SCOTT'S COPY

TIMELINE

1950 — 1959

REVISED: SEPTEMBER 25

1950

ALL DEFINATES:
Transistor patent (1 PAGE)
photograph of transistor
photograph of Shockley, Bardeen, Brattain (too large ?)

TECHNOLOGY: MATERIALS ON TRANSISTOR: copy of Patent: "Three Electrode Circuit..., photograph of the three inventors, color photo of the first transistor;

The invention of the transistor in 1948 by John Bardeen, Walter Brattain, and William Shockley directly affected the growth of the computer industry.

(TEXT IN)

DEFINATE: one williams tube

TECHNOLOGY: MANIAC williams tube (xD214.80) (second choice; Ferranti Atlas Williams Tube (X67.82) (first choice).

Prof. Frederic Williams at the University of Manchester noted that if a tube similar to a television tube could be "written on" electronically, it could also be read electronically. "Williams" tubes were the only random-access storage devices available prior to the invention of core memory. They were widely used during the fifties.

MANIAC Williams Tube (XD214.80)
Lent by Smithsonian Institute.

or

Ferranti Atlas Williams Tube (X67.82)
Gift of University of Manchester, Department of Computer Science

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OPTIONAL!!!

COMPUTER: color photo of Zuse Z-4 installation.

Konrad Zuse's Z4, a relay computer built during World War II, introduced computers to Continental Europe. Courtesy of Konrad Zuse.

DEFINATE: Choose an EDSAC or Manchester, SEAC and SWAC photo for a collage Ace Harvard Mark IV

COMPUTER: photographs of the EDSAC, Manchester, SEAC and SWAC.

Operating electronic, stored program computers in 1950.

(GWEN WILL WRITE NEW TEXT AFTER SELECTION)

DEFINATE: Giant Brains

APPLICATION: books: Giant Brains by Edmund Berkeley;

In Giant Brains, Boston actuary, Edmund Berkeley looked toward the day when computers would become commonplace objects that ordinary people could use.
Giant Brains
Courtesy of Dick Rubinstein.

(TEXT IN)

1951

DEFINATE: patent (connect w/ 1953 core memory machine)
manual (optional)
electrostatic tube (yes in calculator case)

TECHNOLOGY: MATERIALS ON INVENTION OF CORE MEMORY: copy of patent, "multicoordinate ..." #2,736,880; photograph of Forrester; display pp. 6 & 7 of Whirlwind manual; one of the Whirlwind's electrostatic tubes.

Don't have this photo yet!

Professor Jay Forrester developed a highly reliable, random-access, magnectic core memory for the Whirlwind computer. Core memory served on computers until the 70's when it was replaced by semi-conductors.

Electrostatic Tube (X412.84)
Lent by Robert R. Everett.

(TEXT IN)

DEFINATE: tape

TECHNOLOGY: reel of UNIVAC tape (X82.82).

The UNIVAC led the trend away from punched cards to magnetic tape for data storage. This reel stored over a million characters, the equivalent of tens of thousands of punched cards.

UNIVAC tape (X82.82)
Gift of Lawrence Livermore National Laboratory

(Text Optional)

OPTIONAL: (as filler only)

COMPUTER: photograph of Leo.

The Lyons Catering Company, Ltd. modelled this computer after the EDSAC and used it to handle its commercial accounts.
Courtesy of The Science Museum, London.

(Text Optional)

DEFINATE: book

SOFTWARE: copy of book: Wilkes, Wheeler & Gill, The Preparation of Programmes for an Electronic Digital Computer,

Based on experience with the Cambridge University EDSAC, this book was the first textbook on programming.
Gift of Gordon Bell (84.61)

(Text Optional)

YES: Plugboards (use freely as background etc.)

SOFTWARE: IBM plugboards from Burndy Machines (X292.83 part).

IBM accounting machines could be made to perform short sequences of operations by plugging cables on a board.
IBM Plugboards (X292.83)
Gift of Burndy Corporation

(Text Optional)

1952

DEFINATE: shift register (XD6.75)
photo of Harvard Mark I
An Wang notebook pages (if Gwen gets them yes!)
we still need this!

TECHNOLOGY:

Harvard Mark IV Shift Register (XD6.75)
Gift of Robert Trocchi

(GWEN WILL WRITE TEXT AND TRY TO GET NOTEBOOK PAGES)

---

stat from book

(1952 Election Cube)

DEFINATES: photos in the Wulforst book, which we have w/ Collingwood.
Photo of UNIVAC from Livermore.

