

2019

CHM

FISCAL YEAR 2019  
REPORT TO THE COMMUNITY

2019

A YEAR

## LETTER FROM THE CHAIRMAN

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**Like any well-run organization, we work simultaneously** on short-term, medium-term, and long-term projects. We are getting really good at juggling multiple balls in the air at the same time!

In February 2019 we opened our new Learning Lab on the ground floor of our Shoreline building. The flexible space is used for hands-on activities, topical exhibits, educational programs, and live events. The design resulted from a wonderful collaboration between CHM, IDEO, Mark Horton Architecture, and Van Sickle & Rolleri.

On May 4, 2019 we dressed to the nines and inducted four new CHM Fellows: James Gosling (for the Java programming language), Katherine Johnson (for US space program calculations), Leslie Lamport (for distributed system design and LaTeX), and Louis Pouzin (for early packet networking). It was, as always, a great party in honor of making heroes of our computing technologists.

In June 2019 we published an edition of *Core* magazine that highlights the 50th anniversary of humans landing on the Moon, which could not have happened without computers. It also features stories from our Exponential Center on the entrepreneur's journey, an article on what the Dynabook was and wasn't, recent additions to the collection, and much more.

In October 2019 we started rolling out the first major upgrade of our website in a decade. It still has all the rich content we are known for, but is mobile-friendly, has modern graphical design, and is an adaptable platform that will let us more easily add new interactive features.

We are now deep into planning our expansion over the next few years of both mission (you'll read about the vision of CHM 3.0 in our CEO Dan'l Lewin's letter) and of physical space (participating in the radical real estate development happening in our neighborhood on Shoreline Boulevard).

These are exciting times for CHM. Thank you all for being part of this extraordinary journey. Stay tuned for what comes next!



LEN SHUSTEK  
CHAIRMAN OF THE BOARD OF TRUSTEES

# OF CHANGE

172,907  
Museum visitors

349  
Events in 365 days

31  
Stories published on Medium

59,221  
Venue rental guests

5,044  
Attendees to programs and lectures

279,577  
Event livestream viewers

98  
Oral histories recorded

108,642  
Tickets sold

12,106  
Memberships

**PAVING THE WAY**

**As we reflect on fiscal year 2019, I am reminded of** the ambitious goal put forth in our strategic plan: By 2022, we will build the foundation for and reimagine CHM to engage millions of people around the world to leverage technology for positive social impact. This statement has been the crux of a profound and extensive institutional transformation underway at CHM.

For the first half of fiscal year 2019, our team focused its efforts on developing a new strategic direction for CHM. For the second half, we embarked on an interactive museum-wide process to reimagine the Museum's future, reassessing our brand and grounding our positioning in computing, humanity, and meaning. As part of this process, a small cross-departmental team is building a portfolio of operational case statements aimed at creating and expanding our impact through partnerships to realize the aspirations of our strategic plan. These case statements will pave the way for the future of CHM—CHM 3.0.

This journey has not been without its challenges and has forced us to make some difficult decisions along the way, as we evaluated how to better balance our operations while still investing in our future to meet the growth initiatives in our strategic plan. We determined that we not only need to make considerable adjustments to our spending, but that we also need to rethink our work prioritization in ways that will benefit and sustain our institution.

Our CHM 3.0 work will take us well into fiscal year 2020. Our top three priorities are 1) to position CHM for the future, 2) to develop our operational capacity for partnering, and 3) to build out our IT and systems infrastructures to expand engagement and leverage our content in new and exciting ways. The latter is especially fundamental to our future, which we kicked off with the launch of CHM's new website—the first upgrade to the Museum's site in nearly a decade. This is a central pillar to our foundation and will greatly impact the work that we do moving forward.

I want to thank our dedicated board of trustees, our passionate staff, and our incredible corps of volunteers for their continued support as we embark on CHM 3.0.



**DAN'L LEWIN**  
PRESIDENT AND CHIEF EXECUTIVE OFFICER

FOR

**CHM 3.0**



# LAB





# LEARNING



...nificantly different.  
tell a player piano what note  
ormation about a person, or  
to a computer. Until the 1970s,  
ere the main way of inputting  
structions ("programs") into

ere important for industry,  
nment, and business. They  
ized equipment and lots of  
e that the cards were organized  
es were working correctly.

ole to learn more about how  
work.



...nding beside punched cards, ca. 1955



**WELCOME  
TO THE CHM  
LEARNING CENTER!**

*All technology starts as a  
spark in someone's brain*

—Nathan Myhrvold,  
scientist and entrepreneur

The history of technology  
is the history of curious  
people—of dreamers,  
builders, and thinkers who  
have changed the world.

As you explore the Learning  
Center, let it spark your  
own curiosity! Ask questions,  
seek surprises. Look, listen,  
and share.

Whether you are 8 or 88,  
this is your space. Explore,  
enjoy, and have fun. We're  
glad you're here.

# LEARNING

The CHM Learning Lab is the Museum's newest space. Designed to encourage multiple modes of learning, the Learning Lab contains hands-on activities, thought-provoking exhibits, and space for programs and live events, all meant to make the history and impact of technology accessible and relevant for visitors of all ages, backgrounds, and interests.

The Learning Lab accommodates drop-in public access as well as a full calendar of community events and educational programs, workshops, and activities.

Organized into four unique spaces, the Learning Lab encourages interaction and connection at every stop.

## **The Hub**

Explore historical artifacts, an interactive wall featuring profiles of inspiring tech innovators from around the world, insights about CHM's collection from our teen interns, and opportunities for people to share their own insights.

## **The Next Lab**

Deconstruct a computer, solve a coded puzzle, or help us experiment with new exhibit techniques. The Next Lab also functions as a space for concentrated work by scholars, educators, and Museum staff and partners.

## **The Imaginarium**

Discover thought-provoking exhibits of art and music, cutting-edge demonstrations, prototypes of technologies in development, or experimental installations of historical or contemporary computing objects and stories.

## **Currently on Exhibit**

*Conducting Creativity: Orchestrons by Mark Mothersbaugh*

An orchestrion (awr-kes-tree-uh n) is a mechanical musical instrument that may resemble an organ but sounds like a full orchestra. These imaginative instruments were popular among German nobility in the 1850s. But for contemporary artist and musician Mark Mothersbaugh (b. 1950), they capture his personal journey with technology and art. Inquire with our front desk about demonstration times.

## **Harlan E. Anderson Arena**

Amphitheater-style seating serves as a gathering point at the start or end of a program, seating for event attendees, a presentation stage, or a relaxation place for drop-in visitors. The arena is outfitted with digital technologies that allow for filming and remote participation, including live streaming and teleconferencing.

The arena is named in honor of Harlan E. Anderson (1929–2019). The Harlan E. Anderson Foundation's support of CHM comes from Anderson's lifelong commitment to ensuring that everyone has access to quality educational programs.

## **Learning Lab Donors**

### **Visionary Contributors**

Harlan E. Anderson Foundation  
William and Flora Hewlett Foundation  
Gordon and Betty Moore Foundation  
The David and Lucille Packard Foundation

### **Sustaining**

Gene and Patricia Carter  
Oracle  
Severns Family Foundation  
Susan Wojcicki and Dennis Troper

### **Founding**

C. Gordon Bell  
Paul and Antje Newhagen

### **Investing**

Google  
Symantec Foundation

### **Supporting**

David N. Cutler









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**Education Events**

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**08.11.18****Design\_Code\_Build**  
Educators' EditionFeaturing NEXMAP'S  
David Cole**09.22.18****Design\_Code\_Build**Featuring NASA's Irene  
Smith

Level 1: Introductory

**09.23.18****Design\_Code\_Build**Featuring author and Former  
Apple Engineer,  
Ken Kocienda

Level 2: Intermediate

**10.27.18****Design\_Code\_Build**Featuring NASA's Irene  
Smith Cisco's Jyoti Sarin

Level 1: Introductory

**10.28.18****Design\_Code\_Build**Featuring Google's Angela  
Taylor

Level 2: Intermediate

**11.11.28****Design\_Code\_Build**Featuring Cisco's Anjana  
Kambhampati

Level 2: Intermediate

**03.30.19****Design\_Code\_Build**

All Girls Edition

Featuring Genentech's  
Ayesha Hamid and Codette  
Georgia Hutchinson

Level 1: Introductory

**04.13.19****Design\_Code\_Build**Featuring CSU Fresno's  
Scott Peterson

Level 1: Introductory

**04.14.19****Design\_Code\_Build**Featuring Carbon's Becca  
Crabb

Level 2: Intermediate

**05.18.19****Design\_Code\_Build**Featuring Google's Chris  
Cartland

Level 2: Intermediate

**06.02.19****Design\_Code\_Build**

Mentors' Edition

Featuring Analog Design  
Engineer, Neta Retter**06.09.19****Design\_Code\_Build**

Parents' Edition

Featuring Raspberry Pi  
Foundation's Andrew Collins**06.15.19****Design\_Code\_Build**Featuring Rise's Necoline  
Hubner

Level 2: Intermediate

**10.23.18****Field Trip Day****Schools**

Frick Impact Academy

Jeanne R. Meadows  
Elementary

Alpha: Cornerstone Academy

Columbia Middle School

**10.30.18****Field Trip Day****School**Thomas R. Pollicita  
Middle School**11.13.18****Field Trip Day****Schools**

Weaver Middle School

Santee Elementary

Joseph Weller

**03.12.19****Field Trip Day****Schools**

Monroe Middle School

Cesar Chavez Middle School

Alpha: Blanca Alvarado

**03.19.19****Field Trip Day****Schools**

Selby Lane

KIPP Prize Preparatory

**04.09.19****Field Trip Day****Schools**

Lee Mathson

Ida Jew Academy

Adelante Dual Language  
Academy**06.21.19****Teen Takeover: Idea  
to Influence**Organized by CHM's Teen  
Engagement Council (TEC)**10.20.18–10.23.18****Broadcom MASTERS**In partnership with Society  
for Science and the Public,  
and Broadcom Foundation**06.10.19–06.14.19****Picademy**In partnership with  
Raspberry Pi Foundation

# EDUCATION





The 2019 CHM Fellow Awards took place on Saturday, May 4 and honored luminaries James Gosling, Katherine Johnson (accepted by NASA Astronaut Yvonne Cagle), Leslie Lamport, and Louis Pouzin.



2019

FELLOW  
AWARDS

Since 1987 the CHM Fellow Awards have honored distinguished technology leaders who have forever changed the world with their accomplishments. This prestigious award recognizes each Fellow's role in the advancement of computing history, as well as the impact of their contributions. The Fellows have truly bettered our lives and our society. CHM is proud to have a part highlighting and preserving the stories of these esteemed technology heroes for future generations.

### The 2019 Fellow Award Honorees

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**James Gosling:** for the conception, design, and implementation of the Java programming language.

**Katherine Johnson:** for her exceptional calculations during the US space programs that brought the first humans to the Moon.

**Leslie Lamport:** for his contributions to the analysis and design of distributed computer systems, and for the initial creation of the LaTeX document production system.

**Louis Pouzin:** for the pioneering design and implementation of packet communication networks that led the way to the internet.

### 2019 Fellow Sponsors

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#### Headline Sponsors



#### Gala Sponsors

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1185



Sun Microsystems Alumni



### Supporting Sponsors

Donna Dubinsky and Len Shustek

Anonymous

Anonymous

William Harding

Gardner Hendrie and Karen Johansen

IBM



Accenture's Thomas E. Stuermer presented the Fellow Award to NASA Astronaut Yvonne Cagle, who accepted the award on behalf of her dear friend Katherine Johnson.

# TOP 10 ARTIFACTS



Baxter, a robot to aid human assembly line workers, is easily programmed with the trace of a hand.





### **Rethink Robotics, Baxter Robot, USA, 2012**

Lot#: X9025.2019  
Catalog#: 102751979  
Gift of Future Ventures

Robots have been part of global manufacturing assembly lines since the 1960s. Whenever there has been a need to assist human workers with repetitive, very precise, or highly dangerous tasks, robots have been deployed to improve worker safety and ensure consistency of products. Because of their potential to cause serious injury though, robots are often separated from their human coworkers into special “no-go” zones on the shop floor.

Baxter was invented to do repetitive tasks alongside assembly line workers without fear of harming them. Unlike many other robots, which must be laboriously programmed over many hours, Baxter can be programmed by the worker showing/tracing Baxter’s hands how to do the required task. Baxter is easy to train but is not meant as a one-to-one replacement for a human worker on the production line. Says Baxter’s creator, legendary roboticist Rodney Brooks, “We see it as a tool for ordinary workers to do better.”

### **FIDAC, Robert Ledley, USA, 1971**

Lot#: X9031.2019  
Catalog#: 102751999  
Gift of National Biomedical Research Foundation

Biomedical researcher (and dentist) Dr. Robert Ledley developed Film Input to Digital Automatic Computer (FIDAC), a high-speed electronic scanner used for inputting medical imagery into a mainframe computer system. As computers were diffusing into business and academia in the 1960s and ’70s, their application to the biological sciences was tentatively being explored and encouraged by National Institutes of Health (NIH) funding.

Ledley was professor of physiology and biophysics and of radiology at Georgetown University Medical School and benefited from this largesse, pioneering the use of computers in biology and medicine for decades. As Ledley noted early in his career, a great deal of information appears in visual form. Yet images are, in effect, marooned outside the digital universe where their processing by computer might be used to inform research, see large-scale patterns, and ultimately improve human health.

FIDAC represents the first step on the path of digitizing medical and scientific information so that the awesome power of the computer may be applied to our toughest medical and scientific challenges.

### **Hasbro, “AMAZE-A-MATICS,” Chevrolet Astrovette, USA, 1969**

Lot#: X8846.2019  
Catalog#: 102782463  
Gift of Ric Bretschneider

Punching holes in cards to indicate information has a long tradition. Train conductors use them to make sure you’re in the right seat. Computers used them throughout the 20th century for input and output. Even the sandwich shop on the corner uses them to count down your visits until you get a free sub. If the data set is small, punched cards can be a good choice. This toy, for example, is controlled by punched cards that are “read” by the car as it travels.

Known as “the fantastic car with a brain,” this sporty battery-operated Corvette followed a set course around a series of pylons by following preprogrammed plastic punched cards fed through the bottom of the car with rollers. The kit also came with several blank cardboard cards so kids could program their own courses by cutting notches into them: “You program the car. You decide the action.”

### **Model of ITT 7300 ADX System, USA, ca. 1963**

Lot#: X8851.2019  
Catalog#: 102782557  
Gift of Justin Murphy

The merger of computers and communications happened earlier than you might think. As Digital Equipment Corporation (DEC) began shipping its first major product in 1961—the PDP-1 computer—it won a major contract from the multinational conglomerate ITT for 50 of the machines. The new DEC computers formed the nucleus of ITT’s store-and-forward message system called the Automated Data Exchange (ADX), which routed telegraph messages around the world. In much the same way as all FedEx packages go to Memphis first, so did ITT’s messages go to its ADX centers first, where the modified PDP-1s routed incoming messages to their proper destination.

This model would have been used to sell the system initially and for after-sales support and marketing. Fortunately for the newly established DEC, the ITT sale made the PDP-1 itself a viable standard product. While determining how to move information into and out of the PDP-1, early DEC engineer Dr. Gordon Bell also invented the universal asynchronous receiver transmitter (UART), a vital component of nearly all communications systems today. Bell eventually became vice president of engineering at DEC and a founder of CHM.

**Christopher Fenton,  
Cray-1A FPGA Imple-  
mentation, USA, 2010**

Lot#: X8802.2019  
Catalog#: 102783121  
Gift of Christopher Fenton

American electrical engineer Seymour Cray is considered one of the most talented computer designers of all time. Cray's singular purpose was always to design the fastest computers possible at any given time—which he did, for over three decades. In 1972, he started his own company, Cray Research, based in his sleepy mid-western home town of Chippewa Falls, Wisconsin. Four years later, Cray introduced the Cray-1, a computer so fast it was to transform science and engineering and send shock waves around the world of high performance computing.

This modern "reimagining" of the legendary 1976 Cray-1A showcases the power of Moore's Law: the new system is based on a recent commercial field programmable gate array (FPGA) development board and is housed in an imaginative 1/10-scale model, homage to the original six-and-a-half-foot tall machine. In the intervening 34 years since the original, the price of the system has dropped from \$44 million (2019 dollars) to about \$1,000 today. Imitation is the sincerest form of flattery.

**QRS Music Company,  
Player Piano Roll, USA,  
ca. 1919**

Lot#: X8832.2019  
Catalog#: 102783157  
Gift of Knute and  
Ginna Miller

From the Edicts of Ashoka (268 BC) to the USB stick, information storage comes in many forms and spans many eras. Information can be text or it can be code—text that is actually a series of instructions for a machine. Music boxes and automata from the 18th century are early modern examples of machines that ran code—their code being in the form of raised bumps arranged around a rotating cylinder that rang notes and/or provided timing signals to control a device, often human or animal in form.

Piano rolls like this one contained the code required to control pianos fitted with a reading and playback mechanism usually developed by Melville Clark, who founded QRS Music—also the largest producer of piano rolls. Rolls lasted until the Great Depression when radios began replacing player pianos as a source of entertainment in people's living rooms. This one played the song, "Oh, What a Pal Was Mary."

**Rishengchang Piaohao,  
Abacus, China, ca. 1825**

Lot#: X8948.2019  
Catalog#: 102795926  
Gift of Gu LinWu

The earliest known origins of the abacus reach back in time to the Salamis Tablet, a Babylonian counting frame from about 300 BC. Such frames were used by merchants and could be as simple as just lines or sticks in the sand with pebbles used to mark quantities. It is useful to note that the abacus is not a calculator per se, but a way to keep track of intermediate results while performing calculations in one's head.

The Chinese abacus (also called "Suanpan" 算盘) was known by at least 190 AD, as it is described in a book from that year. This particular abacus, of high quality with silver inlays, is from Rishengchang Piaohao, the first draft bank in China, and was first used during the Qing Dynasty in 1825. At its peak in the 19th century, this bank had branches in major cities across China and processed nearly half of Chinese domestic capital flows.

**Gordon Moore and Harry  
Sello, Sketch on Moore's  
Law, USA, ca. 1968**

Lot#: X8761.2019  
Catalog#: 102783359  
Gift of Sheila Sello

In 1968, Dr. Gordon Moore asked chemist Dr. Harry Sello, who worked for him in the Palo Alto R&D Laboratory of Fairchild Semiconductor, to photograph a selection of integrated circuits illustrating his observation that an increasing number of transistors were being fabricated on a silicon chip every year. This, of course, came to be known as "Moore's Law" but at the time it was not a well-known term, having been coined later (in 1975) by Caltech professor Carver Mead.

The law's relentless success in "predicting" the future reflects continuous ongoing improvements across a number of disciplines including chemistry, physics, photolithography, mechanical and electrical engineering, and half a dozen other specialties. With each new turn of the wheel, came faster, smaller, and more affordable innovations. Moore's Law has become a silent but powerful backdrop to the last six decades in which the power of electronics has brought dramatic improvements in scientific knowledge and human quality of life.

Either Moore or Sello made this sketch; its exact author remains a mystery.

**Processor Technology,  
SOL-20 Prototype, USA,  
1976**

Lot#: X8753.2019  
Catalog#: 102785534  
Gift of Robert Marsh

In the late 1970s, transistor-transistor logic (TTL) integrated circuits and a few select microprocessors were available inexpensively, lowering the barriers to entry for companies wishing to build microcomputers. Like minicomputers before them, hundreds of companies entered the market, but ultimately only a few survived.

One company that made a big splash was Processor Technology. In late 1975, *Popular Electronics* editor Les Solomon approached the company to design a terminal to connect to the MITS Altair 8800 computer which the magazine had featured the year before. Having a terminal for the groundbreaking but hard-to-use Altair would make entering information—and seeing results—much easier.

American electrical engineer Lee Felsenstein designed an entire computer, instead of just a terminal, and named it SOL. This prototype, in its original black-smoked plastic, was featured on the cover of the July 1976 issue of *Popular Electronics*. The production version, which came in an idiosyncratic (but beautiful) metal case with wooden sides, sold over 12,000 units.

