

300 Congress Street
Boston, MA 02210

(617) 426-2800

FACT SHEET

BOSTON OPENING

November 14, 1984

BACKGROUND

In 1974, Ken Olsen, President of Digital Equipment Corporation, and Bob Everett, President of MITRE Corporation, saved the MIT Whirlwind computer from the scrapheap. They determined a need to preserve the history of computers and in 1982 The Computer Museum was founded as a public, non-profit organization. The only museum in the world devoted solely to people and computers and their impact on one another, it has the most comprehensive collection and exhibitions on this subject in the world.

FACILITIES

53,000 square feet; seven exhibition galleries; 275-person auditorium (3,200 square feet); Museum Store.

ANNUAL OPERATING BUDGET

2.1 million. Income sources: contributions - 32%; admissions - 21%; Museum Store - 23%; corporate and individual memberships - 19%; functions - 6%; other - 5%.

EXHIBIT HIGHLIGHTS

Over 150 interactive exhibits, including:

- THE WALK-THROUGH COMPUTER™ 2000
- THE NETWORKED PLANET: Traveling the Information Highway™
- ROBOTS & OTHER SMART MACHINES™ and The Robot Theater™
- TOOLS & TOYS: The Amazing Personal Computer™
- PEOPLE and COMPUTERS: Milestones of a Revolution™

COLLECTION

1,500 artifacts; 1000 photographs; 350 videotapes and films; and extensive technical documentation.

AUDIENCE

135,000 visitors per year (45% students); millions served through the Exhibits Kits Program, Educational Activities Packet, educational videos and other materials.

MEMBERS

1,200 individuals from 45 states and 13 countries;
150 corporate members worldwide.

MUSEUM BOARD

24 trustees; 28 overseers

Chairman: Charles Zraket; Treasurer: Nicholas A. Pettinella

STAFF

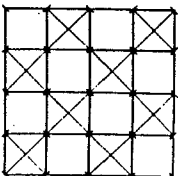
Executive Director: Oliver B. R. Strimpel
Director of Collections: Gwen Bell
Director of Development: Betsy Riggs
Director of Education: Marilyn Gardner
Director of Exhibits: David Greschler
Director of Marketing: John Marchiony
Director of Public Relations: Gail Jennes
Director of West Coast Office: Carol Welsh

MUSEUM HOURS

SUMMER HOURS: Open daily, 10am - 6pm
WINTER HOURS: Tuesday - Sunday, 10am - 5pm

ADMISSION

\$7.00 for adults; \$5.00 for students, children 5 and up, and seniors;
free for Museum members and children 4 and under.
Half price Sunday 3pm - 5pm. Group rates by arrangement.



The Computer Museum

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CONTACT:

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PROFILE OF THE COMPUTER MUSEUM

The Computer Museum is the only museum in the world devoted solely to people and computers and their impact on one another. Located on Boston's waterfront, the Museum has assembled the most extensive collection of historical computers and robots in the world, with over 150 dynamic hands-on exhibits, the award-winning Walk-Through Computer™, two theaters, and a multimedia robot show.

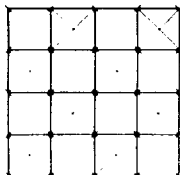
An independent, non-profit institution with an international audience and membership, The Computer Museum stands on the cutting edge of the worlds of both computing and museums. It shows people of all ages and backgrounds how computers have touched all aspects of modern life, from business, education, and health to entertainment and art.

"The museum has a vital role to play in inspiring and educating the public about this dramatic new technology," said Dr. Oliver Strimpel, the Museum's Executive Director. "The medium of dynamic interactive exhibits we offer provides a compelling complement to traditional educational efforts."

Exhibits and Collections

In 1987, The Computer Museum signed an unprecedented joint collecting agreement with the Smithsonian Institution, National Museum of American History. It will ensure that the historic computer artifacts are preserved and will enhance the research and exhibition potential of both institutions.

Reflecting on the evolution of The Computer Museum, Dr. Strimpel observed, "This is a third-wave museum. The first-wave museums showed off huge collections with little explanation. The second-wave were totally devoted to informal education with no collections. We do both.



Away from the classroom, library and computer room, The Computer Museum offers a living environment in which to explore the world of computers and learn about the past, present and future of this technological revolution and the people making it.

THE NETWORKED PLANET: Traveling the Information Highway™: This \$2 million exhibit opened in November 1994 as a microcosm of global networks. The only exhibit of its kind in the world, it reveals the inner workings of large scale "invisible" networks that we rely on, such as global banking systems, telephone networks, and aircraft tracking systems. It also provides access to networking opportunities at home, work and school through first-hand experiences with the Internet. This exhibit involved the creative and technical expertise and support of over 200 people from over 50 corporations and institutions around the world. Sponsors include Sprint; National Science Foundation; National Endowment for the Humanities; Apple Computer, Inc; Hewlett-Packard Company; Novell, Inc.; NYNEX Corporation; Stratus Computer, Inc.; S.W.I.F.T.; Banyan Systems Inc.; Chipcom Corporation; Cisco Systems, Inc.; Fannie Cox Foundation; Harvard Community Health Plan Foundation; Morgridge Family Foundation; Pisces Productions; Paul and Kathleen Severino; Sun Microsystems, Inc.; Thomson Financial Services, and Wellfleet Communications, Inc.

ROBOTS & OTHER SMART MACHINES™: This interactive gallery lets visitors explore the intriguing fields of robotics and artificial intelligence. The original robot character "R2-D2,"™ from the *Star Wars* Trilogy, leads visitors into a futuristic space where over 25 notable robots and 30 interactive computer stations await. Visitors can explore just how "smart" machines are and are not, while trying out the latest applications in creativity, artificial life, games, problem solving and communication. Also featured within the gallery is *SMART ART: The First Artificial-Intelligence-Based Arts Exhibition*. This gallery enhancement opened in February 1993 and was funded by the American Association for Artificial Intelligence; Digital Equipment Corporation; Gensym Corporation; Houghton Mifflin Company; MAXIS; SuperMac Technology; Sun Microsystems, Inc.; Edward A. Feigenbaum and H. Penny Nii; and others. Original sponsors include: C. Gordon Bell; Russell Noftsker; the founders of Symbolics, Inc.; and others.

TOOLS & TOYS: The Amazing Personal Computer™: The \$1 million, permanent exhibit launched the Museum's 10th anniversary year and shows the versatility of this remarkable machine for people's work, play, learning, and communication. Multimedia, graphics, music, simulations, games, and groupware are featured on nearly 40 interactive stations. The entire exhibit has been custom-designed and illustrates leading-edge personal computer applications. *TOOLS & TOYS* opened in June 1992 and was funded by William H. Gates, III; The Kapor Family Foundation; Steve Wozniak; Apple Computer Inc.; Digital Equipment Corporation; Raytheon Company; Cabot Corporation Foundation; 3COM Corporation; and others.

PEOPLE AND COMPUTERS: Milestones of a Revolution™: The Museum's single largest exhibition traces the evolution of computing from a handful of costly electronic giants in the 1940s to the millions of desktop computers and microprocessors in use today. Visitors travel through "time tunnels" to nine milestones tracing this evolution. The centerpiece of each is a life-size re-creation of a computer environment typical of a major era. The displays of the award-winning \$1 million exhibit draw upon the Museum's collection of vintage computers and are amplified by interactive stations, films and videotapes. *PEOPLE AND COMPUTERS* opened in June 1991 and was funded in part by the National Endowment for the Humanities; Digital Equipment Corporation; International Business Machines Corporation; Apple Computer, Inc.; Lotus Development Corporation; Matsushita Electric Industrial Company, The MITRE Corporation; The Travelers Companies; Unisys Corporation; and others.

UNDER CONSTRUCTION (Opens to the public October 21, 1995)
The "New" Walk-Through Computer™ The "New" Walk-Through Computer is The Computer Museum's networked, multimedia upgrade of its giant personal computer. The museum's cornerstone exhibit, it's a working model of a PC the size of a two-story house, packed with state-of-the-art technology—just like the kind anyone can buy today at a computer store. More than 30 hands-on experiences throughout the exhibit bring each new, over-sized component to life. Visitors to the exhibit can put the huge PC through its new paces. For example, they take charge of the whole computer by controlling the execution of instructions at the seven-foot-square Pentium processor. Lights representing the flow of information race out along the computer's buslines to carry out visitors' commands. Or, visitors can answer the giant computer's incoming e-mail, update its database, explore full-motion video and stunning images, and play with text on a 12-foot-tall color monitor by rolling and clicking on the car-sized mouse.

Sponsors of the "new" Walk-Through Computer include: Cirrus Logic, Inc., Intel Corporation, 3Com Corporation, Adaptec, Inc., American Power Conversion (APC), Hayes Microcomputer Products, Inc., Kensington Microware Ltd., NEC Technologies, Inc., Philips Electronics, Phoenix Technologies Ltd., Quantum Corporation, and Texas Instruments.

History

The collection was started in 1974, when Ken Olsen, then-president of Digital Equipment Corporation, and Robert Everett, then-president of MITRE Corporation, rescued the MIT Whirlwind computer -- the world's first real-time, parallel, vacuum-tube computer with a core memory -- from the junkpile. This started Olsen and Digital on a mission to collect and save important early era computers.

By 1979, the collection had grown to the extent that Digital officially opened the world's first computer museum in Marlboro, Massachusetts. The collecting and exhibiting efforts broadened to serve the whole industry and the general public. Thus, in 1982, the Museum was incorporated as an independent, non-profit institution with its own Board of Directors.

By 1984, the Museum had moved to its current home in a stylishly renovated historic building on Boston's waterfront. The Board of Directors grew from 18 to 46 members, representing leaders in industry, business and academia. In 1993, after a Board vote, the original governance of the Museum changed to a 25-person Board of Trustees with fiduciary responsibility for governing the Museum and a 28-person Board of Overseers with a mandate to shape planning and development.

Features

Every year, the Museum welcomes 135,000 visitors from around the world. Museum membership, both individual and corporate, continues to increase in number and geographic diversity.

Some 1,500 artifacts, 1,000 photographs, and 450 videotapes and films are the basis of the Museum's rare and growing collection from early mechanical devices to modern technology. The collection regularly attracts scholars, researchers and journalists from around the globe.

Millions of others are also served by the Museum's educational video *How Computers Work: A Journey Into The Walk-Through Computer*TM, and through the Exhibit Kits

program, which exports software programs from the Museum's most effective interactive exhibits to museums and science centers around the world.

Via a series a special of programs and events, the Museum has become a forum for great computer minds and pioneers, industry leaders, educators, scientists and artists, who share their ideas and experiences while creating an oral history of computing. Topics have ranged from the latest in robotics and artificial intelligence or industrial development to new applications in medicine, education, business or the arts.