APPLICATION:

"For a while after this appearance on television, the word 'UNIVAC' was synonymous with 'computer' in the public's mind."---Paul Ceruzzi.

UNIVAC photo

Courtesy of Lawrence Livermore National Laboratory

(TEXT ON HOLD BE SURE TO CREDIT THE PHOTO WE TAKE FROM BOOK TOO)

1953

DEFINATES: Whirlwind Core Plane (D29.73)
IRE Proc. (use the actual page from book p. 17A)

TECHNOLOGY: core memory plane (D29.73B); ad. in IRE Proc..

In 1953 the first core memory was installed on the Whirlwind computer. In 1955, the IBM 704 was the first commercial machine to use core.

(TEXT IS PROBABLY IN)

DEFINATE: RCA Selectron Tube

TECHNOLOGY: RCA Selectron tube (XD168.83)

John Von Neumann hoped that the Selectron would become the basic high-speed memory device for computers, but only the Rand Corporation's Johnniac used it.

RCA Selectron tube (XD168.83)
Gift of Keith Uncapher and Thomas Ellis

(TEXT IN ??)

DEFINATE: Transistor in tube

TECHNOLOGY: Transistor in a cardboard tube (x31.82).

By 1953, transistors were commercially available.

However, their performance and price continued to favor the mature vacuum tube technology.
Transistor in a cardboard tube (X31.82)
Gift of Carver Mead

(TEXT IN)

DEFINATE: module

COMPUTER: module (X426.84)

IBM 701 module (X426.84)
Gift of Gordon Bell

(GWEN TO SUPPLY SOME TEXT)

DEFINATE: ILLIAC I module

COMPUTER: Illiac (I), circuit module, (X255.83).

The ILLIAC (Illinois Automatic Computer) was one of several laboratory built machines patterned after the design of John von Neumann of the Institute for Advanced Study at Princeton.

ILLIAC I module (x255.83)
Gift of University of Illinois, Department of Computer Science

(TEXT IN)

OPTIONAL:

SOFTWARE: copies of two manuals: "Programming manual for UNIVAC I," and "programmers' handbook for Manchester Mark II.

1954

DEFINATE: radio

TECHNOLOGY: "Regency" radio (x374.84).

The Regency was the first inexpensive consumer product using transistors. The high volume of consumer sales allowed Texas Instruments to slide down the "learning curve" and produce transistors at lower costs.
"Regency" radio (x374.84)
Gift of Roger Webster and Texas Instruments.

(TEXT IN)

WOULD LIKE TO USE ALL 3 see what you can do

COMPUTERS: three calculators: Monroe (x90.82), Marchant (D235.81), and Olivetti (x200.83).

ACKNOWLEDMENTS MUST BE ADJUSTED

DEFINATE: slide rule

COMPUTERS: slide rule (B32.79), and case.

slide rule (B32.79)
Lent by Gordon Bell

DEFINATE: journal

APPLICATION: Title page of the first issue of Journal of ACM.

DEFINATE: book (open to title page)

APPLICATION: "As A Man Thinks....." (84.62)

Gift of Charles Jortberg

OPTIONAL:

FILLER: two booklets: RCA, GE tube manual.

DEFINATE: patent (have xerox needs to be made up) start up from Xerox

1955

TECHNOLOGY: copy of Patent: Signal Conversion Device #3,108,266.

Computers process information digitally, but the primary information source, the physical world, provides most data in analog form. This patent describes one of the first devices to convert analog to digital information.

(TEXT IN)

DEFINATE: all the pieces listed below (even the tube with the diagrams would give a "Japanese High-Tech" feeling)

TECHNOLOGY: relay (xD106.80), logic diagram for the FACON 100 computer. FUJITSU read only memory.

Fujitsu's Facon 100 computer used relay logic and read-only card memory. The Japanese bypassed vacuum tube technology by going to a transistorized computer a few years later.
Facon 100 relay (xD106.80)
Gift of F. Kurosaki.

(TEXT IN ??)

OPTIONAL: photos of tradic
ad for Transistor from TIME 1954, p. 12 (get stat from BPL

TECHNOLOGY: ad for transistor, photograph of tradic.

[want precise description of tradic]
courtesy of bell labs.

(IF USED GWEN WILL DO SOME TEXT)

DEFINATE: module
Von Neumann's quote should be done big and treated as an artifact. (on plexi?, speak with GWEN on this)

COMPUTER: IBM NORC adder module (xD27.80).

