

## The Director's Letter



*Ed Kuge, Gwen Bell, and Masateru Takagi from Tokyo with a souvenir tape.*



*Ted Johnson, Massachusetts Secretary of Commerce Evelyn Murphy, Minuteman Technical High School student and robot arm cutting the ribbon, Gordon Bell, Gwen Bell, Bill Poduska, and John Lacey.*

*Visitors at the opening at the close of the tape cutting ceremony.*



It's great to be open again!

About 1500 people came to the opening on November 13th, including 100 from outside of Boston. Masateru Takagi, Vice President of NEC in Japan, traveled the longest distance to represent Dr. Kobayashi at this historic event.

The formal "ribbon cutting" was in keeping with the Museum. "Shag" Graetz, who worked night and day the last week to get the PDP-1 up and running, prepared the program that punched the paper tape reading "The Computer Museum Grand Re-Opening 13 November 1984." The students at Minuteman Technical High School then programmed an Apple II to control a robot arm that cut the 1960-era tape. The new exhibitions at the Museum range from vacuum-tube computing to the uses of the new personal computers, professional workstations, and computer networks.

The re-opening and re-birth of The Computer Museum took a long time in the making. Marlboro provided an excellent beta-test site for historic exhibits but gave us little experience about interactive computing within exhibits.

After the Board of Directors approved the move in May 1983, planning started immediately. A team of "developers" was put together. Dr. Oliver Strimpel, then Curator of Mathematics, Computing, and Navigation at The Science Museum, London, agreed to come as Visiting Curator and develop a highly interactive gallery devoted to computer graphics and image processing. At the completion of this work, Oliver agreed to stay on as the Curator of the Museum. Oliver subdivided the tasks in the image gallery with Geoffrey Dutton and Andrew Kristoffy as developers.

I undertook the role of curator of the rest of the exhibitions with "developers" for each segment: Paul Ceruzzi (who is now at the Air and Space Museum) on the 1950-69 Timeline; Beth Parkhurst on the integrated circuit and Apollo Guidance Computer exhibits; Carl Sprague on the "See It Then Theatre"; Meredith Stelling on the ANFS/Q7, SAGE, and UNIVAC exhibits; Gregory Welch on the IBM 1401 Room, Seymour Cray, and Manufacturing exhibits; and Bill Wisheart on the personal computer exhibit.

*Special thanks to Companies and Organizations who gave time, machines, programs, and materials to make the opening possible.*

Adage, Inc.  
Almac Moving & Storage  
Altek Corporation  
Apollo Computer, Inc.  
Apple Computer, Inc.  
Artek Communications Corporation  
AT&T  
Bitstream, Inc.  
Boeing Commercial Airplane Company  
Boris Color Laboratories  
CADCentre, Ltd.  
Capitol Children's Museum  
C-Ware Corporation  
Commodore Business Machines, Inc.  
Compaq Computer Corporation  
Concord Caterers  
Condor Corporation  
Control Data Corporation  
Coopers & Lybrand  
Cranston Csuri Productions  
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Data General Corporation  
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Digital Equipment Corporation  
Digital Productions, Inc.  
DUCK Productions  
Fiber Optic Communications Specialists  
Fibronics International, Inc.  
General Computer Corporation  
Germain-Lawrence-DRK, Inc.  
Grinnell Systems Corporation  
Hewlett-Packard Company  
Institute of Advanced Study, Princeton University  
Intel Corporation  
International Business Machines Corporation  
Interactive Computer Products  
International Data Group  
Jerry Valenta & Sons, Inc.  
Jet Propulsion Laboratory  
Jung/Brannen Associates, Inc.  
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KAYPRO Corporation  
Lawrence Livermore National Laboratory  
Learning Corporation of America  
Lexidata Corporation  
Lockheed Georgia Company  
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Lucasfilm Ltd.  
MASSCOMP  
Mentor Graphics Corporation  
Micro Control Systems, Inc.  
Microsoft Corporation  
Microsystems Engineering Corporation  
Massachusetts Institute of Technology  
MITRE Corporation  
Mono Systems Corporation  
NASA  
National Museum of American History  
National Museum of Science and Technology, Ottawa  
National Semiconductor Corporation  
NEC Corporation  
Nike, Inc.  
Northern Energy Homes  
Omnibus Computer Graphics Center, Inc.  
Ontario Science Center  
Oregon Software, Inc.  
Pencept, Inc.  
Rand Corporation  
Rossin Greenberg Seronick and Hill  
Scriptel Corporation  
Siecor Corporation  
SIGGRAPH  
Skidmore Owings & Merrill  
SRI International  
Summagraphics Corp.  
Tektronix  
Thayer School of Engineering, Dartmouth College  
The Travelers Companies  
United States Air Force  
United States Geological Survey  
University of Massachusetts at Amherst  
University of Tokyo  
University of Utah  
VCA Teletronics  
Visual Technology, Inc.  
Wang Laboratories, Inc.  
XtraSoft

Oliver, the developers and I then started to work with a broad set of advisors who helped us refine ideas, collect the materials and computers, and some of whom eventually worked on the actual programs and installations. The architectural firm of Crissman and Soloman were chosen to integrate the ideas of the developers with the existing structure of the 1880's wool warehouse and come up with suitable exhibition space. Meredith Stelling took on the role of supervising the contractors, Hawkins and Co., and the graphics designers, Maxwell Design.

When we worked out the schedule, all planning was to be complete by June 1, construction complete in early October, with a month for exhibit installation. It never worked that way. Everything happened at the end. And is still happening. When we opened with over half an acre of exhibits in five large rooms, each was about 70% complete. Over the winter, the exhibits will be finished and some will start to evolve even further as we watch how visitors are reacting.

By June 1, the developers had their scripts completed and then seriously sought to implement them. One exhibit that we knew we wanted to animate was on the Apollo Guidance Computer. Hewlett-Packard agreed to give us an HP-150 with a touch sensitive screen and the use of Tom Horth in their Andover facility as a consultant. Draper Laboratory's Malcolm Johnston coordinated the work of our summer intern, Andy Gerber, in order to accurately simulate the astronaut's console. But by July 1, the HP-150 had not appeared. Andy was more than ready to get started on the machine. Tom Horth came up with a loaner so that the project could begin in earnest. By mid-August the prototype program was tested and it was slow. Tom arranged to get us a faster compiler. Then, the actual machine came in September after Andy had gone back to MIT.

Another interactive exhibit that we wanted from the outset was one that communicated the concept of "discernability," conveying the meaning of pixel sizes, grey levels, and false coloring in image processing. Masscomp agreed to take on this exhibit. Lorrin Gale, Vice President of Engineering, personally made two trips to the Museum with several programmers. The project was specified and Masscomp produced a special two terminal machine. Each terminal was connected to a tv camera that they supplied. One camera is focussed on the face of the visitor, who then can change the pixel size and grey levels of his own image. The other camera is focussed on the view of Boston. The visitor can then color in the grey levels to create an "Andy Warhol-like painting." The engineers at Masscomp got excited about this project (one that has little hope of ever being a product) and kept assuring us that it would be exactly what we specified. Oliver visited it at the plant three days before opening and was satisfied. Masscomp delivered the two exhibits exactly one hour before the preview for the Board of Directors!

Last July, Oliver, Geoff Dutton and I went to SIGGRAPH, where, among other things, we collected "the teapot" from Martin Newell and got lines on other exhibit material. As I write this on New Year's Day, the "teapot" exhibit is not yet complete. Its components are numerous. Adage gave us a terminal connected via a fiber-optic cable, donated by Fibronics, to the VAX 750 contributed by Digital Equipment Corporation. The "teapot" simulation is still being programmed by Allan Sadoski, a volunteer from the Adage user group, and his 16-year old "hacker friend" Neil Day. They are spending most weekends at the Museum, providing a living, working exhibit. Parallel to this simulation, the Design and Production staff of The Children's Museum is building a stage set for the real teapot where its lighting can be manipulated manually. This should be complete in mid-winter.

IBM Fellow and Harvard Professor Benoit Mandelbrot became very excited about producing an interactive exhibit of his concept of fractals. He produced a program on the IBM XT but it lacked sufficient variation. A prolific author, he discovered, as we had, that an interactive exhibit needs to have a lot more variety than the illustrations within an article. A week prior to

opening, the program was finally acceptable but we had no machine to run it on. Our two IBM XTs were committed to other programs. Dr. Mandelbrot arranged for another XT for this exhibit and it arrived (minus several critical parts) three days before the opening.

One exhibit that arrived complete and wonderful a full week before opening was a video of the view done by Dean Winkler and John Sanborn of VCA Teletronics. In August, they came up from New York and cavorted on top of the roof videotaping the view. They talked to us, looked at the logo and some of our concepts, and then spent over 200 midnight hours of editing with the very fancy frame-buffering equipment to produce a three-minute spectacular of the view popping out in different colors with the core plane logo flying over it and skyline circling a pyramid. In this case, the creators were given artistic freedom and went wild in making a very spectacular video. The equivalent spot made commercially would cost hundreds of thousands of dollars. Dean Winkler and John Sanborn will come up and explain to all how this was done in a talk on Sunday, March 17.

Yes, it's great to be open. Three "beta-test" talks were given in December, and now the full schedule of talks for the spring appears on the inside back cover. These are planned for every Thursday night at 7 and Sunday at 4 from February 7 to April 28. The next issue of the *Report* will have an article on one of the December talks—a conversation between Steve Levy and some of the heroes featured in his book *Hackers*. For those of you who can't get to the talks, we'll try to bring you the very best in the *Report*.

Best wishes for the New Year.



Special thanks to the individuals who gave their time to make the opening possible.

Frederick Ahrens	Marion Marill
Charles Bachman	Nelson Max
Constance Bachman	Benoit Mandelbrot
Steve Barbell	Norman Margolus
John Barstow	Salvatore Maulucci
Karma Beal	Patrick McGovern
Gordon Bell	James McKenney
Stephen Benton	Mary McKenney
Jim Blinn	John McKenzie
Loren Carpenter	Timothy McNeil
George Casaday	Carver Mead
Patrick Caulfield	George Michael
Kelly Chan	Armin Miller
Tom Charland	Richard Mueller
S. H. Chasen	Kent Multer
Pat Chavez	Robert Nathan
Duncan Chesley	Martin Newell
Robert Chinn	Jack Nolan
Robert Claussen	Robert Noyce
Harold Cohen	Charles Owen
Rob Cook	Michael Parker
David Corbishley	Ted Paull
Neil Day	John Payne
Vince Dirico	Jamie Pearson
John Doerr	Nicholas Pettinella
David Donaldson	Cliff Pitz
Greg Duckworth	William Poduska
Bill Dunbar	Tom Porter
Art Durinski	Ed Potter
Richard Eckhouse	Patrick Purcell
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Alan Kotok	Richard Voss
Ted Kuklinski	Jon Ward
John Lacey	Steve Watson
Barth Lentini	Patrick Weidhaas
Ann Lewin	James Weider
Ralph Linsalata	David Weimer
Donald Lynn	Herbert Willman
Ian MacLennan	Dean Winkler
	Stephen Wolfram
	David Zeltzer