**Antelope MCC Ultra  
Portable Computer,  
Switzerland, 2003**

Lot#: X8789.2019  
Catalog#: 102782673  
Gift of Chad Hale

Based on the Transmeta Crusoe microprocessor, the pocket-size, nine-ounce Modular Computing Core (MCC) was a "handheld PC" that users connected to peripherals, like a screen and keyboard, through a series of docking station "shells." The MCC, which combined "the functionality of a PDA, desktop, and notebook computer in a single portable device," reflected a brief market opening for devices based upon a so-called "modular architecture," in which one computer could unify various individual devices and functions, eliminating the syncing problem between them.

Antelope licensed the manufacturing technology for making the MCC so compact from IBM, which developed it at its Thomas J. Watson Research Center. While the MCC was a computer you could hold in your hand, it required an external screen, power supply, and keyboard. In another decade or so, the vision of a truly portable computer would finally come to fruition in the form of the smartphone.

Fortunately for the newly established Digital Equipment Corporation (DEC), the ITT sale made the PDP-1 a viable standard product, perhaps thanks in part to this sales model.



Known as "the fantastic car with a brain," this battery-operated Corvette followed a set course around a series of pylons by following preprogrammed plastic punched cards fed through the bottom of the car.



TOP 10

## Chuck Geschke

### Interviewed by David C. Brock

April 4, 2018 and  
October 26, 2018

Lot#: X8568.2018  
Catalog#: 102740312  
and 102740448

Charles “Chuck” Geschke is a cofounder of Adobe Systems and an important figure in computer graphics and electronic publishing. In this oral history, he recounts growing up in Cleveland, Ohio, his educational trajectory in Jesuit institutions, his eventual turn to computer science and matriculation at Carnegie Mellon, his professional involvement at Xerox PARC, and the founding and development of Adobe Systems. Geschke worked toward a PhD in mathematics at Case Western Reserve while teaching at John Carroll University. He recounts his inadvertent encounter with computers when a former student offered to teach him computer programming with Fortran over the course of a summer. This sparked an interest in computer science, leading him to pursue a PhD in computer science at Carnegie Mellon University beginning in 1968.

## John Warnock

### Interviewed by David C. Brock

April 26, 2018 and  
August 8, 2018

Lot#: X8536.2018  
Catalog#: 102738760  
and 102738855

John Warnock is a cofounder of Adobe Systems and a significant figure in computer graphics, electronic publishing, and printing. In this oral history, Warnock discusses growing up in Utah, his education in mathematics at the University of Utah, his professional trajectory in computing and computer graphics, and Adobe’s founding and development. Warnock notes his family’s artistic interests, including painting and drawing, and his continued passion for photography. He discusses his education in the Holladay public schools and his transformation in high school from a lackluster student into a passionate one with the help of his mathematics teacher. Years after making key contributions to computer graphics as a graduate student at the University of Utah, he was interviewed by Chuck Geschke for a job at Xerox PARC and joined the newly created Imaging Sciences Laboratory in 1978. Warnock describes innovations made in printing and computer displays while there and their connection to the creation of Adobe.

## Peggy Burke

### Interviewed by Chuck House

May 10, 2018

Lot#: X8618.2018  
Catalog#: 102738790

Peggy Burke is the founder and CEO of 1185 Design, a Palo Alto-based branding agency. Burke studied graphic design at the University of Cincinnati and set up an internal communications team at software consultancy Boole & Babbage before founding 1185 Design in 1985. The agency has worked with companies like Motorola, Cisco, and Sun Microsystems to visually convey the essence and value of semiconductors, routers, and servers to the world. The result was a new visual language: the logo 1185 created for Cisco was the first iconic symbol for a router. In the 1990s, 1185 became the go-to agency for the internet startups of the dot-com boom as well as established companies just beginning to embrace digital tools. More recently, the agency has helped shape the stories behind its designs. For over 30 years, Burke has led 1185 to create some of the most significant and enduring brands in Silicon Valley and beyond.

## Jacques Vallée

### Interviewed by Marc Weber

August 30, 2018

Lot#: X8770.2019  
Catalog#: 102717358

Jacques Vallée is a pioneer of groupware, databases, and online communities, as well as of the formal study of UFOs. He studied and worked in astrophysics in France, moving to the United States in 1962 to work on a computerized map of Mars. This led to his early work in databases and artificial intelligence and a doctorate in computer science. At Stanford University he developed the first version of what became the SPIRES database. He then moved to Doug Engelbart’s Augmentation Research Center at SRI, which had created one of the first major systems for online collaboration as well as hosting the Network Information Center for the ARPANET. Vallée took those inspirations with him to the Institute for the Future (IFF), where he developed PLANET, a pioneering groupware system for ARPANET. The system was spun off by IFTF as InfoMedia and ran over TYMNET. Clients included nuclear plant operators, who used it for an emergency response network. Vallée then turned to investing, founding Sofinnova and several Euro-American venture funds. He is a published author on several topics.



## Gordon Eubanks

**Interviewed by**  
**David C. Brock and**  
**Doug Fairbairn**

September 11, 2018

Lot#: X8774.2019

Catalog#: 102717362

Born in 1946, Gordon Eubanks is a pioneer of personal computer software and languages. A naval submarine officer, Eubanks was a doctoral student of Gary Kildal at Monterey's Naval Postgraduate School. When Kildal wrote the soon-to-be popular CP/M operating system for early personal computers, Eubanks wrote an accompanying BASIC language compiler (BASIC-E) as his thesis project. He then wrote another version, CBASIC, for the IMSAI personal computer. In 1981 Digital Research acquired Eubanks' company, Compiler Systems. After CP/M was squeezed out of the marketplace by Microsoft's DOS, Eubanks joined Symantec where he developed Q&A, an integrated database and word processor you could query in plain English. He later became president and CEO of Symantec, making it a major publisher of utilities and security software. He left in 1999 to head web security firm Oblix, later acquired by Oracle. Eubanks is a highly noted stamp collector.

## Charles Trimble

**Interviewed by**  
**Charles Rino**

September 25, 2018

Lot#: X8786.2019

Catalog#: 102717378

GPS was intended to be a dual-use military and civilian position, navigation, and timing system. The fact that the civilian applications would spawn a major global industry was not anticipated. Charlie Trimble was among the first commercial GPS developers. Trimble described how marketing a device that provided a corrected latitude/longitude readout for LORAN-C navigation fixes led to the founding of Trimble Navigation in 1978 and a reinvention of the surveying industry. Both the Trimble LORAN-C and an early GPS breadboard were projects that Charlie Trimble's former employer, Hewlett-Packard, chose not to continue. His oral history includes technology innovation, disaster recovery, high-level political intrigue, and a competition for scarce radio frequency allocations that persists to this day. GPS applications are an integral part of our modern world, from providing directions to the Taj Mahal on a smartphone to tracking the roaming habits of Elk in Wyoming.

## Pat Gelsinger

**Interviewed by**  
**David C. Brock and**  
**Doug Fairbairn**

January 9, 2019 and  
March 21, 2019

Lot#: X8899.2019

Catalog#: 102781030  
and 102781087

Pat Gelsinger discusses his background and youth in a Pennsylvania farming community, his introduction to electronics at Lincoln Tech, and his recruitment to Intel in 1980. He recounts the development of his career at Intel and his education at Santa Clara and Stanford Universities. Gelsinger details his leadership roles in the development of the Intel 80386 and 80486 microprocessors and his interactions with key figures at Intel. He describes the rivalry between Intel's CISC approach and the RISC approach championed by John Hennessy and his professional mentorship by Andy Grove. He reflects on Intel, his tenure at its first chief technology officer, and his recruitment to EMC and becoming its CEO. He details EMC, its history and his efforts there before becoming the CEO of VMware. Gelsinger discusses the history and strategies of VMware and his efforts as its CEO. The interview closes with a discussion of his philanthropic activities.

# TOP 10 ORAL HISTORIES

## Scott McNealy

**Interviewed by  
Uday Kapoor**

February 26, 2019

Lot#: X8935.2019  
Catalog#: 102781075

Born in Indiana, Scott McNealy graduated from Harvard (BA) and Stanford (MBA) with an emphasis on business and manufacturing. He cofounded computer technology company Sun Microsystems in 1982. Despite having no technical background, McNealy's leadership helped develop Sun into one of the world's leading computer companies. In particular, his articulation of the company vision, "the network is the computer" led to Sun's role as the "dot in the dot-com" during the amazing growth of the internet in the mid-1990s. McNealy gained a reputation as a brash and aggressive CEO, unconventional for his outspoken comments about his business rivals. However, those close to him emphasized his business insight, his appreciation of his coworkers and his ability to relate to many different types of people, especially customers. After leaving Sun, McNealy has devoted time to his startups Curriki and Wayin.

## James Gosling

**Interviewed by  
Hansen Hsu and  
Marc Weber**

March 15, 2019

Lot#: X8971.2019  
Catalog#: 102781081

James Gosling is known as the father of the Java programming language. Growing up in Calgary, Alberta, Canada, after a BSc at the University of Calgary in computer science, Gosling received his MA and PhD at Carnegie Mellon University, where he developed a variant of the popular Unix text editor Emacs. Gosling joined Sun Microsystems, Inc. in 1984, and created the NeWS window system. After NeWS, a group, including Gosling, formed the Green project to explore consumer technologies, producing the Star7, a multimedia remote control. It was for Star7 that Gosling first created the Oak language, later renamed Java. After an unsuccessful foray into interactive cable TV, Gosling's team repurposed Java for the Web, which enabled interactive web pages. Sun partnered to include Java with Netscape's browser. Sun's goal was for Java to become a network-centric, independent platform that would free computers from proprietary systems like Microsoft. While Java was lost on PCs and web browsers, it became the dominant language in enterprise computing and a major player in mobile and embedded computing.

## Ann Winblad

**Interviewed by  
Marguerite Gong  
Hancock**

May 8, 2019

Lot#: X9043.2019  
Catalog#: 102781310

Ann Winblad is an entrepreneur and venture capitalist based in San Francisco. Born and raised in Minnesota, Winblad convinced three fellow programmers at the Federal Reserve Bank in Minneapolis to join her in founding Open Systems, one of the first software companies, when she was in her early twenties. After navigating the early days of the industry, Winblad sold the company for \$15 million and moved to San Francisco in 1984. She quickly found herself in demand by venture capitalists who needed her expertise to help them understand the challenges of the software companies in their investment portfolios. While explaining her diagnosis of one of these companies at a board meeting, she met John Hummer, who invited her to join him in starting the first venture capital firm focused exclusively on software. In 1989, the two founded Hummer Winblad Venture Partners, where Winblad has enjoyed a long and successful career.

Peggy Burke

Ann Winblad





# WHAT MATTERS

LESSONS FROM MY JOURNEY



**AN EVENTFUL  
YEAR**



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**CHM Live Events**

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**07.20.18**

**Friday Nights @ CHM**

Science Slam: Computing, Anthropology, Astronomy, and More

Series of Short Presentations from the Wonderfest Science Envoys

**SPEAKERS**

**Carina Cheng**

PhD Student, Astronomy  
University of California,  
Berkeley

**Dylan Hadfield-Menell**

PhD Student, Artificial  
Intelligence and Robotics  
University of California,  
Berkeley

**Anna Khazenon**

Graduate Student, Cognitive  
Neuroscience  
Stanford University

**Eric Copenhaver**

PhD Student, Physics  
University of California,  
Berkeley

**Julie Hui**

PhD Student, Anthropology  
University of California,  
Berkeley

**MODERATOR**

Tucker Hiatt  
Executive Director  
Wonderfest

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**07.25.18**

**CHM Live | Inside the Transformation**

Quantum Questions

**SPEAKERS**

**John Martinis**

Research Scientist  
Google

**Matthias Troyer**

Principal Researcher  
Microsoft Research

**Pat Gumann**

Research Staff  
IBM Research, Quantum  
System Integration and  
Cryogenics

**MODERATOR**

David C. Brock  
Director, Software  
History Center  
CHM

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**08.03.18**

**Friday Nights @ CHM**

General Magic

Film Screening and Panel  
Discussion

**SPEAKERS**

**Marc Porat**

Cofounder and Former CEO  
General Magic

**Andy Hertzfeld**

Cofounder  
General Magic

**Bill Atkinson**

Cofounder  
General Magic

**Megan Smith**

CEO  
Shift7

**Michael Stern**

Executive Producer  
and Story Creator  
eneral Magic

**Sarah Kerruish**

Director, Producer,  
and Writer  
General Magic

**MODERATOR**

**Dan'l Lewin**  
President and CEO  
CHM

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**08.15.18**

**CHM and IEEE Present**

Celebrating the Birthplace  
of Silicon Valley

Shockley Semiconductor  
Dedication at 2585  
California St.

**SPEAKERS**

**James F. Gibbons**

Professor Emeritus and  
Former Dean of the School  
of Engineering  
Stanford University

**James A. Jefferies**

President  
IEEE

---

**08.15.18**

**CHM Live | Technically Speaking**

Tomorrow's Computers:  
More Moore?

**SPEAKERS**

**Karen Bartleson**

2017 President  
IEEE

**Mark Bohr**

Senior Fellow and Director  
of Process Architecture and  
Integration  
Intel

**William Chappell**

Director, Microsystems  
Technology Office  
DARPA

**MODERATOR**

**David C. Brock**

Director, Software  
History Center  
CHM

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**08.24.18**

**Friday Nights @ CHM**

Women of Silicon Valley:  
Intersections

Conversations with Diversity  
and Inclusion Advocates

**SPEAKERS**

**Sheree Haggan**

Diversity Specialist on Talent  
Programs and Events  
Google

**Ana Medina**

Chaos Engineer  
Gremlin

**Danielle Forward**

Product Designer  
Facebook

**Angela Taylor**

Software Engineer  
Google

**MODERATOR**

**Lynette Barksdale**

Head of Diversity,  
Equity, Inclusion  
Access

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**09.07.18**

**Friday Nights @ CHM**

From STEM to STEAM: How  
and Engineer Wrote a Play  
Film Screening and Panel  
Discussion

**SPEAKER**

**Susan Marie Frontczak**

Scholar, Playwright, and  
Performer

**MODERATOR**

**Jen Myronuk**

Cofounder  
STEM on Stage

---

**09.20.18**

**CHM Live | Inside the Transformation**

Leading Matters: Lessons  
from My Journey

**SPEAKER**

**John Hennessy**

Chairman  
Alphabet

**MODERATOR**

**Marissa Mayer**

Cofounder  
Lumi Labs

---

**09.28.18**

**Friday Nights @ CHM**

The Silicon Valley Science Fiction Short Film Festival

Screening of 18 Short Film from Around the World

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**10.23.18**

**CHM Live | Inside the Transformation**

Digital Resilience

**SPEAKER**

**Ray A. Rothrock**

Chairman and CEO  
RedSeal

Author

*Digital Resilience*

**MODERATOR**

**Siobhan Gorman**

Partner, Cybersecurity and Privacy  
Brunswick, Group, LLC

---

**10.26.18**

**Friday Nights @ CHM**

Artful Design

How we Shape Technology, and How Technology Shapes Us

**SPEAKER**

**Ge Wang**

Associate Professor, Center for Computer Research in Music and Acoustics  
Stanford University

**MODERATOR**

**Hansen Hsu**

Curator, Software History Center  
CHM

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**11.13.18**

**CHM Live | Inside the Transformation**

Disruptive Solutions: Innovation, Entrepreneurship, and Prosperity

**SPEAKER**

**Clayton Christensen**

Kim B. Clark Professor of Business Administration  
Harvard Business School

---

**MODERATOR**

**Scott Cook**

Founder and Chairman of the Executive Committee  
Intuit

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**12.08.18**

**CHM Live | Inside the Transformation**

Blitzscaling: The Lightning-Fast Path to Building Massively Valuable Companies

**SPEAKER**

**Reid Hoffman**

Cofounder  
LinkedIn

Partner

Greylock Partners

**MODERATOR**

**Dan'l Lewin**

President and CEO  
CHM

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**12.12.18**

**CHM Live**

Solving Today's Great Problems? Lessons from Engelbart's Demo @50

Can Engelbart's techniques for accelerating change solve today's great problems?

**SPEAKERS**

**Erika Woolsey**

Marine Biologist and Ocean Design Teaching Fellow  
Stanford University

**Ben Rattray**

Founder and CEO  
Change.org

**Erika Gregory**

Managing Director  
NSquare

**MODERATOR**

**Paul Saffo**

Consulting Professor, School of Engineering  
Stanford University

---

**02.15.19**

**CHM On the Road**

2019 State of the Valley Program | Silicon Valley and the Fourth Industrial Revolution

**SPEAKERS**

**Fei-Fei Li**

Codirector, Human-Centered Artificial Intelligence Institute  
Stanford University

**Murat Sönmez**

Managing Director  
World Economic Forum

Global Head

Centre for the Fourth Industrial Revolution

**Shannon Vallor**

Regis and Dianne McKenna Professor, Department of Philosophy  
Santa Clara University

Artificial Intelligence Ethicist and Visiting Researcher  
Google

**MODERATOR**

**Dan'l Lewin**

President and CEO  
CHM

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**03.28.19**

**CHM Live | Technically Speaking**

Ada Lovelace: The Making of a Computer Scientist

Augusta Ada King's Life in Mathematics, 1815-1843

**SPEAKERS**

**Ursula Martin**

Professor Mathematics and Computer Science  
University of Oxford

**Adrian Rice**

Professor Mathematics  
Randolph-Macon College

**MODERATOR**

**David C. Brock**

Director, Software History Center  
CHM

---

**04.19.19**

**Friday Night @ CHM**

Love Notes to Newton Screening

Celebrating the Newton Device and the Community Around It

**SPEAKERS**

**Noah Leon**

Director

*Love Notes to Newton*

**Steve Capps**

Chief Innovator

PayNearMe

Newton Design Team

Member

Apple

**Walter Smith**

Early Newton Team Member

Apple

**MODERATOR**

**Marc Weber**

Curatorial Director, Internet History Program  
CHM

---

**04.26.19**

**CHM Live | Inside the Transformation**

Trillion Dollar Coach: The Leadership Playbook of Silicon Valley's Bill Campbell

**SPEAKERS**

**Eric Schmidt**

Former Executive Chairman  
Alphabet

**Alan Eagle**

Director  
Google

**Jonathan Rosenberg**

Senior Vice President  
Alphabet

**MODERATOR**

**Susan Wojcicki**

CEO  
YouTube

---

**05.28.19**

**CHM Live | Inside the Transformation**

Alpha Girls: The Women Upstarts Who Took on Silicon Valley

**SPEAKERS**

**Julian Guthrie**

Journalist and Author

**Abe Kleinfeld**

President and CEO  
GridGain Systems

**Sonja Perkins**

Managing Director  
The Perkins Fund

Founder

Broadway Angels

**MODERATOR**

**Laurie Yoler**

Founding Board Member  
Tesla Motors

---

**05.29.19**

**Common Sense and CHM Present**

Designers for Our Future: Solutions for Digital Well-Being

Investing in Ethical Tech

**SPEAKERS**

**Tim Chang**

Partner

Mayfield Fund

**Craig Newmark**

Founder

Craigslislist and Craig Newmark Philanthropies

**MODERATOR**

**Dan'l Lewin**

President and CEO  
CHM

---

**06.12.19**

**CHM Live | Technically Speaking**

If Software, Then Space

Perspectives on Computing and Space History

**SPEAKERS**

**Charles Simonyi**

Technical Fellow  
Microsoft

**Mathew Shindell**

Earth and Planetary Sciences Historian  
National Air and Space Museum, Smithsonian

**Dan Lickly**

Aeronautical Engineer  
MIT Instrumentation Laboratory

**MODERATOR**

**David C. Brock**

Director, Software History Center  
CHM

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**06.21.19**

**Friday Nights @CHM**

Teen Takeover: Idea to Influence

Organized by CHM's Teen Engagement Council (TEC)

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03.28.2019



*Ada Lovelace*

THE MAKING OF A COMPUTER SCIENTIST  
Augusta Ada King's Life in Mathematics, 1815-1843

Exponential Center @CIM LIVE

05.28.2019

THE WOMEN UPSTARTS WHO TOOK ON SILICON VALLEY

Julian Guthrie, Abe Kleinfeld, Sonja Hoel Perkins  
Laurie Yoler, Moderator

INSIDE THE TRANSFORMATION

ALPHA GIRLS

Exponential Center @CIM LIVE

08.08.2018



THE LIGHTNING-FAST PATH TO BUILD MASSIVELY VALUABLE COMPANIES

Reed Hoffman in Conversation with  
GCM CEO Dan I. Lewin

BLITZ-SCALING

Exponential Center @CIM LIVE

10.23.2018



INSIDE THE TRANSFORMATION

DIGITAL RESILIENCY

Chairman & CEO of RedSeal  
Ray Rothrock in Conversation with  
Brunswick Partner Siebhan

Exponential Center @CIM LIVE

11.03.2018

DISRUPTIVE SOLUTIONS

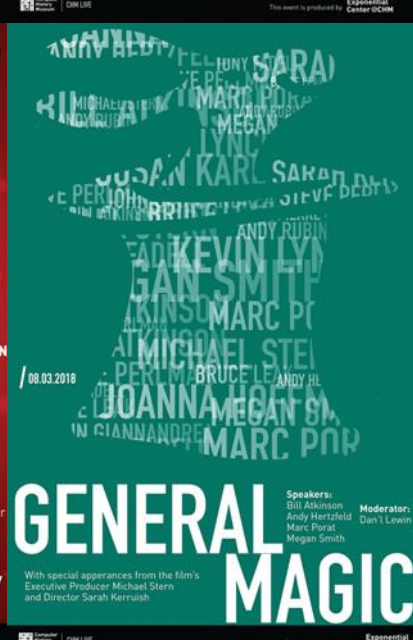
INSIDE THE TRANSFORMATION

Innovation Expert  
Clayton Christensen  
in Conversation with  
Inuiti Co-founder & Chair  
Scott Cook

INNOVATION, ENTREPRENEURSHIP & PROSPERITY

Exponential Center @CIM LIVE

08.03.2018



GENERAL MAGIC

Speakers:  
Bill Atkinson  
Andy Hertzfeld  
Marc Portet  
Megan Smith

Moderator:  
Dan I. Lewin

With special appearances from the film's  
Executive Producer Michael Stern  
and Director Sarah Kerruish

Exponential Center @CIM LIVE

09.20.2018



IF SOFTWARE, THEN SPACE

PERSPECTIVES ON COMPUTING AND SPACE HISTORY

Dan Lickly, Matthew Shindell, Charles Simonyi  
David C. Brock, Moderator

TECHNOLOGY SPEAKERS

Exponential Center @CIM LIVE

09.20.2018

INSIDE THE TRANSFORMATION

Authenticity and Trust  
Leadership as Service  
Empathy  
Courage  
Collaboration  
Innovation  
Intellectual Curiosity  
Storytelling  
Legacy

LEADING MATTER

LESSONS FROM MY JOURNEY

An Evening with  
Alphabet Chairman  
John Hennessy  
in Conversation with  
Marissa Mayer

Exponential Center @CIM LIVE

12.12.2018



LESSONS FROM ENGELBART'S DEMO@50

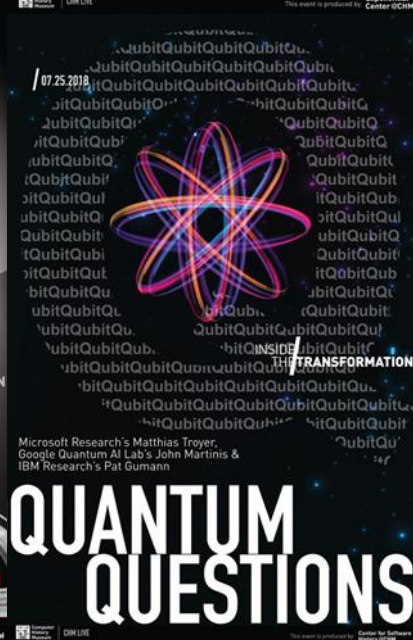
Can Engelbart's techniques for accelerating change solve today's great problems?

Erika Gregory, Ben Rattray & Erika Rodriguez  
Moderator, Paul Saffo

SOLVING TODAY'S GREAT PROBLEMS?

Exponential Center @CIM LIVE

07.25.2018



QUANTUM QUESTIONS

Microsoft Research's Matthias Troyer,  
Google Quantum AI Lab's John Martinis &  
IBM Research's Pat Gumann

INSIDE THE TRANSFORMATION

Exponential Center @CIM LIVE

11.01.2018

TOMORROW'S COMPUTERS: MORE MOORE

AN EVENING WITH  
INTEL SENIOR FELLOW MARK BOHR AND  
DIRECTOR OF DARPA'S MICROSYSTEMS TECHNOLOGY OFFICE  
WILLIAM CHAPPEL

TECHNOLOGY SPEAKERS

Exponential Center @CIM LIVE

04.26.2018

INSIDE THE TRANSFORMATION

TRILLION DOLLAR COACH

THE LEADERSHIP PLAYBOOK OF SILICON VALLEY'S BILL CAMPBELL

Google leaders Eric Schmidt, Jonathan Rosenberg, and Alan Eagle  
in Conversation with YouTube's Susan Wojcicki

Exponential Center @CIM LIVE

# FY 19

INCOME STATEMENT (\$K)	FY 2019	FY 2018	FY 2017	FY 2016
<b>Total Revenue</b>	<b>\$11,807</b>	\$14,752	\$12,750	\$13,081
<b>Total Expenses</b>	<b>\$15,591</b>	\$14,675	\$13,646	\$13,200
<b>Changes in Net Assets</b>	<b>(3,784)</b>	77	(896)	(119)
<b>REVENUE CATEGORIES (\$K)</b>				
<b>Annual Fund</b>	\$2,196	\$1,899	\$2,028	\$1,644
<b>Public Programs</b>	\$5,716	\$7,336	\$5,391	\$9,459
<b>Museum Operations</b>	\$2,528	\$2,565	\$2,429	\$2,610
<b>Investment Gain (Loss)</b>	\$1,168	\$2,717	\$2,667	(847)
<b>Other Income</b>	\$195	\$235	\$235	\$215
	<b>\$11,807</b>	<b>\$14,752</b>	<b>\$12,750</b>	<b>\$13,081</b>
<b>EXPENSE CATEGORIES (\$K)</b>				
<b>Operations</b>	\$2,813	\$2,329	\$2,122	\$2,117
<b>Content &amp; Public Programs</b>	\$7,855	\$7,862	\$7,502	\$7,439
<b>Marketing &amp; Development</b>	\$2,031	\$1,585	\$1,465	\$1,259
<b>Depreciation &amp; Amortization</b>	\$2,891	\$2,899	\$2,557	\$2,385
	<b>\$15,591</b>	<b>\$14,675</b>	<b>\$13,646</b>	<b>\$13,200</b>
<b>ASSETS (\$K)</b>				
<b>Net Assets</b>	<b>\$59,897</b>	\$63,681	\$63,602	\$ 64,498