"It is very important...to do sometimes what the United States Navy did in this case, and what IBM did in this case: to write specifications simply calling for the most advanced machine which is possible in the present state of the art. I hope this will be done again soon and that it will never be forgotten."

John Von Neumann at the Dedication of the IBM NORC

IBM NORC adder module (xD27.80)
Gift of Herbert Lechner.

DEFINATE: IBM 650 module and ad — already mounted on foam-core — must use as-is.

chronological listing of installations. (this

needs some creative way of being displayed so that we see for each year up to 1955 what computwers existed. In 1956 we want to say something about the list being to long to list anymore.

COMPUTER: IBM 650 Logic Module (xD12.75), chronological listing of installations.

650 Logic Module (xD12.75)
Gift of Murray Allen.

(NEW TEXT OR NO TEXT ASK GWEN)

1956

DEFINATE: photo TX-0
transistor in bottle

TECHNOLOGY: transistor in a bottle (x403.84), from the TX-0; photograph of the TX-0.

The TX-0 (Transistor Experiment-0) packaged transistors like vacuum tubes, in case they failed and had to be replaced. However, the transistors soon proved their far greater reliability and could be soldered directly onto circuit boards.

(TEXT IN)

~~[illegible]~~

THIS MUST BE ADDRESSED BUT WITH ANY COMBINATION OF THE FOLLOWING THAT YOU LIKE

COMPUTER: color photo of IBM 704; photo of manual "Fortran for the IBM 704"; copy of IBM reference manual for FORTRAN on the 704.

IBM developed the programming language FORTRAN (FORmula TRANslation) for powerful scientific computing on its 704.

[Photo]
Courtesy of Lawrence Livermore National Laboratory

(TEXT IN)

DEFINATE: Use all these items if you can, leave out the brochure if cramped

APPLICATION: ELECTION ~~1952~~ 1956--newspaper clipping from Detroit Times; photo of election night, with Burroughs E-101; Burroughs E-101 pinboard (x102.82); Pinboard description; brochure: "you can program..."

Burroughs E-101 pinboard (x102.82)
Courtesy of William Smith

OPTIONAL: would need stating at BPL, (would use 2nd page photo and caption)

APPLICATION: Article on "Translation by Machine," Scientific American. — get stat from BPL

OPTIONAL: Radio Electronics cover (stat this)
Electronic brains booklet

FILLER: copy of booklet on "electronic brain;" article in Radio-Electronics on Tic-Tac-Toe machine.

Booklet
Gift of George Stibitz.

Pamphlet (8½x11) Introduction to Arithmetic Computers

1957

DEFINATE: module

TECHNOLOGY: one "Digital Laboratory Modules."

The newly-formed Digital Equipment Corporation introduced these modules as their first product.

(TEXT IN OR GWEN FOR NEW TEXT OR POSSIBLELY NONE)

EVERYTHING HERE IS OPTIONAL

TECHNOLOGY: ITEMS RELATING TO SHRINKING COMPONENTS: copy of Sputnik headline, NYT articles on space race, page 141 of Dummer book on "Micro-module" circuits.

[See comments below; also use comments from Dummer book on Micromodule, p. 141.]

DEFINATE: Use the modules in any arrangement

5

TECHNOLOGY: 3 Circuit boards: " Trigger pair v E.M.S." from USAF Cambridge Research Laboratory.

The United States responded to the Soviet lead in booster technology by exploring ways to lessen the weight of space payloads, thus enabling the use of less-powerful rockets.
3 Circuit boards (CHECK THERE NUMBERS)
Gift of Gunars Zaghars.

(THIS TEXT NEEDS TO BE CHECKED AND QUESTIONED IF WILL EVEN USE)

DEFINATE: Deuce Drum

TECHNOLOGY: English Electric "Deuce" Drum (x65.82).

This fixed-head drum from the English Electric "Deuce" could store about 40,000 characters.

English Electric "Deuce" Drum (x65.82)
Gift of Murray Allen (check this).

(TEXT ????)

DEFINATE: Hard disk (check the number) — from Time Mag. Nov. 5, 1956 pp. 14, 15
photo of the 50-disk file (to be stated at the BPL).

TECHNOLOGY: hard disk, and associated photograph and publicity for the IBM RAMAC.

The IBM RAMAC hard disk was a significant breakthrough in mass-storage technology. Each could store about 100,000 characters, or the equivalent of about 70 pages of double-spaced, typed text. A complete RAMAC disk file consisted of 50 disks with a capacity of 5 million characters--equivalent to the contents of a large textbook.

RAMAC disk
Gift of Brigham Young University.

[Photographs]
Credit appropriate source.

DEFINATE: photo of Leprechaun — make color print from slide

COMPUTER: photos (b & w and color slides) of Leprechaun.

Bell Laboratories, developed this all-transistorized digital logic machine under an Air Force contract.

Courtesy of Bell Labs.

(TEXT???)

OPTIONAL

COMPUTER: manual for the Burroughs DATATRON.

The Burroughs DATATRON was one of the first commercial computers with an index register, which greatly simplified programming and speeded up computation.

OPTIONAL

stat from Xerox as-is.

SOFTWARE: copy of print-out of "first user written FORTRAN program," from Annals, vol 6 #1; also vol 1 # 1, pp. 72-74.

Initial skepticism concerning high-level programming languages evaporated as users found that FORTRAN helped them solve numerical problems much faster than machine language could.
Courtesy of Herb Bright.

DEFINATE: ACM Roster

APPLICATION: copy of first ACM Roster of Members.

This first directory listed about 2,500 members.

OPTIONAL:

FILLER: cartoon, and still from "Desk-Set"(20th Century Fox).

In the film "Desk Set,"Spencer Tracy wants to improve office efficiency by installing a computer, but Katherine Hepburn objects.
Courtesy of the Modern Museum of Art.

1958

DEFINATE: ues the following in whatever manner you think best

TECHNOLOGY: board, on which are mounted transistors and diodes (x63.82) from Transitron Corp, and others. also book, GE Transistor Manual.

Transistor circuits replaced the following technologies within the next decade.

[book] GE Transistor Manual
Courtesy of Dick Rubinstein.

[transistors]
Check this Bob Glorioso I believe??

DEFINATE: Delay Line (D230.80) this is first choice
Delay line (X54.82) this is second choice
~~Delay line (D108.80)~~

TECHNOLOGY: Magnetostrictive Delay Line (D230.80), from the Ferranti Sirius Computer; and another from the Ferranti Pegasus (x54.82).

Magnetostrictive delay lines stored digits as an electromagnet induced pulses along a coil of wire at the opposite end.

Magnetostrictive Delay Lines (x54.82, D230.80)
CHECK ACKNOWLEDGEMENT

DEFINATE: UNIVAC 80/90 module
Check with Bill W. for more modules (eg. Philco 212)

5

TECHNOLOGY: magnetic amplifier circuit board for the UNIVAC Solid State 80/90 Magnetic Amplifier (x238.83).

The UNIVAC Solid State 80 was one of the first commercial solid state computers delivered. This magnetic amplifier performed pulse shaping and timing, while diodes performed the switching [THIS IS AN EXTREMELY BORING COMMENT, BUT I DON'T KNOW WHAT TO DO WITH IT]
circuit board for the UNIVAC Solid State 80/90 Magnetic Amplifier (x238.83)
Gift of Ted Bonn.

DEFINATE: model (X205.83)
3 logic boards (X188.83)

COMPUTER: model of MOBIDIC (x205.83); logic boards from MOBIDIC (188.83).

One of the Army "Fieldata" series of computers, the MOBIDIC has been called the first family of upward-compatible machines.
Model of MOBIDIC (x205.83)
Gift of Fredrick W. Paget.
Logic boards from MOBIDIC (188.83)
Gift of Jack Stevens.

(TEXT ?????)

DEFINATE:

SOFTWARE: vol 1, #1 of the Communications of the ACM.

OPTIONAL BUT DO TRY TO INCLUDE: articles would need to be stat at the BPL

stat from BPL

APPLICATION: article on "Computer v. Chess Player," Scientific American.

Scientists have always considered playing chess an activity suited for testing the "intelligence" of computers . The game is based on a well-defined set of rules, is intellectually challenging, and is by no means easy to play well.

(TEXT ???)

ONLY IF ABSOLUTELY DESPERATE:

FILLER: books: Programmers' Handbook for Ferranti Mercury; early issue of the British Computer Society's Computer Bulletin; ACM Roster of Members.

Ferranti handbook
Gift of F.R.A. Hopgood.

1959

DEFINATE: Kilby patent

TECHNOLOGY: Patent #3,138,743: Jack Kilby's patent for "Miniaturized Electronic Circuits,"

After exploring several ways of miniaturizing electronic circuits, Jack Kilby realized that single circuit blocks containing several individual circuits could be made--the IC.

(TEXT ????)

DEFINATE: Noyce patent
planar tansister photo (teardrop)

TECHNOLOGY: copy of R. Noyce's Patent for IC: "Semiconductor Device and Lead Structure."; