, he proposed a number of new translations of technical terms using Chinese characters.

The second speaker was Professor Seishiro Tsuruho who was director of the NTT Software Research Labs and is currently president of HAL Tokyo computer school. When he was at NTT, he summoned many researchers from divisions who had been accused that they were "only toying with programming" in their offices. At the labs, however, he encouraged these research styles and protected them from the company's higher management. One researcher wrote a chess program and found mistakes in a medieval chess textbook. Professor Tsuruho allowed him to publish a research paper persuading the managers that it was useful for the analysis of communication networks.

REFERENCES

1. "Computer Graphic Re-visited," J. Horáková and J. Mucha, curators, The House of Arts, Brno, 2017; <http://www.dum-umeni.cz/en/vystavy/detail/id/290>.
2. "Computer Graphic Re-visited 2.0," J. Horáková and J. Mucha, curators, The House of Arts, Brno, 2018; <http://www.dum-umeni.cz/en/vystavy/detail/id/322>.
3. *A Little Known Story about a Movement, a Magazine, and the Computer's Arrival in Art: New Tendencies and Bit International, 1961–73*, M. Rosen, ed., Cambridge: MIT Press, 2011.
4. A. Manosch, *New Tendencies: Art at the Threshold of the Information Revolution (1961 - 1978)*, Cambridge: MIT Press, 2016.
5. *Cybernetic Serendipity: the Computer and the Arts*, J. Reichardt, ed., London: Studio International, 1968.
6. M. Šperka, "The Origins of Computer Graphics in the Czech and Slovak Republics," *LEONARDO*, vol. 27, no. 1, 1994, pp. 45–50.
7. J. Valoch, "Concrete Poems," *Anthology of Concretism, Special Issue of the Chicago Review*, E. Wildman, ed., vol. 19, no. 4, 1967, pp. 62–63.
8. J. Valoch, "Computer. Creator or Tool?," *A Little Known Story about a Movement, a Magazine, and the Computer's Arrival in Art: New Tendencies and Bit International, 1961–73*, M. Rosen, ed., Cambridge: MIT Press, 1968, pp. 283–284.
9. J. Valoch, "Illustrations," *Chicago Review*, vol. 26, no. 4, 1974, pp. 47–51.
10. H.U. Obrist, "Interview with Jiří Valoch," *The Czech Files*, Zürich: JRP/Ringier; Dijon: Les Presses du Réel, 2014, pp. 110–121.
11. J. Valoch, "Catalog of Computer Graphics '68," 1968.

12. M. Mathews, "The Digital Computer as a Musical Instrument," *Science*, vol. 142, no. 3592, 1963, pp. 553–557.
13. M. Mathews, "Interview with Max Mathews by Curtis Roads," *Computer Music Journal*, vol. 4, no. 4, 1980, pp. 15–22.
14. J. Levy, "Generative Poetics," *Sign, Language, Culture*, G.J. Algridas, ed., The Hague: Mouton, 1970, pp. 548–557.
15. Z. Nevěřilová and K. Pala, "Generating Czech Iambic Verse," *Proceedings of The 9th Workshop on Recent Advances in Slavonic Natural Languages Processing*, 2015; <https://nlp.fi.muni.cz/raslan/raslan15.pdf#page=133>.
16. R. Greenberg, "Remembering Exhibitions': From Point to Line to Web," *Tate Papers*, vol. 12, 2009; www.tate.org.uk/research/publications/tatepapers/12/remembering-exhibitions-from-point-to-line-to-web.
17. J. Horáková and J. Mucha, "Computer Graphic Re-visited," 2017; www.dumumeni.cz/data/galleries/290/leaflet/en/CG_Booklet_ENG.pdf.

ABOUT THE AUTHORS

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. Contact him at mshabo@andrew.cmu.edu.

Amanda Wick is the archivist at the Charles Babbage Institute, University of Minnesota Libraries. Contact her at abwick@umn.edu.

Hiromichi Hashizume is a professor in the National Institute of Informatics' Information Systems Architecture Science Research Division. Contact him at has@nii.ac.jp.