Among the featured speakers: Marvin Minsky, co-founder of MIT's Artificial Intelligence Laboratory; Steve Wozniak, co-founder of Apple Computer; Raymond Kurzweil, pioneer of the music synthesizer and Kurzweil Reading Machine™; J.W. Forrester, Whirlwind builder; and the late Admiral Grace Hopper, inventor of the first program compiler.

At the Breakfast Seminar Series, offered to the Museum's Corporate members and their guests, industry leaders and innovators address important trends in computing. Recent speakers included John Morgridge, Chairman CISCO Systems; Carl Ledbetter, President AT&T Consumer Products; Jim Manzi, Chairman & CEO Lotus Development Corporation; and Robert Metcalfe, Vice President/Technology International Data Group.

The Museum also regularly celebrates events in computing history, such as the 40th anniversary of ENIAC in 1986 and the 25th anniversary of computer games in 1987. In 1988, to benefit its educational programs, the Museum sponsored the world's first Computer Bowl, which is now an annual classic contest of technological know-how between computer luminaries on the East and West Coasts. The Computer Bowl® has raised over \$1.7 million in donations and in-kind support since 1988.

Museum publications include catalogues, brochures, educational activities packets, *The Computer Museum NEWS*, and the *Annual Report*. Videotapes, films, printed materials, and photographs on the history of computing are available to advanced students and scholars for research.

The Museum regularly offers special tours and group rates to students and educators. Also, throughout the year, contests, robot-building workshops and specially designed exhibit-based activities, talks on artificial intelligence and computer graphics, computer music and art, and workshops for teachers are featured.

In addition to the galleries, the Museum features a store on the lobby level, which has everything from state-of-the-art microchip jewelry, T-shirts, posters, and chocolate "floppies" to books, educational slide sets, and audiotapes.

The Museum's galleries are available on an exclusive basis for special events for groups of 12 to 850 people. In addition, two versatile function rooms with stunning views of the Boston skyline are available for groups of up to 275 people. Corporations and non-profit organizations hold more than 100 functions a year at the Museum, from annual meetings, lectures and press conferences to parties, receptions and dinners.

Funded through corporate and individual support, admissions, and foundation and government grants, the Museum offers members free subscriptions to *The Computer Museum NEWS* and *Annual Report*, invitations to its events and exhibit openings, free admission and a 10% Computer Museum Store discount.

Location

On Museum Wharf at 300 Congress Street, Boston, the Museum is easily accessible by public transportation (two blocks from South Station and the MBTA Red Line) and only minutes away from Logan International Airport and Boston's financial district. Parking is available on streets and at nearby parking garages. Fees vary.

Museum Hours/Admission/Information

WINTER: Tuesday-Sunday 10am-5pm; **SUMMER:** Daily 10am-6pm. Public tours given daily. **ADMISSION:** \$7 adults, \$5 students and seniors, children 4 and under and members free. Half price Sunday 3pm-5pm. Physically challenged visitors will find all Museum exhibit areas accessible.

For recorded information and a current listing of special events, call the Talking Computer at 617-423-6758. To reach the Museum business offices, call 617-426-2800. Computer Museum information is available via the Internet at our Web homepage <http://www.tcm.org>. Museum staff are also accessible through the Internet by using the staff person's last name in the following format **name@tcm.org**.

"R2-D2" is a trademark of Lucasfilm and used under authorization

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THE COMPUTER MUSEUM EXHIBITS

THE NETWORKED PLANET: Traveling The Information Highway™

In one hour, visitors to this \$2 million dollar exhibit, can see, feel, and use the "information highway" and understand when and how it touches them. A July 1994 Harris poll showed that 48 percent of adult Americans have heard of the information highway, however, most of them don't know much about its key components. *THE NETWORKED PLANET* was built to address this confusion. The only exhibit of its kind in the world, the exhibit is designed as a ride along the information highway with electronic tour guides at every stop. Visitors are issued a Key Card when they log in and are asked to select a "Network Guide," who will explain both the technology and impact of the network being highlighted. Concerns about privacy, information overload, and life and love in the new electronic age are raised. The exhibit reveals the inner workings of a large scale "invisible" networks that we rely on, such as global banking systems, telephone networks, and aircraft tracking systems.

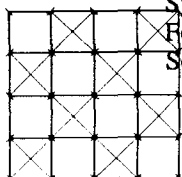
Large-scale "Invisible" Networks

- Travel down a 3D animated telephone line and find out how network connections (e-mail, cellular calls or fax) are made over the phone system.
- Track the location of all commercial airplanes in the sky across the USA.
- Follow the flow of over \$3 trillion around the globe each day throughout the S.W.I.F.T. banking network.

Personal Tools

- Discover the Internet, using the "Internet Sampler" to explore various companies and communities available on the world's largest computer network.
- Find out how life on the information highway can impact your health and what preventive measures you can use to stay healthy.

[*THE NETWORKED PLANET* is made possible with support from: **Principal Sponsor:** Sprint. **Major Underwriters:** National Science Foundation, National Endowment for the Humanities. **Major Sponsors:** Apple Computer, Inc., Hewlett-Packard Company, Novell, Inc., NYNEX Corporation, Stratus Computer, Inc., S.W.I.F.T. **Supporting Sponsors:** Banyan Systems Inc., Chipcom Corporation, Cisco Systems, Inc., Fannie Cox Foundation, Harvard Community Health Plan Foundation, Morgridge Family Foundation, Pisces Productions, Paul and Kathleen Serverino, Sun Microsystems, Inc., Thomson Financial Services, and Wellfleet Communications, Inc.]



The Walk-Through Computer™ 2000

The Walk-Through Computer™ 2000 is The Computer Museum's networked, multimedia upgrade of its giant personal computer. The museum's cornerstone exhibit, it's a working model of a PC the size of a two-story house, packed with state-of-the-art technology—just like the kind anyone can buy today at a computer store.

Venturing into the giant machine, visitors grasp the magic of the latest technology firsthand, seeing for themselves what it has to offer. The million-dollar upgrade is driven by a high-speed Pentium® processor, surrounded by multimedia boards, connected to a CD-ROM drive, and networked—at 50 times scale.

Journey into the Multimedia, Networked PC

Visitors to the exhibit can put the huge PC through its new paces by clicking and rolling a car-sized mouse. They can answer the giant computer's incoming e-mail, add themselves to its database, explore full-motion video and stunning images, and play with text on a 12-foot-tall color monitor.

More than 30 hands-on experiences throughout the exhibit bring each new, over-sized component to life. For example, visitors take charge of the whole computer by controlling the execution of instructions at the seven-foot-square Pentium processor. Lights representing the flow of information race out along the computer's buslines to carry out visitors' commands.

- At the hard drive, saucer-sized heads fly to scoop data off the eight-foot platters. Visitors flip magnets to write messages and spin the disc to read them.
- At a huge video board, loaded with video memory and processing chips, the big computer displays a digital image of visitors' faces. Visitors can manipulate their own images to see how easily reality can be distorted in digital pictures.
- At the ceiling-high audio card, visitors enhance or distort the sound of their voices to grasp how computers store and manipulate sound.
- At an eight-foot-long CD-ROM player, visitors write a message onto coaster-sized pits on a six-foot compact disc and use a laser to extract the data.
- At the RAM, visitors fiddle with bits of the computer's temporary memory and see what happens when they shut the power off.

- At an over-sized modem, visitors create and send their own messages over the phone lines to learn the nuts and bolts of how computers communicate with each other, such as when sending electronic mail or hooking up to global networks like the Internet.

[**Principal Sponsors:** Cirrus Logic, Inc., Intel Corporation. **Major Sponsors:** 3Com Corporation, Adaptec, Inc., American Power Conversion (APC), Hayes Microcomputer Products, Inc., Kensington Microware Ltd., NEC Technologies, Inc., Philips Electronics, Phoenix Technologies Ltd., Quantum Corporation, and Texas Instruments.]

ROBOTS & OTHER SMART MACHINES™

This enhanced interactive gallery, located on the 6th floor and measuring 2,750 square feet, allows visitors to explore the intriguing world of robotics and artificial intelligence. The only one of its kind in the world, this gallery addresses the fundamental question: Can machines really think and act like human beings? The original robot character "R2-D2"™ from the *Star Wars* Trilogy leads visitors into a futuristic space where over 25 notable robots and 30 interactive computer stations await. These stations introduce visitors to some of the rapid advances in artificial intelligence, as well as to the latest applications in creativity, games, problem-solving and communication.

Robots: Press a button and watch as more than 25 robots come to life in *The Robot Theater*. This dramatic 10 minute multi-media presentation of notable robots from around the world features Shakey, the first "intelligent" mobile robot; Sea Rover, the smallest underwater robot; NASA's Mars Land Rover; the Omnibot 2000, a robot toy which can be programmed to move, talk, and carry objects; and Charlie, a robot designed to assemble products for the computer industry. Visitors will also find out how robots "see," "touch," "hear," and move by communicating with contemporary robots and other smart machines that spell their names with alphabet blocks and recognize the sound of their voices. Also featured:

The Reading Edge™-- Using a state-of-the-art character-recognition program, see how a computer scans printed material and converts it into machine-readable text and then voice.

Color the States-- Give a computer instructions about how to color a map of the United States so that no two bordering states are the same color.

Height Sensor-- Stand on the footprints and listen as the height sensor tells you how tall you are.

LEGO/Logo-- Move LEGO objects around by typing simple commands on a computer keyboard.

Computer Vision-- Learn how a computer uses a vision recognition system to recognize the difference between a one and a twenty dollar bill.

SMART ART: The First Artificial-Intelligence-Based Arts Exhibition:

The installations in "Smart Art" are from an AAAI-sponsored show, arranged with the STUDIO for Creative Inquiry at Carnegie Mellon University's School of Computer Science.

Is it Mozart or is it EMI?-- Guess whether the music you are hearing was composed by Mozart or by a computer program called Experiments in Musical Intelligence (EMI).

Synthetic Emotional Speech-- Select an excerpt from a play or a comedy routine, choose the emotions for each line using computer-generated speech, and then listen to how different they sound.

Artificial Life: Two interactive programs introduce visitors to "artificial life," an amazing computer-generated universe of creatures and environments that act as if they are alive:

El-Fish™-- Place fish with over 800 different genetic traits into a computer-generated aquarium and watch as they breed with other fish to create unique, new offspring.

SimLife™-- Build an artificial ecosystem where animals and plants live or die depending upon how you manage their environment.

Other Smart Machines include:

The Expert Baker-- See how an expert system coordinates the production of an automated bakery and then watch how it reacts when problems arise.

Grammar Advisor-- Type in a sentence with grammatical errors and see if the grammar-correction program finds them.

AARON Interactive/Plotter-- Watch as AARON, the computer drawing program, plots complex original pictures, while a nearby interactive exhibit explains how it is done.