Contributions for museum programs and projects, including multiyear pledges, are recognized as revenues when received, whereas expenditures are recognized as incurred. Consequently, revenues and expenditures do not always align in the same fiscal year. The Museum prudently manages cash such that major projects are not undertaken

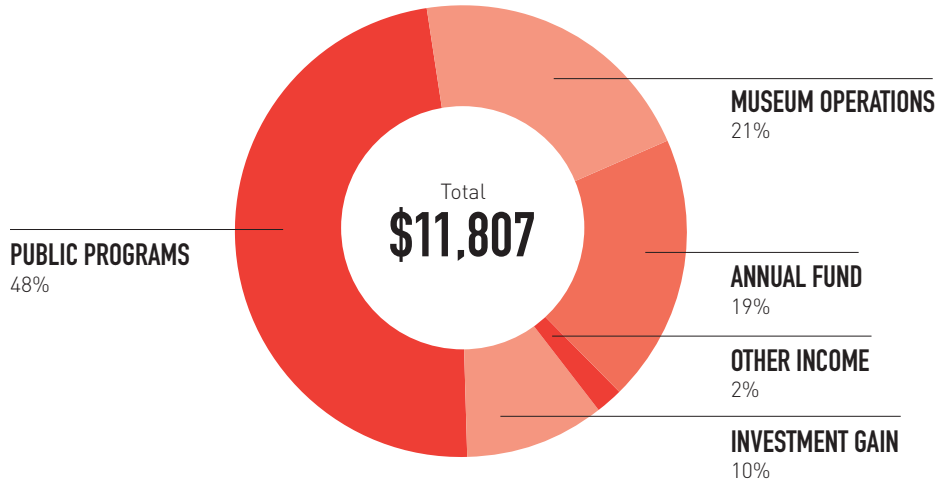
until funding has been secured. Revenue changes from the previous fiscal year were driven by contributions received in FY2018 toward the construction of the Museum's new Learning Lab, where most of the expenditures were incurred and capitalized upon completion in FY2019, and by lower gains from the Museum's investments which are

marked to market based on estimated net asset values at the end of each fiscal year. Expense changes from the previous fiscal year were driven primarily by the vacancy of the Museum's CEO position throughout most of FY2018 and increased marketing and development resources in FY2019.

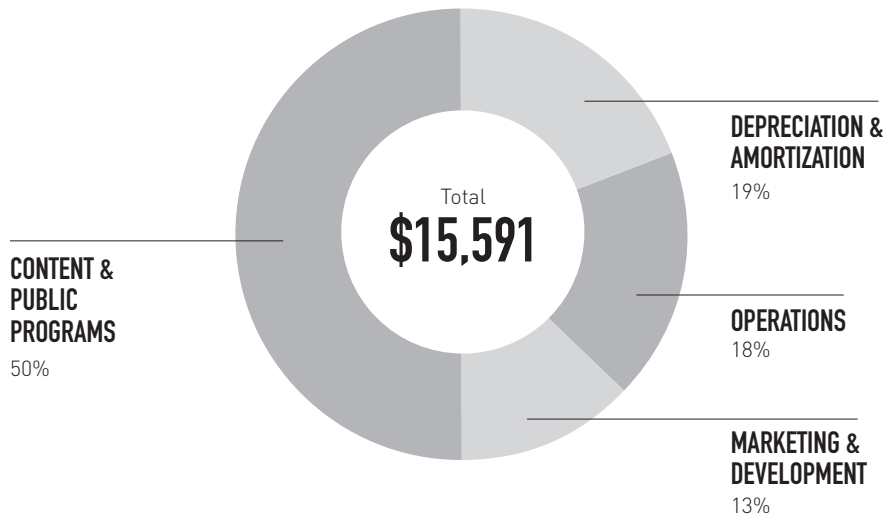
# SUMMARY



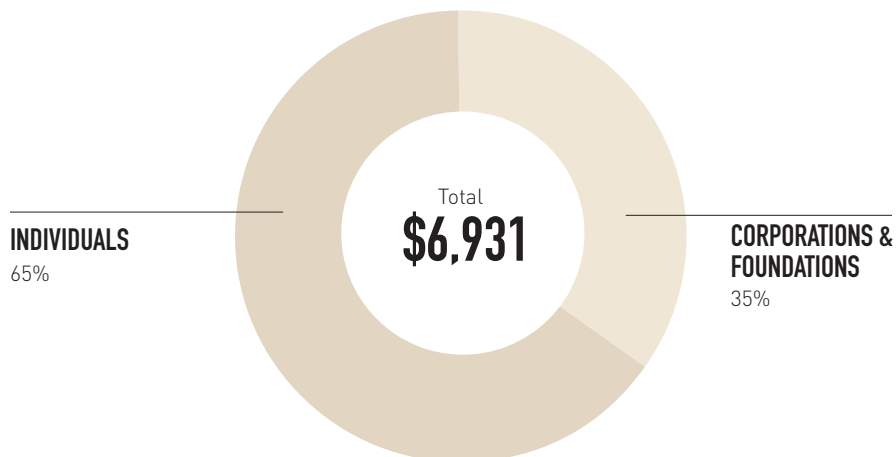
REVENUE BY CATEGORY (\$K)



EXPENSES BY CATEGORY (\$K)



DONATIONS BY TYPE OF DONOR (\$K)



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Computing is the story of people, the technology we create and how it has forever changed our world. It is a story that belongs to all of us. CHM's Lifetime Giving Society is a leading class of donors whose cumulative gifts total \$100,000 or more. These visionary donors form the foundation of our institution and pave the way for a future as inspiring as the story of computing.

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Just as magnetic-core memory was the heart of early computers, CHM's Core donors are the heart of our organization. Core donors provide the largest source of support for our Annual Fund, which in turn provides flexible resources to support immediate needs, including collections, live programming, and educational programs. This listing recognizes the generosity of Core donors who made gifts to the Annual Fund between July 1, 2018 and June 30, 2019. Giving levels are inspired by the standard binary sizes of computer memory.

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Franklin "Pitch" and Catherine H. Johnson

Eric and Wendy Schmidt

Raymie Stata

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Ron and Penny Blake

Jack and Casey Carsten

Lawrence and Janice Finch

Anonymous

Tom\* and Carolyn Friel

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Diane Greene and Mendel Rosenblum

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Jon Rubinstein and Karen Richardson

Richard Sites and Lucey Bowen

Tevanian Family Foundation

Carrie and Bob Zeidman

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