



# Core

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## Core

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## Message from the President

November 24, 1999

Welcome to CORE,



We prepared this material to keep our many supporters and friends abreast of History Center developments, programs and activities. There are many exciting developments to report, among them: the 1999 Fellow Awards; a great photo essay about Computer History Museum in the November issue of "Wired"; a new 15,000 square-foot warehouse to house our ever-growing collection of artifacts; a January 2000 lecture about Superpaint (featuring its inventor Dick Shoup and Alvy Ray Smith, who received a Technical Academy Award for digital painting in 1998), and much, much more.

Through reading this material, I hope you will feel, as I do, the energy and excitement that our staff, board and volunteers bring to this important and challenging endeavor to preserve and present artifacts and stories of the information age.

My heartfelt thanks to all of you who contribute your time, money, artifacts and other resources to Computer History Museum. Together, we are working to preserve our computing heritage.

We hope you will include The Computer History Museum History Center in your year-end giving plans. Your support is what keeps us growing and vital.

Please let me hear from you. I look forward to your comments, suggestions, and participation.

Sincerely,  
Karen Mathews

## Upcoming Events

**Thursday**  
**January 13, 2000**

**Time**

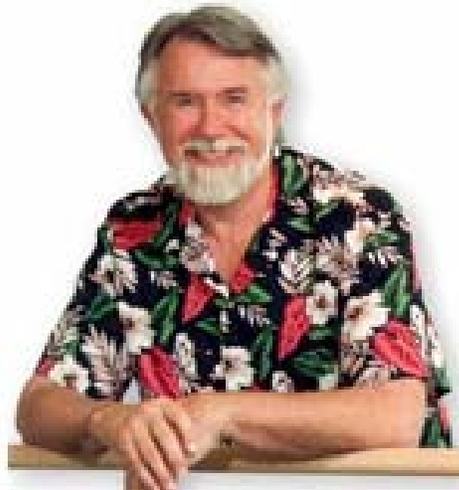
**Location**

Computer History Lecture Series  
Dick Shoup & Alvy Ray Smith  
**Recollections of Early Paint Systems**

6:00 p.m.

Moffett Training/Conference Center  
(Bldg 3)  
NASA Ames Research Center  
Moffett Field, CA

Computer pioneers Dick Shoup and Alvy Ray Smith will be speaking on the evolution and development of Superpaint, the world's first computer painting program, developed at Xerox PARC in the early 1970s.



Alvy Ray Smith



Dick Shoup

## Recent Events

1999 Fellows Dinner  
Vintage Computer Festival 3.0  
Zuse Colloquium  
Gordon Moore Lecture  
COMDEX 1999

Computer History Museum is a busy place! Thanks to a solid volunteer corps, the Center is able to mount a variety of events meant to promote our educational and preservation missions in the history of computing. The five events took place since September 30 and brought us to the attention of over 2,000 people directly and probably 10 times that indirectly.

### 1999 Fellows Dinner

Over 220 guests attended Computer History Museum's 1999 Fellow Awards Ceremony & Dinner. The event is Computer History Museum's annual tribute to those who have made fundamental contributions to computing. For more information on the event, including biographies of the 1999 Fellows, please visit <http://www.computerhistory.org/fellowawards/>.

This annual fundraiser began with a cocktail reception during which guests had an opportunity to talk to History Center staff and volunteers, learn about Center projects and progress, and try out our new website ([www.computerhistory.org](http://www.computerhistory.org)).



**President Karen Mathews with WIRED magazine contributing editor David Pescovitz.**



**Doug Engelbart speaks with Computer Museum Founding President Gwen Bell. Engelbart was the introducer for Alan Kay -- one of the three 1999 History Center Fellows.**



Horst Zuse (left) accepting award on behalf of his father Konrad Zuse from Hermann Rampacher, Chief Executive of the German Konrad Zuse Society.



Alan Kay (left) receives a 1999 Fellow Award from presenter Doug Engelbart.



Event MC Donna Dubinsky and History Center Board Chairman Len Shustek



Presenter Ed Feigenbaum (left) and 1999 History Center Fellow John McCarthy



Information poster on the Zuse Z23 Mainframe computer donation. The 1960 transistor-based machine travelled 7,500 miles to reach Computer History Museum!



History Center volunteer Lee Courtney (left) discusses current projects with Stanford professor and History Center founding member Gio Wiederhold.

## Vintage Computer Festival 3.0

The Vintage Computer Festival is the brainchild of Sam Ismail, a San Francisco Bay Area computer enthusiast, and takes place annually at the Santa Clara Convention Center over two days. VCF is a great way to meet fellow computer collectors in an informal and engaging atmosphere.

VCF puts the emphasis on fun and on building a community of mutually-supportive computer history supporters both locally and around the world (VCF Europe is in the planning stages!)

Aside from an exhibition space and flea market, it also hosts a mini lecture series each morning of the event.

Computer History Museum was delighted to participate again this year by setting up an exhibit showcasing our activities. As well, History Center curator Dag Spicer joined VCF and History Center volunteer Alex Bochanek and computer pioneer Lee Felsenstein as judges in the [Exhibit competition](#). A truly diverse range of exhibits made the VCF a great learning experience for everyone!

Computer History Museum encourages computer history buffs everywhere to attend and support VCF 4.0 next year.

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## Zuse Colloquium

Konrad Zuse was honored by three significant events at Computer History Museum this year: he was made one of three History Center Fellows for 1999 (posthumously); and was the subject of a day-long colloquium on his work. Also, one of his mainframe computers was dedicated to the Center's permanent collection.

Zuse was a fascinating character in the history of computing because his inventions, which embodied great originality, went unnoticed for many years due to wartime conditions, even in his native Germany. Three distinguished Zuse scholars spoke at the colloquium about his work in the context of computing generally and as part of the German war effort.

A condition of Zuse's will (he died in 1995) was that one of his machines should be displayed in America so that people there might appreciate his contributions. Fortunately for the Computer History Museum, a group of high school students carefully restored one of his Z23 mainframe computers for this donation. In a touching ceremony featuring one of these students, several instructors from the school, representatives of the German Informatics Society, the Konrad Zuse Society, and the Deputy Consul General of Germany (San Francisco); the machine was formally donated to the Museum's permanent collection.



**Zuse Z23 Mainframe in its permanent home at Computer History Museum.**



**German guests at the Z23 Dedication Ceremony.**

As well as the machine, all system documents (on CD-ROM) were included in the donation, as were a painting by and portrait of Konrad Zuse--both of which now hang in the Center's administrative offices.

Finally, an exhibit display of the Zuse Z3 (relay computer) Adding Unit was donated by Professor Raul Rojas--a brilliantly conceived and meticulously executed instructional display the Museum will treasure for years to come.

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## Gordon Moore Lecture

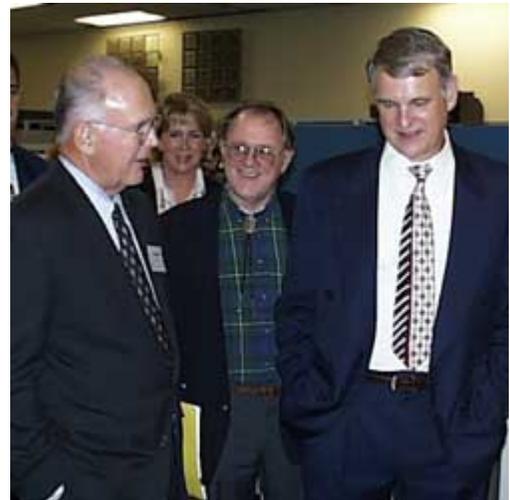
Intel co-founder and Chairman Emeritus Gordon Moore gave a lecture at the NASA Ames Research Center, co-sponsored by Computer History Museum and the Churchill Club--a local Silicon Valley organization.

Dr. Moore spoke about the evolution of the semiconductor industry, a speech that was followed by tours of our exhibit area given by History Center staff and volunteers. Over 200 people got their first look at the collection highlights on display!

Moore's lecture covered the early days of Shockley Semiconductor, Fairchild, and Intel, including a discussion of his eponymous law--originally coined somewhat in jest by Caltech professor and friend Carver Mead.



From left, History Center Chairman Len Shustek, President Karen Mathews, and speaker Gordon Moore at Computer History Museum. Collections Coordinator Chris Garcia peeks from behind!



Moore with History Center board members Gordon Bell and Dave House.

## COMDEX 1999

On November 15 in Las Vegas, Computer History Museum co-hosted, with Computer Reseller News, the third annual Industry Hall of Fame Awards. Twelve computer industry luminaries were inducted, including History Center Founding Members Donna Dubinsky, Charles Geschke, and Ray Ozzie.

History Center President Karen Mathews and Computer Museum Founding President Gwen Bell represented Computer History Museum at this exciting event.

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## Collection News

Exhibit Space Doubles!

IBM 1620 Up and Running

Recent Donations

### Exhibit Space Doubles!

Computer History Museum has added 10,000 square feet of storage space by leasing Building 45 at NASA Ames, just one block from our Visible Storage Area. This has allowed us to convert the middle bay of Bldg 126 from storage to exhibit space, effectively doubling the number of items we can now display.

The new space was urgently needed to accommodate the many artifacts Computer History Museum now receives daily as well as several very large institutional donations that threatened to take up every remaining square inch of warehouse space.

The Center will be mounting new and original exhibits in the former "middle bay" of Visible Storage--exhibits focused on mini and microcomputers as well as the Internet. We will also have room to re-institute our monthly Computer History Lectures surrounded by artifacts--a venerable tradition among regular History Center lecture goers!

The new exhibits are expected to be ready by January 1, 2000--a great way to start the millennium!



New Storage Area - Building 45 Visible Storage (Bldg 126) is across from the water tower



Cavernous interior of Building 45 (40 foot ceilings!)

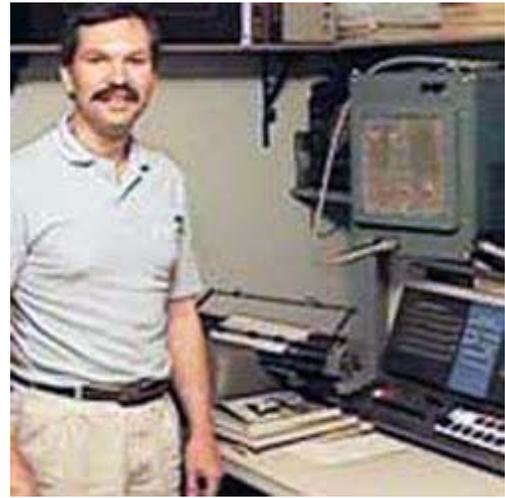
## IBM 1620 Up and Running

The IBM 1620 Project, an historical restoration undertaken by History Center volunteers, reached a critical milestone on October 23 at 10:55 a.m. when, for the first time in over 15 years, the machine successfully executed an instruction. The IBM 1620 was first introduced in 1960, sold for \$74,500 dollars, and came with 20 to 60K (digits) of core memory. It was popular in educational and light engineering markets and IBM manufactured some 2,000 of the machines. Weighing 1,200 lbs and consuming approximately 2kW of power, the 1620 could also be ordered with paper tape, punch card, and disk I/O. It could perform 1,700 ADD instructions per second.

The restoration project was begun in January of this year under the leadership of volunteer Dave Babcock, a senior software developer with the compiler group at SGI (and now with HP). The purpose of the project was not only to restore machine hardware to working condition but also to learn general techniques of museologically-sound computer restoration; to act as a magnet for attracting historically-relevant materials about the 1620; and to advance the Center's understanding of what is important in preserving the history of computing machinery.



Joe Fredrick and Steve Casner debug 1620 power supply units.

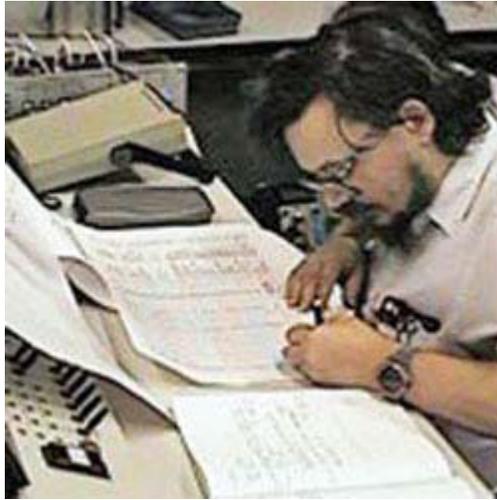


Portland IBM 1620 owner and technical guru David Wise--instrumental in History Center 1620 Project success.

All three of these goals have already been met. The highly-talented volunteer restoration team, comprising both software and hardware engineers from across the country, are building a modern interface to simulate paper tape, punch card reader & punch, and console keyboard since these system elements are not available at this time. When it was determined that the 1620's core memory was irretrievably damaged through the ravages of time, the team designed and built a semiconductor replacement for the original core, carefully annotating their modifications for the benefit of future scholars.

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As word spread about the project, documentation and software began arriving at Computer History Museum in large quantities. Manuals, schematics, reference cards, marketing literature and photographs--as well as over 300,000 punch cards, representing the largest single collection of 1620 software in the world--arrived within six months of project start. These cards are being read and a CD-ROM produced in order to preserve these hundreds of programs, compilers, games, and utilities. The project has thus greatly increased the Center's holdings, creating a wonderful legacy for future students of this machine.



**Tim Coslet maps out entire circuit board complement of 1620.**



**Local 1620 Project Team--over 25 people around the world have contributed.**

Finally, many important questions relating to what about computers is worth preserving were (in part) answered. While working hardware was the main goal, the project has preserved documents, ephemera, software, photographs, films, and oral histories about the 1620--allowing a highly-accurate historical context for the machine to be developed. The team also wrote a simulator (in Java) so that people on the web can learn from the machine. Similarly, it is anticipated that all project materials will eventually be digitized and placed on the web. Congratulations to all team members for their persistence, intelligence, and great care!

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## Recent Donations

Computer History Museum receives some 100 historical objects per week all year round. This makes us the single largest collector of computing history in the world!

Some highlights from items donated in the past several months:

<b>Mechanical Calculators:</b>	<b>Supercomputers:</b>
Monroe CST-8 (1949)	ETA-10 Supercomputer (1988)
Monroe CSA-10	IBM Multi-RIOS Prototype (1991)
Monroe CAA-10	Intel iPSC2 (1987)
Friden SW10	Intel iPSC 860 (1990)
VE-PO-AD (1930)	Intel Paragon XP/S (1994)
	Intel Touchstone Delta (1991)
<b>Microcomputers:</b>	<b>Other / Special Purpose:</b>
Apple Powerbook 100	CDC 679 Magnetic Tape Unit (1988)
Atari 2600 (1979)	CDC 819 Disk Storage Unit (1988)
Cromemco SCC	DEC Alpha Prototype System (1991)
IBM PC Jr. (1983)	DEC Alpha EV-5 Test Wafer
IMSAI 8080 (1976)	DEC MicroVAX Die Plot (1984)
Otrona Attache (1987)	DEC MicroVAX II Die Plot (1987)
Tandy 600 (1985)	Fujitsu VP2000 SIM CPU (1988)
Xerox 860 (1981)	GENIAC Kit (1958)
	IBM 3151 ASCII Terminal (1987)
<b>Mainframes:</b>	Iomega Bernoulli Box (1987)
Zuse Z23 (1960)	ILLIAC IV PCB Test Core (1972)
Honeywell DPS-8 (Multics)	InfoGear iPhone (1999)
	Sega AI Computer (1986)
<b>Minicomputers:</b>	Spyrus FORTEZZA Crypto Card (1999)
DataPoint 2200 System	U.S. Robotics 1200bps MODEM (1976)
DEC PDP-11/70	Xerox Alto (1972)
HP1000 (1978)	
HP2115A (1968)	<b>Documentation:</b>
HP3000 (1986)	Datapro Reports (Complete Run)
Sun 960A System (1987)	George Stibitz Personal Papers
TI 960A (1972)	Original SRI RFCs (#1-1000)
TI 960B (1973)	APL Collection (50 lin. ft.)
	Zuse Z3 Adder Unit Display (1999)
	UVC Video Collection (150 pioneers)

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## In The News

WIRED Magazine

IEEE Poster

Radio & Television

### WIRED Magazine

Computer History Museum was featured in a 24 page article of WIRED magazine's November 1999 issue (See "The Computer Hall of Fame - Modern Art." pp. 276 - 299). This photo-essay by New York photographer Todd Eberle and WIRED contributing editor David Pescovitz was one of the largest articles ever published by the magazine according to WIRED staffers.

Some of the Center's most famous historical machines were highlighted in beautiful color photographs, suggesting that quite apart from a machine's technical attributes, they may also be appreciated on an aesthetic level as embodiments of human creativity at its best.

WIRED also supported Computer History Museum by being a co-sponsor of this year's 1999 **History Center Fellow Awards**. The Center is grateful for this support and proud of its collaboration with WIRED on the article which brought it to the attention of several million WIRED subscribers and news-stand readers.

To read an on-line version of the article, visit:

<http://www.wired.com/wired/archive/7.11/computer.html>



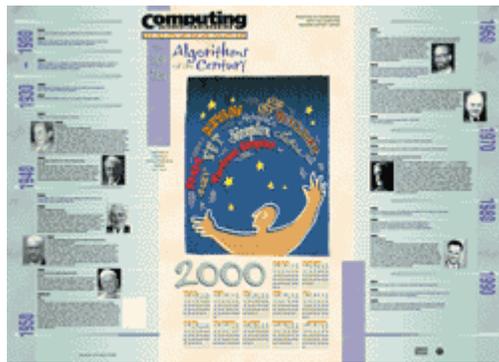
"Mona by the Numbers," produced by H. P. Peterson in 1964 on a CDC 3200 computer. One of many images in the WIRED article mentioned above.

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## IEEE Poster

History Center Curator Dag Spicer and researcher Anna Gloukhov collaborated with the editors of Computing in Science & Engineering magazine, published by the IEEE, to produce "The Top Ten Algorithms of the 20th Century," a fold-out supplement to their November/December 1999 issue.

In addition to providing images for the poster, Computer History Museum assisted with research.



"Top Ten Algorithms Poster," produced in cooperation with the IEEE and Computer History Museum

## Radio & Television

Computer History Museum receives approximately three to five media requests daily for information on the history of computing. Some recent projects the Center has collaborated on include:

1. PBS Special on Y2K with host Bob Cringely
  2. NHK (Japan) Special on the History of Computing
  3. San Francisco Chronicle, "[Computer Valhalla](#)," Stan Bunger, May 20, 1999, Business Section, page 1.
  4. CLiCK Weekly, "Computer Museum Saves The Valley's Tech Relics," Steve Enders, Nov 2, 1999, pp. 1-2.
  5. Computerworld, "Flashback," (Regular column), Consulting Historians, Jan, 1999 - Dec, 1999.
  6. KRON's New Media News (Stan Bunger), Tech History Series , Monthly, 1997 - present.
  7. Microsoft's "Is Your Computer Ready for Y2K?" co-marketed with Blockbuster Video.
  8. Popular Mechanics, January 2000 issue.
  9. Novatis Internet Timeline
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## Sightings

Many of the pioneers whose inventions the Center preserves have occasion to visit us. To the first three people who can identify the principal contributions of this issue's visitors listed, we will send a complimentary "Evolution of the Microprocessor" poster! Think you know the answer? E-Mail your responses to Chris Garcia at the Museum. ([garcia@computerhistory.org](mailto:garcia@computerhistory.org))

1. Cliff Stoll
2. David Patterson
3. Randy Katz
4. Ike Nassi
5. Josh Fisher
6. Herb Grosch
7. Gordon Moore
8. Forrest Baskett.



Cliff Stoll with Museum curator Dag Spicer



Josh Fisher beside his MultiFlow Trace VLIW machine, on display at Computer History Museum.