Eliza-- Seek the advice of a nondirective computer psychotherapist who seems much smarter than she really is.

Direction Assistant-- Find the shortest route between two Boston destinations by stepping inside a phone booth and asking a computer direction assistant.

Haggle With a Computer-- Haggle with a rule-based expert that bargains over the price of a box of strawberries.

[Support for the enhancement of *ROBOTS & OTHER SMART MACHINES™* came from the American Association for Artificial Intelligence; Digital Equipment Corporation; Gensym Corporation; Houghton Mifflin Company; MAXIS; SuperMac Technology; Sun Microsystems, Inc.; Edward A. Feigenbaum and H. Penny Nii; and others. The original exhibit was funded by C. Gordon Bell; Russell Nofsker; the founders of Symbolics, Inc.; and others.]

TOOLS & TOYS: THE AMAZING PERSONAL COMPUTER™

Thirty-five state-of-the-art interactive stations demonstrate the remarkable capability of the personal computer. Developed with The Boston Computer Society, the exhibit, features cutting-edge applications in multimedia, music-making, graphic design, games, virtual reality and desktop publishing. Visitors can also create souvenirs they can take home.

In **“Making Pictures,”** visitors can explore the futuristic world of virtual reality and star in their own computer assembled commercials.

“Making Sound” allows people to experiment with computerized music and voice synthesizers. Another environment will let visitors try computer applications, including text-recognition and voice-activated systems, used by people with special needs.

“Playing Games” features education and entertainment software-- from simulations that let people fly a DC-10 airplane to building an ant colony to games of strategy and adventure.

Atari Games, Inc.’s “Hard Drivin” Simulator: The coupling of 3-D computer graphics with a mechanical force feedback steering wheel adds a new element of realism to this racecar simulation. The game features cockpit, swivel seat, gas, break and clutch pedals, and a four-speed stick shift.

In **“Sharing Ideas,”** visitors can use computers connected by a network to work together at solving a puzzle.

“Exploring Information” shows people how to get the latest information from worldwide news agencies or search for facts in a CD-ROM encyclopedia.

The **“Writing”** and **“Adding It Up”** areas offer the latest advances in word-processing and spreadsheets.

[Support for *TOOLS & TOYS: The Amazing Personal Computer™* came from the following individuals and corporations: William H. Gates, III, Chairman and Co-founder of Microsoft Corporation; Steve Wozniak; Apple Computer, Inc.; Digital Equipment Corporation; Raytheon Company; Cabot Corporation Foundation; Arthur Nelson; Steve Stadler and others.]

PEOPLE AND COMPUTERS: MILESTONES OF A REVOLUTION™

This highly interactive, historical exhibition, located on the 6th floor and measuring 5,000 square feet, traces the evolution of the computer and its impact on people's lives. Visitors travel through "time tunnels" to nine milestones that trace the evolution of the computer from a handful of costly electronic giants in the 1940s to the millions of desktop computers and microprocessors in use today. The centerpiece of each milestone is a life-size re-creation of a computer environment typical of each major era. These vivid displays draw upon the Museum's rich collection of artifacts, and are amplified by interactive computer stations, films and videotapes. PEOPLE AND COMPUTERS also examines the mythical roles into which the computer has been cast over the years by Hollywood and the public.

Beginning with the milestone, "**Of Clerks, Cards and Collators,**" visitors enter a government office in the 1930s to see how hundreds of clerks used punch-card machinery for the Social Security Administration. Milestone #2, "**Aftermath of the War,**" goes inside the heart of the huge Whirlwind computer, developed under a contract for the military by the Massachusetts Institute of Technology. Its hand-wired components convey the experimental nature of an original invention.

"**Computer for Sale!**" introduces "that marvelous electronic brain" UNIVAC I, the first commercially available computer. General Electric paid \$1 million for UNIVAC to keep track of the huge inventories needed to produce goods during the burst of consumerism in the 1950s. The next milestone, "**Try to Tell It What to Do,**" explores the forces and people that came together to create the first programming languages.

"**Computers Mind Your Business**" re-creates an IBM System/360 at The Travelers Insurance Companies in the mid-1960s. This computer efficiently and accurately processed people's insurance claims.

In the early 1970s, minicomputers were small and affordable enough to be widely integrated into the workplace. "**Doing it on the Spot and in Time**" reconstructs two scenes where a Digital Equipment Corporation PDP-8 was used: an operating room where it helped surgeons identify important brain tissues and the lighting booth for "A Chorus Line" on Broadway.

In “**Big Science and Supercomputers,**” the European Centre for Medium Range Forecasts relies on a CRAY-1 supercomputer. This late 1970s milestone illustrates the need for supercomputers that could quickly perform a vast number of calculations for scientific applications such as weather forecasting.

“**A Computer on Every Desk**” explores how the personal computer has changed people’s lives. It highlights spreadsheet applications on the IBM PC and desktop publishing on the Macintosh. The final milestone, “**Computer, Computers, Everywhere,**” unveils a brightly lit electronics store and the microprocessors in everyday objects such as VCRs, thermostats and toys. A computerized manikin or “animatron” asks visitors to reflect on what they have experienced and to predict the future.

[*PEOPLE AND COMPUTERS™* marks The Computer Museum’s commitment to exhibits that explore the humanities themes in the evolution of computer technology. It was made possible with the support of the National Endowment for the Humanities (NEH); Digital Equipment Corporation; International Business Machines Corporation; Apple Computer, Inc.; Lotus Development Corporation; Matsushita Electric Industrial Company; The MITRE Corporation; The Travelers Companies; Unisys Corporation, and numerous individuals.]

Please note that the above list of exhibits is subject to change and not all-inclusive.

The Computer Museum is located on Museum Wharf, 300 Congress Street, Boston, MA.
Winter Hours: Tuesday- Sunday, 10am to 5pm. **Summer Hours:** Daily, 10am to 6pm.
Public tours and demonstrations daily. **Admission:** \$7 adults, \$5 students and seniors, children 4 and under and members, free. Half price Sunday 3pm-5pm. For more information and a current listing of special events and programs, call the Talking Computer at 617-423-6758. To reach the Museum business offices, call 617-426-2800. For information on The Computer Museum visit the Museum’s World Wide Web site at <http://www.tcm.org>.

Living Arts

THE BOSTON GLOBE • SATURDAY, NOVEMBER 12, 1994



NETWORKED



GLOBE STAFF PHOTOS / FRANK O'BRIEN
Director of exhibits David Greschler explains computer network to Meghan Beach of Quincy.

Training wheels for the information superhighway

Computer Museum eases access

By Renee Graham
GLOBE STAFF

In 1876, shortly after using his first working telephone, inventor Alexander Graham Bell observed, "The telephone reminds me of a child, only it grows much more rapidly. What is before it in the future, no man can tell."

These days, the same can be said of computer technology and the "information superhighway." To hear the technoheads talk, we're all just zipping happily through the limitless possibilities of cyberspace chatting up

strangers half a world away, retrieving information from libraries without ever leaving home, sounding off to the president and such.

Yet in reality, an increasing number of folks who wouldn't know a bit from a byte are finding themselves stranded along the information superhighway, easily the most used, least understood cultural catch phrase of recent years. But a new permanent exhibit, "The Networked Planet," opening today at the Computer Museum in Boston, offers a guided tour into the capabilities and everyday applications of the information

COMPUTER, Page 64

Computer Museum introduces Internet

■ COMPUTER

Continued from Page 61
superhighway.

"The big question we kept getting was, 'What is this information superhighway, and how can I get on?' So, this exhibit comes down to being two things," said David Greschler, the museum's director of exhibits. "One, above anything else, we want this to be a fun exhibit, and that's why we really made it like a trip - you log in, pick your guide and they lead you through.

"But this also gives people access to things they want to know about, like the Internet. People have heard all kinds of wonderful things about the Internet, and we give people a chance to actually get on it and try it themselves," he said. "We're trying to give people a hands-on definition of what the information superhighway is all about."

The \$2 million exhibit combines computers and video. With a bar-coded key card, visitors can make their way through such features as a simulated underground telephone switching station, radar used to predict the weather (as explained by WBZ's meteorologist Bruce Schwogler) and a cruise through cyberspace on the Internet.

Participants can even play with \$1 million in "cyber-bucks," as they buy and sell during a five-minute foray into the international stock market.

"People use networks everyday and they don't really know about it -

when they use the telephone or cash machines or when they're getting the weather, they're using computer networks," Greschler said. "All that stuff is information brought to them through the help of networks. We want to make the invisible visible for them."

Visitors are led through the tour with one of four guides - Erica, Max, Jessie and Beatrice - who appear on video and are selected via computer by the user. With the guides, visitors can ponder their own concerns about the pervasiveness of the computer age. For instance, "Erica" works at home, but worries hours spent at her computer are robbing her of family time; "Jessie" bemoans technology's invasion of privacy.

"It's also designed for people who think about the impact this has on us - how it's changing our work, our home, our relationships with others, our communities," said Greschler of the exhibit, which received part of its funding from the National Endowment for the Humanities. "We're trying to trigger things people really experience in their own lives."

One of the most interesting features of "The Networked Planet" is its design. Ted Groves, the museum's director of design, wanted his work to hint at the openness of computer networks.

"The things that jumped into my mind right away was this circle, and we planned the exhibit as strongly based on that central circle," said

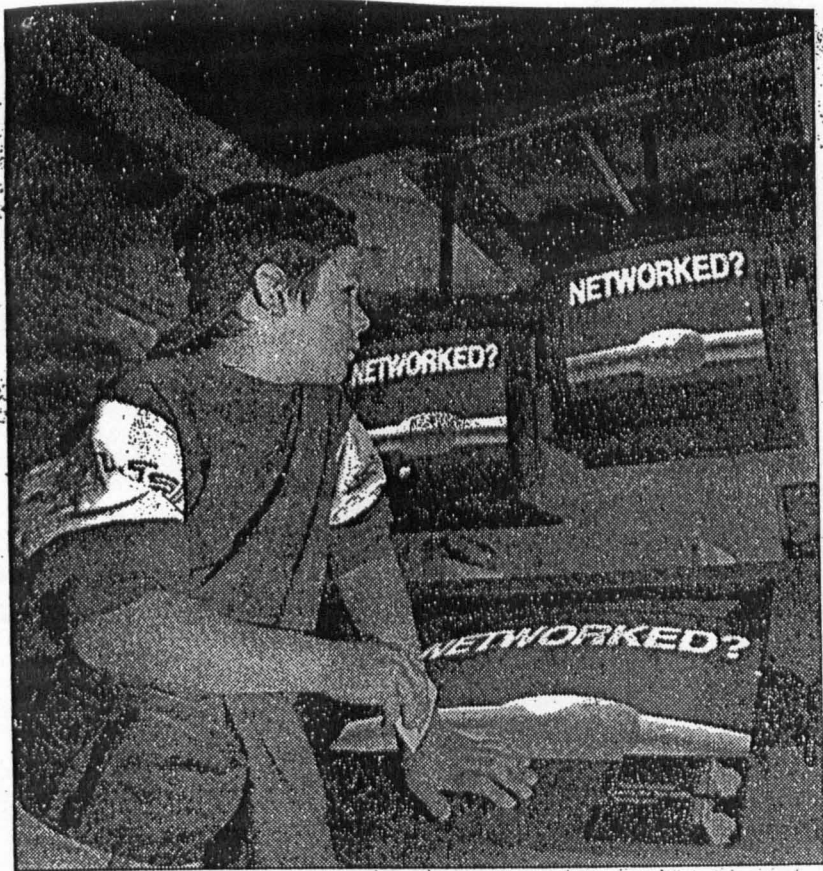
Groves, who began building the exhibit in February. "Because the network is essentially a loop - you go out and come back, you can send messages and receive messages - you go through a series of loops to get things done. So that idea was just almost instantaneous, and everything radiated out from that like the network itself.

"The second decision was to use perforated steel. The idea is no matter where you were in the exhibit, you had a visual access to places in the exhibit. You're never cut off from anything else, just like in the network," he said.

While the design may stay the same, museum officials plan to update the exhibit regularly as computer technology changes. Like the networks it reveals, the exhibit's possibilities are endless, Greschler said.

"Fundamentally, this will evolve in time. Right now, we're showing people what they want. I think it will change with new innovations and access networks. So we're just going to keep on top of it," he said. "The whole point is really to be right on the cutting edge of computer networks and always show people the latest stuff that's happening."

► *The museum is at 300 Congress St. in Boston. Hours are Tuesday through Sunday from 10 a.m. to 5 p.m. Admission is \$7; \$5 students and seniors; children 4 and under are free. Sunday afternoon admission is half-price. Call 423-6758.*



Associated Press photo

CONNECTED WORLD — Tony Villacci, 11, of Boston awaits computerized instructions during his journey through "The Networked Planet" exhibit at the Computer Museum in Boston yesterday.

Hub exhibit clarifies computer mysteries

BOSTON (AP) — The Computer Museum opened a \$2 million exhibit yesterday allowing visitors to hitchhike on the information highway.

"The Networked Planet: Traveling the Information Highway" is a guided tour of global networks meant to demystify the Internet and other networks.

"It's all around us and we don't even know it," said David Reschler, the exhibit's designer. "We use bank ATM machines, we use computer-generated weather maps on TV, our telephones are hooked and our planes are controlled with the same technology. We make the invisible visible."

More than 750,000 people are expected to see the permanent exhibit over the next five years, according to museum officials.

"People have read about it and people are talking about it, but many don't know what it is," said Reschler. "The whole purpose of the exhibit is to give the public hands-on access to it."

Guided tour

Visitors get a bar-coded key card and are steered through the information highway by a combination of computer and video technology.

Early reviews were favorable. "It's fun," said 11-year-old Josh Shaw of Norwell. "I know about the Internet, but now I know how it goes all across the world."

The exhibit, partly underwritten by the National Endowment for the Humanities, traces 150 years of communications technology from Samuel Morse's 1844 telegraph to the explosion of networking in 1989.

It demonstrates the up-to-the-second world of finance from Wall Street to overnight delivery services to supermarket checkout counters, beginning with an exhibit about the telephone system, the backbone of computer networking.

"I can't say I know a lot about computers but I do use them at work and at home," said Mary Hyson, 34, who drove to the museum from Portland, Maine, with her husband and their son. "I think

computers are changing our world faster than we can keep with them. My son David is only 8 and he has computers in the second grade. He picks things up quicker than we do. His mind does not have set parameters that adults have learned. "As for what I've seen today, and given that computers are amazing anyway, there's nothing here that could surprise me," she said.

In the end, visitors can log on to the Internet to sample from a universal menu, including White House news releases.

SUNDAY REPUBLICAN

SPRINGFIELD, MA
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ASSOCIATED PRESS CLIP

Sichtbar unsichtbar

Globale Datenreisen, ein begehrter Computer in Hausgröße:

Ein weltweit einmaliges Museum erklärt die neue Medienwelt.

Wenn Oliver Strimpel, 41, aus dem Fenster seines Büros im sechsten Stock blickt, wird er zuweilen Zeuge eines grotesken Schauspiels. Von einem Zweimaster, gegenüber an der Congress Street Bridge vertäut, lassen johlende Touristen Holzkisten mit der Aufschrift „Tea“ ins brackige Hafengewässer klatschen.

Das Spektakel auf dem „Tea Party Ship and Museum“ in Boston soll an eine Dezembernacht im Jahr 1773 erinnern. Damals enterten Siedler, als Indianer verkleidet, drei britische Teeschiffe und kippten die Fracht über Bord – aus Protest gegen einen drückenden Steuererlaß der Kolonialmacht England. Die Boston Tea Party gab das Signal zum Aufstand der 13 amerikanischen Kernstaaten gegen die Krone.

Manchmal, gesteht Strimpel, Chef des benachbarten Computer Museum, mache ihn der Kostümklamauk der Kollegen vom Teeschiff „ein wenig neidisch“. In seinem eigenen Haus käme er mit solch simplem Mummenschanz nicht weit: Strimpel hat sich vorgenommen, für ein breites Publikum „den Computer zu entmystifizieren“.

Für die Zielgruppe, meist Kids der Nintendo-Generation und deren lernwillige Lehrer oder Eltern, muß er eigene Methoden entwickeln. „Die Welt wird nicht mehr von Waffen, Öl oder Geld beherrscht“, zitiert das Museumsteam den Hacker-Film „Sneakers“, „sondern von kleinen Nullen und Einsen.“

Mit Datenpaketen aus dieser binären Sphäre, die lautlos und sekundenschnell um den Globus rasen, können die Besucher des Computer Museum von Donnerstag dieser Woche an selbst hantieren: Dann wird die neue Ausstellung „The Networked Planet“ (Der vernetzte Planet) eröffnet. Strimpel: „Unser Ehrgeiz ist es, das Unsichtbare sichtbar zu machen.“

Die Schau (Projektetat: zwei Millionen Dollar), gesponsert vom amerikanischen Telekomkonzern Sprint, von der National Science Foundation und High-Tech-Firmen wie Apple, Hewlett-Pak-

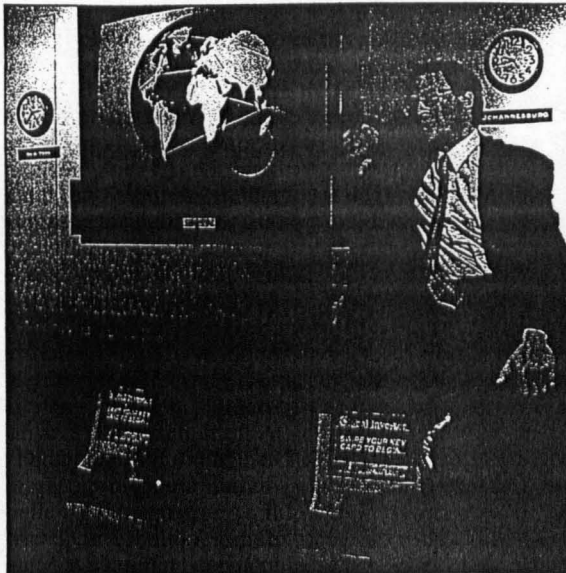
kard und Novell, ist das bislang schwierigste Unterfangen des Museums.

Die Besucher werden eingeladen zu einer „Reise auf dem Information Highway“, ein Begriff, von dem laut Strimpel „selbst Computerfachleute zu meist nicht wissen, was eigentlich gemeint ist“. So konzentrierten sich die Aussteller darauf, statt umstrittener Zukunftsvisionen die zentralen Nervenstränge des globalen Datentransfers darzustellen.

Dabei werden die Museumsgäste, die eine individuelle Eintrittskarte mit Strichcode erhalten, durch eine Art Datengeisterbahn geschleust. Wenn sie am Eingang diesen Ausweis in ein Lesegerät einschieben, können sie wählen, welche Bildschirmfigur sie durch die Ausstellung begleiten soll – etwa „Max, Sozialarbeiter“ oder „Erica, Telearbeiterin“.

An jeder Station gibt der elektronische Führer dann Erläuterungen, der Weg des Gastes wird vom Netware-Netzwerk mitprotokolliert. „Wir deklarieren den Besucher zum Datenpaket“, erklärt Ausstellungsleiter David Greschler, 31, den Kunstgriff, „damit er ein Gefühl für den Informationstransport im Netz bekommt.“

So bildeten die Gestalter etwa eine unterirdische Telefonzentrale nach, erlauben den Besuchern simulierte Bör-



Museumschef Strimpel
„Den Computer entmystifizieren“

sengeschäfte in einem Datennetz für Finanzmanager und bauten sogar ein virtuelles Flugkontrollzentrum. Über einen Glasfaserstrang ist der Museumstower direkt mit der US-Luftfahrtbehörde verbunden, so daß das Publikum den zivilen Flugverkehr der USA auf einem Großbildschirm beobachten kann.

Wie sich komplexe Technologie als anschauliches Lernerlebnis gestalten läßt, hat das Computer Museum in den vergangenen Jahren schon mehrfach beispielhaft vorgeführt. Seine Sammlung historischer Rechenmaschinen und Roboter ist weltweit einzigartig. Das berühmteste Exponat wurde vor vier Jah-

ren in Betrieb genommen: der haushohe Walk-Through Computer. Im Innern dieses begehbaren PC-Nachbaus werden die Datenströme auf integrierten Videobildschirmen nachgebildet und auf Schrittgeschwindigkeit gedrosselt – so kann jeder die Wege der Bits und Bytes mitverfolgen.

Der handfeste Ansatz gilt als Markenzeichen der Bostoner Museumspädagogen. In dem ehemaligen Hafenspeicher können die Besucher viele Computer als Werk- und Spielzeug ausprobieren oder auf Knopfdruck prozessorgesteuerte Maschinenwesen tanzen lassen.

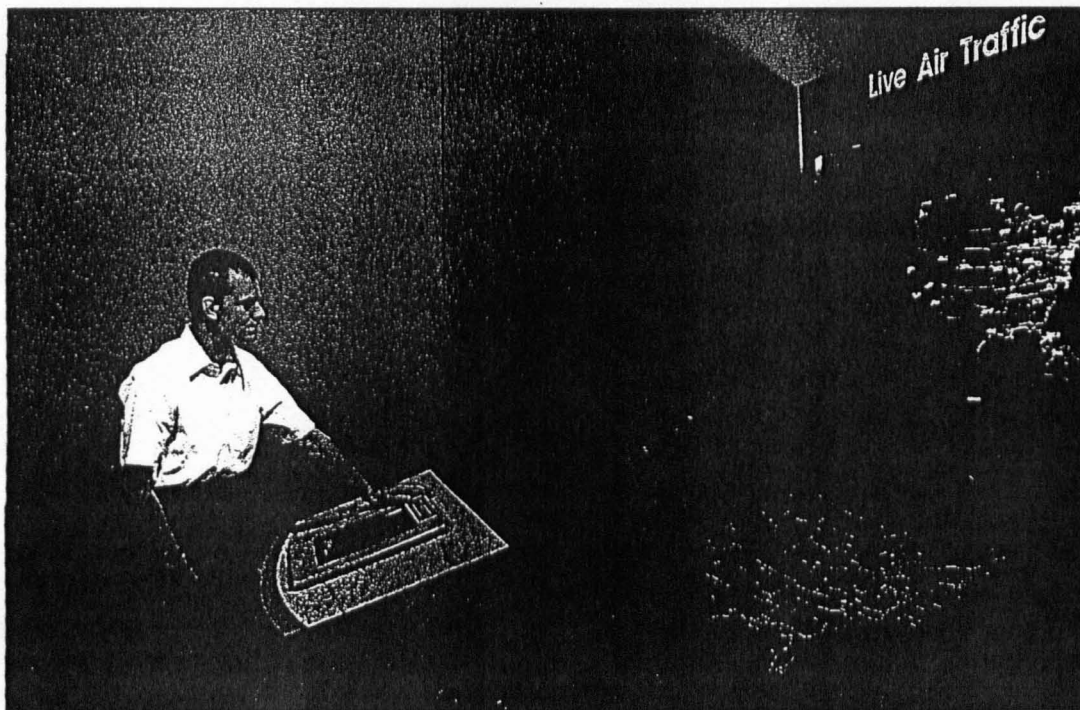
Im April schrieb das Museum selbst Computergeschichte, als es zur ersten Auktion im weltumspannenden Datennetz Internet lud. Strimpels Team versteigerte Hardware-Devotionalien der Computerrevolution wie den Pappmodell-Computer Cardiac aus den Bell-Laboratorien des AT&T-Konzerns; vernetzte Sammler konnten ihre Gebote zu Hause auf der PC-Tastatur eintippen.

Jetzt ist das Internet, das seinerseits wiederum mehr als 32.000 kleinere Computernetze zusammenhält, selbst Teil der Ausstellung. Mit einer Spezialsoftware dürfen die Besucher von den Museumscomputern aus die unermeßlichen Datenbestände des weitverzweigten Rechnergeflechts durchstöbern. Von Dezember an können sich Datenreisende auch von außen in die Ausstellung einwählen, deren Exponate dann auf den Monitoren der PC-Benutzer abgebildet werden.

Weniger behagliche Erfahrungen mit der schönen neuen Medienwelt werden dem Museumsbesucher auch gleich beigebracht: Während jeder virtuellen Reise durch die globalen Netze wird der eigene Datenschaten immer länger.

Denn nicht nur beim elektronischen Teleshopping oder beim Tanken auf Kreditkarte, sondern auch beim Wissenserwerb in vernetzten Bibliotheken oder Online-Datenbanken, warnt Begleiterin Erica auf dem Bildschirm, „landest du auf irgendeiner Liste“. Es gibt kein Entrinnen, lautet die abschließende Botschaft der Multimedia-Hosteß: „Du wirst kaum kontrollieren können, wie diese Informationen genutzt werden.“

Der Beleg dafür liegt gleich darauf druckfrisch in einem Schacht unter dem Computerterminal für den Museumsgast bereit. Das Blatt enthält ein lückenloses Bewegungsprofil seines Streifzugs durch die museale Netzwelt. □



FOTOS: T. MUSCONECO

Virtuelles Flugkontrollzentrum: „Immer landest du auf irgendeiner Liste“

**BUSINESS WEEK
(INDUSTRIAL/TECHNOLOGY
EDITION)**

NEW YORK, NY
WEEKLY 308.831

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**WHERE TO GET
DIRECTIONS FOR
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IT SEEMS IMPOSSIBLE TO GET through a day without hearing some mention of the Information Superhighway. Open a magazine or newspaper, turn on the TV news, and there's a product for it, a company getting on it, or a business acquisition that pundits insist anticipates it. But even after all the hype you may still have the feeling that you don't really understand what it is. What to do? Well, now there's a place to learn all about it.

Boston's Computer Museum has created its own Info Highway for the uninitiated. The Networked Planet, a newly opened \$2 million permanent exhibit, is a circle of 40 linked terminals that turns the visitor into a "human byte" traveling through the network. It starts with animated explanations of the familiar—such as networks of phones and automated teller machines—and moves through the complexities of the Internet. Showpieces include a link to the Federal Aviation Administration's air traffic control network and a simulated stock exchange, in which visitors obtain electronic cash to buy and sell stocks that are actively trading.

Museums Catch the Wave

Thanks to CompuServe Information Service and several art galleries worldwide, art lovers don't have to leave home to go museum hopping. CompuServe recently initiated a digital venture called Online Gallery, a joint project between participating art galleries and CompuServe's Artist Forum. The new service conveniently delivers images and information online at the start of a gallery's exhibit.

The inaugural CompuServe exhibit spotlights the work of Norwegian artist Per Fronth. Fronth's collection (shown courtesy of New York's Meisner Gallery and Oslo's Kunsthuset A/S) consists of eight large photographic images and one photoengraving/composite. CompuServe members tour the exhibit by downloading its images. They also can access a brochure with detailed information about the artist and his work.

Exhibit brochures are produced using Adobe Systems' *Acrobat*, a utility that facilitates the transfer of pictures and formatted text to and from any computer platform. Members need a copy of Adobe *Acrobat Reader* to view the Forum's online documents, which can be downloaded free of charge (other than connect time) from Artist's Forum Library 1, Helpful Software. Other events are planned for CompuServe's Artist Forum, including an exhibit of "Angels Through Ages." For more information, contact CompuServe at (800) 848-8990 or (614) 457-8600.

Science Museums Online

Art galleries aren't the only facilities offering digital access. Recently, six science museums and technology centers joined with Unisys Corp. to form the Science Learning Network (SLN). This electronic facility uses the Internet to link elementary school science teachers to an online educational network. Participating institutions in this three-year, \$6 million venture include Philadelphia's Franklin Institute Science Museum, San Francisco's Exploratorium, Miami's Museum of Science, Boston's Museum of Science, the Oregon Museum of Science and Industry (Portland), and the Science Museum of Minnesota (St. Paul).

SLN pilot projects are expected to go online in September 1995, when six K-8 schools will log on to the network for online teaching and inquiry-based learning. Participating educators will be able to access the Internet's World Wide Web of information-serving computers to obtain a vast range of science data, including multimedia sounds and video. They will also be able to log on to UniVERSE (Unisys/Science Museums Virtual Explorations and Resources for Science Education) for science, math, and technology resources made available by museums in the alliance.

High-Tech Exhibits

The old "look-but-don't-touch" approach to gallery exhibits is fast becoming as extinct as the dinosaurs. Several art, science, and technology museums have begun using computers in many displays and offering high-tech gadgets that invite interactive exploration.

The Computer Museum. In November 1994, Boston's Computer Museum launched "Networked Planet," the first exhibit in the world to make the information highway accessible to the general public. This \$2 million project involves more than 40 computers networked via Novell's *Netware 4.0* software and Apple Computer's latest AV multimedia technology. Visitors log on to real and simulated networks for a behind-the-scenes look at global computer networks used by banks, telephone companies, weather stations, and air-traffic controllers. Sprint fiber-optic T1 lines permit live worldwide network feeds.

Stations in the exhibit follow \$3 trillion as it journeys around the world in different currencies through the S.W.I.F.T. banking network. Visitors travel a three-dimensional animated telephone line to discover how phone systems handle E-mail, cellular calls, and fax transmissions. An air-traffic system lets users track commercial air flights. Visitors also can investigate the various communities and services available on the world's largest computer network with the Internet Sampler.

The museum's "Walk-Through Computer" exhibit covers 5,300 square feet and features a giant two-story working model of a desktop computer,

Via a live feed, young people track air traffic across the U.S. in "The Networked Planet" exhibit at The Computer Museum in Boston.



Photo Credit: Keith Quenze/FAYFOTO

enlarged to 50 times its regular size. In addition to viewports showing the computer's central processing unit (CPU), random-access memory (RAM) chips, and a spinning 15-foot hard disk, visitors use a 40-inch diameter trackball plus 10 operational keys on a 25-foot long keyboard to make program selections displayed on a 21 x 14 x 12-foot computer monitor.

Royal Ontario Museum. Located in Toronto, the Royal Ontario Museum (ROM) is one of the few museums in the world with art, archeology, and science exhibits.

Tom Wujec, ROM's creative director, says that the museum liberally uses multimedia computers to help visitors understand and appreciate museum artifacts. Currently, ROM features several multimedia exhibits, the first of which went online about two years ago. Called "Bird Song," it's a Macintosh-based, touch-screen interactive exhibit that lets visitors listen to and explore the sounds of nearly 100 Ontario birds. Users also learn about the museum's ornithology research.

Another Macintosh-based interactive exhibit, "Light and Gemstones," introduces visitors to gemstone properties through a variety of sophisticated animation techniques. Users can examine three-dimensional models of different stones while computer controls spin gems around and adjust their properties. Wujec believes that visitors enjoy this exhibit because "they feel like they're holding a real gemstone and actually turning it."

WIRED

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Around the World with Wires

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Sure - America Online, CompuServe, and the Internet are computer networks - but don't forget, so are air-traffic control systems, cash machines, and supermarket checkout scanners. The Networked Planet, a permanent exhibit at The Computer Museum in Boston, introduces visitors to the panoply of computer networks and their social implications.

At the start of the exhibit, you receive a key card. After supplying the exhibit's computer network with information like your name, age, and zip code, you select one of four video "exhibit guides." At stations throughout the exhibit, you log in by swiping your card through a reader, and your guide greets you.

Each of the video guides presents a different perspective: Erica, a young mother who runs a small business from home, talks about the difficulties of balancing work and family. Beatrice, an older publishing executive, contrasts how things are done now with how they used to be done. Max, a social worker, raises issues of the technical haves and have-nots. Jessie, a teenage hacker, is supposed to be a voice of young people, but her performance falls a bit flat.

The exhibit shows how prevalent computer networks are in everyday



Networks allow us to fly to Europe, call friends, and spy on others.

life - even without a Net account. Pick up one of the pay phones on the museum wall when it rings, and you'll hear an explanation of how telephone networks and touch tones work. You can also access data from weather satellites. And a live air-traffic control area displays planes in flight over the United States. In the last exhibit area, museum visitors can surf the Net and poke around CompuServe.

The show designers effectively portray the risks as well as the benefits of network technologies. For example, a chilling video segment from CNN explains that companies can legally monitor their employees' every actions without informing them that they're being watched. To bring the point home, near the end of the exhibit, you can spy on other museum visitors using the network.

The exhibit, which opened late last year, still has some kinks. Some of the touch screens have impossibly small icons, and many things were broken - but of course not all of those are the museum's fault. When I was there, a 6-year-old boy managed to crash Mosaic twice in five minutes. Now that's a real education about the Net! - *Amy Bruckman*

The Networked Planet: US\$7 adults, \$5 kids. The Computer Museum: +1 (617) 426 2800.

JUL 16 1995

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Museum is a byte of history



LAURA BERGHEIM

OFFBEAT U.S.A.

BOSTON — Centuries from now, will our descendants regard our newborn information age as the great technological awakening? Are we, as we bite our way into the next millennium, bearing the archetypal torch of the caveman inventing the wheel, the ancient creating written language, the explorer discovering a new world?

And as we struggle daily with our nose to the keyboard, battling bugs and installing upgrades, are we preserving for posterity the pathways of our progress?

One museum is protecting the heritage of the hard drive: Boston's Computer Museum. It's devoted to keeping the history of computing alive and to understanding the present and future roles of computers in society and culture.

From a distance, you might mistake the Computer Museum for a typical historic Boston attraction: Its waterfront home — an old brick warehouse once used as a wool-cleaning factory — looks like comfy quarters for, say, displays on New England seafaring history or dioramas of Revolutionary War battles.

But pass through the doors and you're blasted back to the future.

You don't have to be a technogeek to love this place. Indeed, the less you know, the more you'll learn. Most exhibits are hands-on and interactive, encouraging even cyber-phobes to log on and join in.

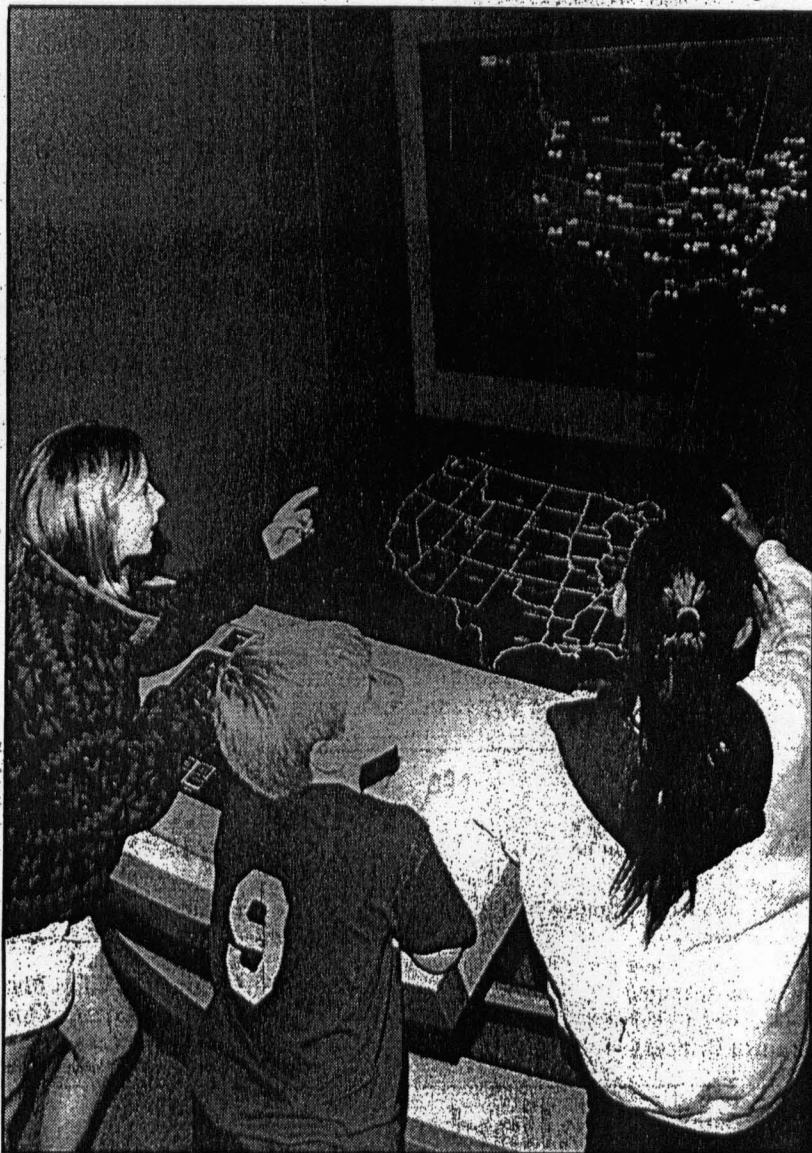
Explore the giant, two-story PC model. Loll on its keys, take a stroll through its inner workings, play with its huge mouse, and you'll find the mysteries of megabytes morphing into the seeds of knowledge.

Kids, naturally, adore the museum. They can play the latest games and simulators, try out new high-tech applications in the Computer Club and zoom down the information highway on real and simulated on-line networks.

Robots are another lively attraction — visitors can bring 25 automata to life in the Robot Theater, or gaze in delight at an R2-D2 model from *Star Wars* that actually hid a tiny actor.

But the history of computers is

Are we, as we bite our way into the next millennium, bearing the archetypal torch of the caveman inventing the wheel, the ancient creating written language, the explorer discovering a new world?



Special to The News

Via a live, up-to-the-minute feed from the FAA, young people track air traffic across the United States in *The Networked Planet: Traveling the Information Highway*, at the Computer Museum in Boston.

never far from sight. "The People and Computers: Milestones of a Revolution" exhibit features dozens of old machines, ranging from giant old UNIVACs of the mid-century to only recently outmoded models.

This byte-by-byte approach to history was a founding principle for the museum: Back in the pre-PC dark ages of 1974, Ken Olsen and Bob Everett (both serious computer guys) salvaged the MIT Whirlwind computer from the trash heap of history. Soon they were saving other computers as well. The museum opened in 1982 to house the multiplying collection.

Whether you're a laptopper or a Luddite, a Windows shopper or a DOS-believer, a visit to the Comput-

er Museum is a far from peripheral experience.

Thanks for the memory!

■ **Specifics:** The Computer Museum (300 Congress St., Boston, Mass. 02210; 617-423-6758) is in downtown Boston, along the waterfront, at the foot of the Congress Street Bridge. It's open daily from 10 a.m. to 6 p.m. in July and August (Tuesday to Sunday, from 10 a.m. to 5 p.m., from September to June). Admission is \$7 (students and seniors, \$5).

Offbeat souvenir

Pick up a souvenir menu at El Rancho Motel in Gallup, N.M., featuring lively tales of the movie stars who stayed at this Route 66 classic.

King Features Syndicate Inc.

AUGUST 1995

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Fun Time | computers
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Top spots for hands-on fun

BY NATALIE J. JORDET

Whether you're planning a trip across the country or just around the corner, there are lots of attractions that let your child get in touch—literally—with the future. Interactive, computer-based, hands-on exhibits are springing up across the United States. There are museums dedicated entirely to computers and technology; others feature interactive exhibits among other offerings. And whole areas of theme parks have gone interactive as well. Here, our pick of future-focused worlds your family can explore today.

The Computer Museum, in Boston, was the first museum in the country dedicated to computers. It boasts a two-story walk-through working model of a personal computer that teaches children how computers work from the inside out. Using the PC's giant trackball—it's large enough to climb on—your child can plot a journey anywhere in the world. He

can then step into the PC to see how the computer retrieves the information from a spinning disk 50 times its actual size. Other attractions include the Robot Theater, where your child can meet *Star Wars*' R2-D2 and more than 20 other famous robots that "walk" and

"talk." For more information call 617-423-6758. **The National Museum of American History's Information Age Exhibit**, in Washington, D.C., has almost 40 interactive stations, making it the Smithsonian's largest interactive exhibit ever. Your child can talk on a phone using the same wire as Alexander Graham Bell or see her name translated into the secret code the Germans used during World War II. School-age children will enjoy the many activities at the interactive computer gallery,

such as designing a bicycle. For more information call 202-357-2700. **Innoventions**, at Walt Disney World's Epcot '95, in Orlando, is an interactive computer and video wonderland that will have kids speeding toward the 21st century. Your child can ride a magic carpet through a 3-D virtual-reality version of Aladdin's world or "finger-paint" on a touch screen at the electronic-painting station. At Electronics, kids 3 and up can preview the latest CD-ROM software before it hits store shelves. For more infor-

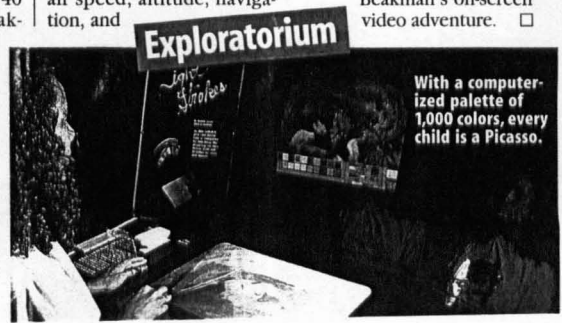
mation call 407-824-4321. **The Museum of Science and Industry**, in Chicago, takes visitors to the next century. Your child can juggle imaginary balls at the virtual-reality exhibit or visit a classroom of the future where

radar. For more information call 312-684-1414. **The Exploratorium**, in San Francisco, is a true hands-on adventure where computers, laser beams, holograms, radios, televisions, and much more are ready for play. With the stroke of a brush on a computerized palette, children can create 16 million colors on a screen. Or they can make faraway friends by way of the Internet. A video screen even allows kids to see their new pals. For more information call 415-561-0360. **Sony Wonder Technology Lab**, in New York City, lets your child step into the shoes of a television-camera operator, a music recording engineer, even a physician. Six studios at this three-story exhibit dedicated to technology give your family a hands-on feel of how all kinds of new media work. A digital recording studio lets visitors record their own version of a hit song. Your child can also take an on- or offscreen role in the production of one of four television programs. And don't leave the lab without meeting Beakman the

Interactive exhibits, from virtual baseball to a ride on Aladdin's carpet.

computers take center stage. No pilot wanna-be will be able to resist the 727 once-active jet. Its interactive displays teach children about air speed, altitude, navigation, and

Science Wizard. Sony's high-definition interactive theater, the only one of its kind in the United States, lets you chart the course of Beakman's on-screen video adventure. □



WALT DISNEY COMPANY (TOP); COURTESY OF THE EXPLORATORIUM

Business Day

The New York Times

THE NEW YORK TIMES, MONDAY, OCTOBER 16, 1995



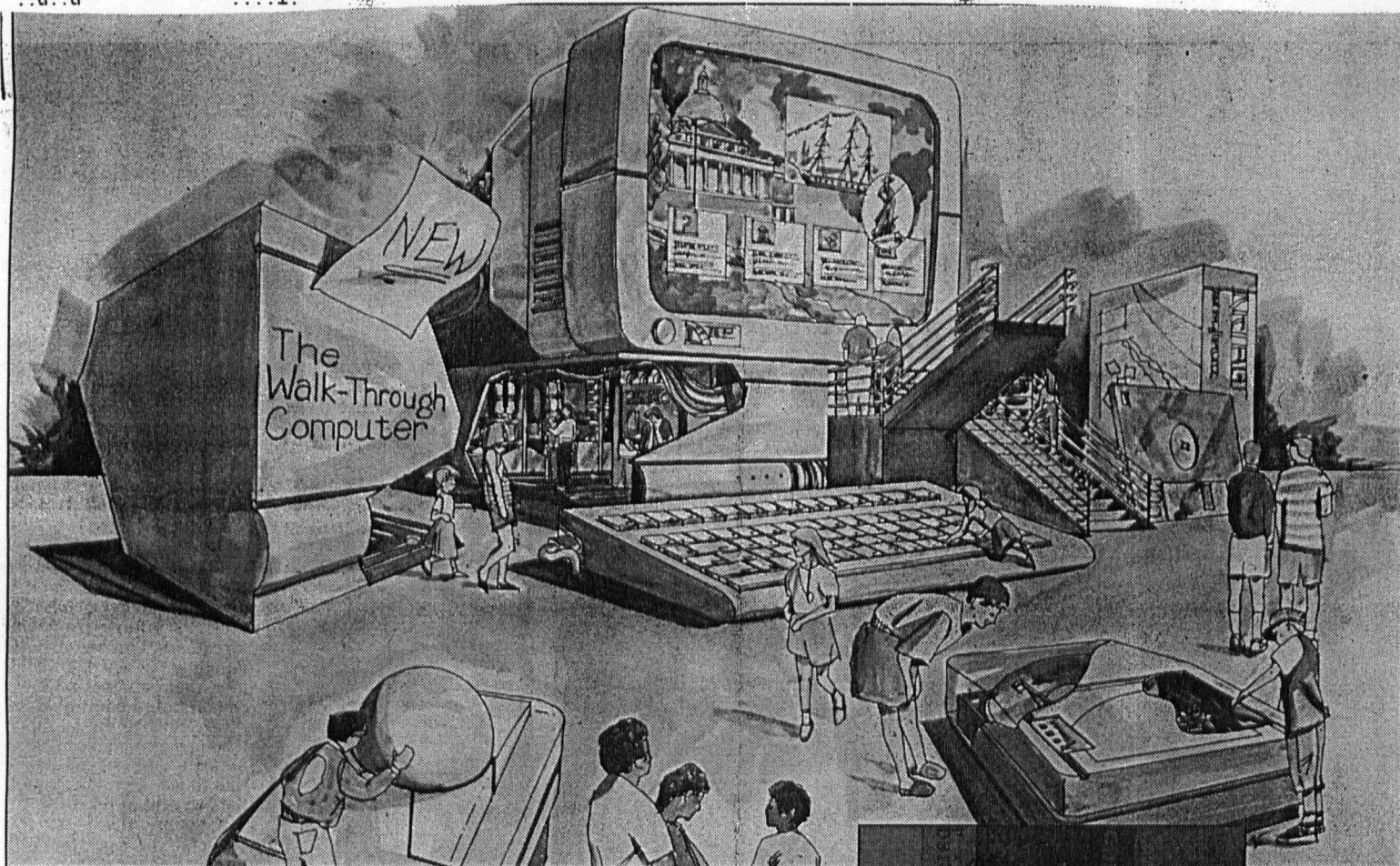
Ed Quinn

The Mother of All Motherboards

The world's largest personal computer, 50 times usual size, has been given a multimedia upgrade. The giant PC at the Computer Museum in Boston, which works and has been chugging away with an Intel 486-series chip since 1990, is now a multimedia machine powered by an Intel Pentium chip the size of a kitchen table and controlled by a Kensington Expert Mouse trackball big and sturdy enough for children to climb on. (Only the keyboard is a stage prop; the designers were unable to create suitably rugged keys.) The hands-on, feet-on exhibit, built by museum staff members with corporate donations, will reopen on Saturday.

WEDNESDAY
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The computer that lets you into its heart

Science editor **Roger Highfield** finds the mysteries of PCs put into perspective inside a walk-through machine

THE RESULT of the world's most expensive upgrade of a personal computer will be unveiled this week, the culmination of £700,000 expenditure and work by 60 people during the past 18 months.

Rather than sitting on a table, the giant computer is sited in a former wool warehouse on Boston's waterfront, home of the world's leading computer museum, and has been visited by more than 750,000 people.

The original £1 million computer — 50 times the size of a normal desktop PC — was the brainchild of Dr Oliver Strimpel, the museum's British-born executive director.

At the end of this week, the Computer Museum will show off the latest version of the walk-through computer, which has been upgraded so that it can play CD-Roms, send electronic mail and surf the Internet. To celebrate, mad scientists will prowl the museum and "we are going to fill out a giant warranty

card", quipped Mr Christopher Grotke, the exhibit developer.

Visitors will put the huge PC through its paces by rolling a car-sized trackball — a fixed version of a mouse — that has been suspended on a cushion of air so that it is easy to roll, even for a child.

They can answer the giant computer's incoming e-mail, watch full-colour images on its 12ft tall monitor screen, and listen to it on a 4ft-cube Bose speaker.

Clambering over a streamlined keyboard, visitors step through a hole in its chassis to enter a canyon of printed circuit boards loaded with suitcase-sized chips, the components that enable a computer to carry out logical functions. These functions allow a computer to number-crunch, among countless other tasks, by manipulating streams of binary digits, that is, ones and zeroes.

Pulsing light fibres embedded in a translucent floor — a mock printed circuit board called the motherboard — will simulate the flow of data

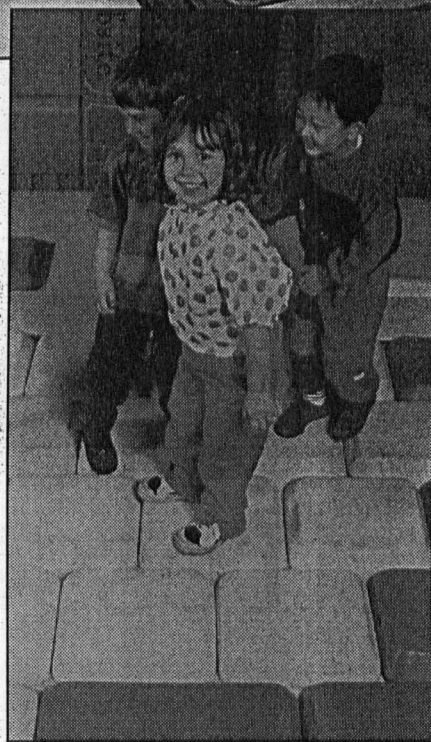
through the computer, notably to the 7ft square Pentium processor at its heart.

The chip offers one of three programs — sending e-mail, or making a sound or picture display — revealing how the central processor steps through its instructions, converts them into the ones and zeros of machine code that operate its component transistors, and then executes them.

"We have decided to let people take control of the computer and become the parts," said Mr Grotke. "When it executes the instructions, lights will jump out of the chip along the motherboard floor of the PC."

"It is an unforgettable experience to feel like a Lilliputian inside this Gulliver of a computer," said Mr Dave House, senior vice-president of Intel, the company that created the Pentium.

The computer includes a CD-Rom player — 8ft long — on which visitors can write a message in the form of a pattern of coaster-sized pits on a



On a grand scale: a group of children wander over the keyboard of the Boston Computer Museum's walk-through PC (above), which has just been upgraded at a cost of £700,000 over 18 months

6ft compact disc and use a laser to extract this binary data.

Visitors can also manipulate their own images on a huge video board loaded with a suitcase-sized video memory and processing chips. They can alter the size of the dots on its huge screen, called pixels, to investigate how an image is built up and how it can be distorted.

They can also warp the sound of their own voices in a demonstration that reveals how computers store and manipulate sound. Once a visitor has spoken into a microphone, the computer will show the voice in the form of a wave and then numbers — hence the term digital — that can be manipulated by the machine. Visitors can alter the numbers, for instance by reversing their order, to hear how their voice is distorted

as a result.

Using a modem the size of a double bed, delivered earlier this week by truck, the visitors can create and send their own messages and learn the nuts and bolts of how computers communicate with each other, for instance while sending electronic mail or linking to the Internet.

The computer also includes some traditional games. In one, for example, a brick wall is slowly demolished by steering a ball at it with a paddle. "We thought it would be fun with such a huge trackball and lots of kids shouting 'Go that way' and 'No, go this way'," said Mr Grotke.

Those who cannot attend in person can take a trip into cyberspace by visiting the Computer Museum's web site: <http://www.tcm.org/>

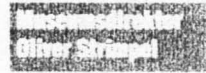
ze aus dem RAM-Modul in eine Kiste, die Daten sind gelöscht. »Der Arbeitsspeicher«, erklärt ein Museumsführer, »braucht im Gegensatz zur Festplatte Strom, um Daten zu behalten.« Laura nickt – Lektion gelernt.

Anderswo werden die Rechner immer kleiner, nur im Computer Museum von Boston im US-Staat Massachusetts ist es umgekehrt. Hier steht der einzige begehbare PC der Welt. Vergangene Woche wurde der Super-Computer, der die Ausmaße eines zweigeschossigen Einfamilienhauses hat, in einer neuen Multimedia-Version vorgestellt: der »Walk-Through Computer 2000«, komplett mit CD-ROM-Laufwerk, Telefon-Modem und Netzwerk-Anschluß. Das Ziel der Computerpädagogen formuliert ihr Chef Oliver Strimpel: »Unser Museum soll ein Ort sein, an dem Menschen herausfinden

können, was der ganze Rummel um den Computer zu bedeuten hat.«

Im Verhältnis zu dem aufgeblasenen PC wirken die Besucher, unter ihnen zahlreiche Ostküsten-Urlauber aus Deutschland, wie auf Bleistiftgröße geschrumpft. Kinder klettern auf der Tastatur herum, andere drehen die Kugel an einem Trackball im Kleinwagenformat und bewegen so den Mauszeiger über den Riesens Bildschirm. Im begehbaren Gehäuse-Innenen ragen maßstabsgetreu mit Chips und elektrischen Widerständen bestückte Platinen auf.

»Hier erfährt man, was der Rummel um Computer bedeutet«



»Die Größe macht den PC anschaulich«, erklärt Chris Grotke, der das neue Modell entwickelt hat. »Wenn unsere Besucher mitten auf der Hauptplatine stehen und alle Bauteile um sich herum sehen, verstehen sie, wie die einzelnen Teile zusammenwirken. Falls die Besu-

cher anschließend die verschiedenen Computerteile benennen können, ist das schon eine Menge.«

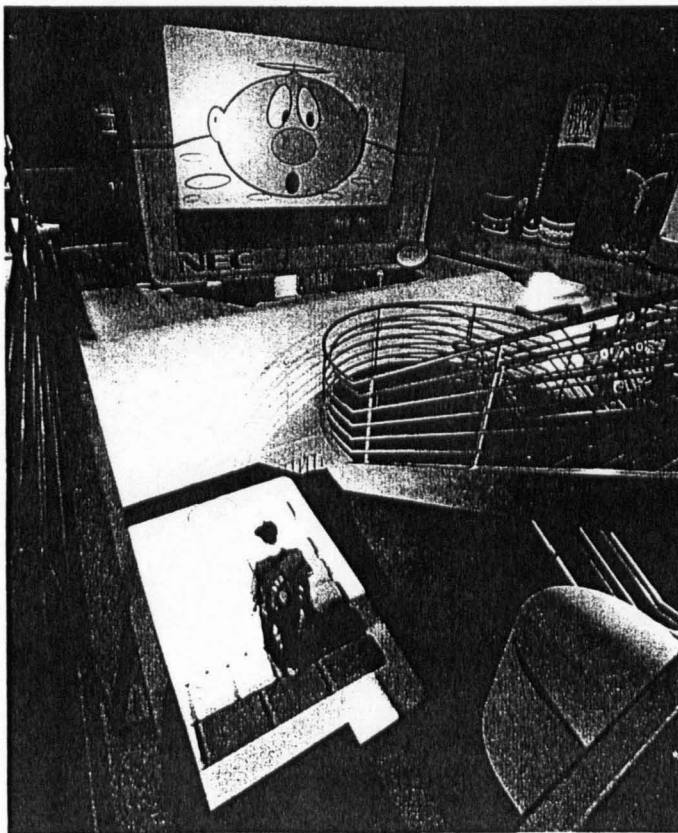
In das Modell eingebaute Monitore, Bedienknöpfe und Hebel sollen den Besuchern helfen, sich mit den Funktionen des Rechners vertraut zu machen. So veranschaulicht eine Computer-Animation an der Platine, die die Kommunikation mit dem Netzwerk regelt, wie Nachrichten im Netz verschickt werden: Auf dem Bildschirm unterhalten sich drei Cartoon-Computer darüber, wer von ihnen als nächster Daten bekommt. An einem nachgebauten Videochip können Besucher ein Bild von sich aufnehmen und danach digital verfremden. Eine spezielle »Soundkarte« zeichnet ihre Stimmen auf.

Wie ein Buchstabe computersprachlich mit acht »Bit« dargestellt wird, läßt sich am nachgestalteten Hauptspeicher lernen: Zu »An«- und »Aus«-Kombinationen von acht Schaltern werden die passenden Buchstaben gezeigt. Das übergroße Modem demonstriert anschließend, wie sich die Signale in Töne umwandeln lassen, die dann per Telefon übertragen werden. Am CD-ROM-Laufwerk wiederum öffnen und schließen sich Löcher in der überdimensionierten Demo-CD, wobei ein mittels Lichtsensor lesbarer Code entsteht – wie bei einem echten CD-Laufwerk.

»Wir wollen nicht nur, daß die Leute etwas lernen«, erklärt Museumsdirektor Strimpel, »sie sollen sich auch begeistern können.« Dasselbe Ziel hat auch Designer Grotke: »Wenn der Rechner zum Spielplatz wird, verlieren die Menschen die Scheu und den Respekt vor dieser Technologie.«

Wieweit sein Konzept aufgegangen ist, kann Grotke im Ausstellungsraum hinter dem begehbaren PC messen. Dort liegen, hinter Glas in einer Vitrine, echte Computer-Bauteile in ihrer winzigen Originalgröße. »Wer sich auch die noch ansieht«, sagt Grotke, »hat Feuer gefangen.«

THOMAS BORCHERT



PC über zwei Etagen: Unter dem Bildschirm steht das Gehäuse, davor die Tastatur

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Smart software shopping

Tips for parents

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Cathy Miranker has some software advice you might not like. She's an expert who knows a lot about how to pick the best educational software for kids, and has this to say to parents: Don't take kids to the store with you and don't pay any attention to the boxes the software comes in. "It's like paperback books," said Miranker, co-author along with Alison Elliott of "The Computer Museum Guide to the Best Software for Kids." "Don't even read the boxes. It's the only shot that the companies have to sell you, and they do a good job."

As far as leaving kids at home, she tells parents: "You have a tough enough job making good decisions without someone tugging at your arm saying, 'buy it, buy it.'"

So how should parents select children's software?

Miranker, naturally enough, thinks the reviews in her book are a good place for parents to start. The \$16 book, published by Harper Perennial, contains reviews of hun-

dreds of programs for children.

Even if your parents don't buy the book, Miranker thinks they should read intelligent reviews before buying. She recommends two computer magazines that routinely review children's software: FamilyPC and Home PC.

Here are some things to look for in the reviews.

Educational programs that include some fun are fine, she said. "But avoid those where a game doesn't have any real purpose, where it's just tacked on to the program."

Also look for programs that won't get old fast. You don't want to buy a program that'll be used for a few days and then abandoned.

Finally, for families with children of varying ages, it's more economical to find programs with age recommendations that span more than one child.

— Bill Husted



MARLENE KARAS / Staff

Hundreds of computer programs are reviewed in a \$16 book co-authored by Cathy Miranker.

A PARENT'S DILEMMA

Plenty of programs for kids, but most fall short

Cathy Miranker and co-author Alison Elliott tested nearly 1,000 titles for their new guide to kids' software. Most flunked, but 215 programs earned excellent grades for being educational and making good use of the computer's special capabilities. Miranker talks about her rationale.

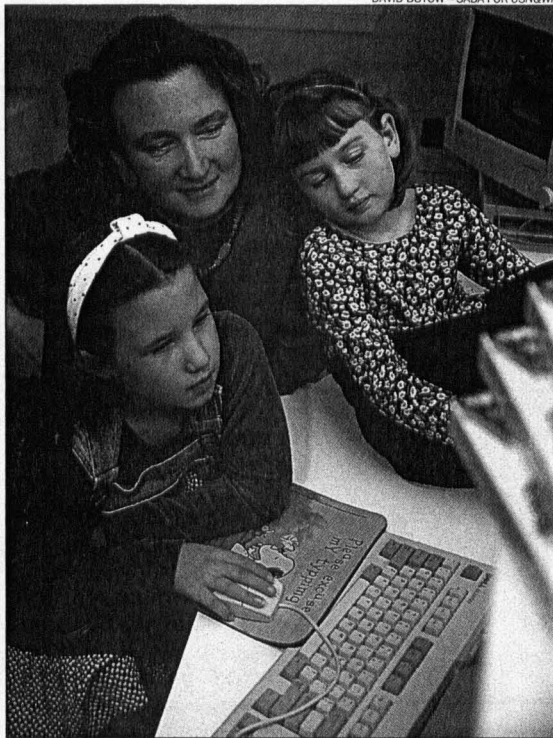
What makes a first-rate educational program?

It's got to be more than just a quizmaster that teaches math facts or state capitals. Great educational software encourages children to create, to experiment, to make choices, to solve problems. It creates powerful environments for exploration and for fun—like ancient Greece in *Wrath of the Gods* or the rain forest in *Zurk's Rainforest Lab*.



Are children good judges of software?

Kids do tend to like almost anything on a computer screen—at first. That's why a parent should make the first cut. Find a resource you trust to recommend software—a book, a magazine—then try before you buy. Unlike most computer outlets, stores like Imaginarium, Learningsmith and Zany Brains let you try most titles they sell. And



Critics. Cathy Miranker's daughters were testers.

don't be embarrassed to return software if it doesn't meet your expectations and doesn't satisfy your kids. Buy from a source with a good return policy—no questions asked and a minimum of 30 days. Or buy from the publisher—many sell direct. Publishers want to satisfy parents, so they always take a product back.

What's the buzzword du jour?

Every title claims to be "interactive"—but many "interactive" titles capture video clips from a TV show or a movie, slap the clips onto a CD-ROM, add some buttons and menus and call them software. The degree of interactivity the child has is the ability to fast forward, pause, back it up, start it or stop it. For example, while I credit Disney for good-looking software, the most compelling activity in its programs is watching movie clips. I prefer to see children be active participants rather than passive viewers when they use the computer.

Is newer better?

Not always. Some fine pieces of software—the *Sim* series, *Oregon Trail*—have been around for years. Good companies keep their titles up to date.

Turning books into CD-ROM packages is a cottage industry these days. Does the transformation always work?

Be very choosy about storybook software. Many electronic versions sidetrack the child with gratuitous "hot spots"—points where kids can click to see a surprise. Ask yourself: Is this electronic story turning my child into a reader of real books?

If you were stuck on a desert island with a PC and a couple of kids, what programs would you bring?

For a younger child, I'd say *Kid Pix Studio*—a multimedia art program that lets you create pictures, add music and turn your creations into a slide show or movie. For older kids, I'd take *The Lost Mind of Dr. Brain*, which has an incredible quantity of fiendish puzzles and brain teasers. It would take some families—parents and children both—a year to solve them all. ■

A cool selection of hot programs

Cathy Miranker especially likes these new CD-ROM programs that run in Windows and on Macs. Miranker and Alison Elliott will review releases monthly on the *World Wide Web* (<http://www.tcm.org>).

- **Curious George Comes Home** (Houghton Mifflin Interactive, about \$50, ages 3-6). Direct the monkey's pranks, print an account.
- **Pantsylvania** (Headbone Interactive, about \$30, ages 4-8). Learn about inventions, hunt

for hidden numbers, create a rocket cat.

- **Bumtzt Science Carnival** (Theatrix Interactive, about \$35, ages 6-10). Sharks, mirrors and prisms lurk in puzzles exploring light, magnetism and buoyancy.

- **Top Secret Decoder** (Houghton Mifflin Interactive, about \$50, ages 8-14). Mirror writing, pig Latin, other secret languages.

- **MayaQuest** (MECC, about \$48, ages 10-16). Hop on a bike, pedal into a simulation with 1,700 photographs and try to figure out why the Mayan civilization went kaput.

CONVERSATION WITH MARC SILVER

THE COMPUTER MUSEUM GUIDE TO THE BEST SOFTWARE FOR KIDS
BY CATHY MIRANKER AND ALISON ELLIOTT (HARPERCOLLINS, \$16)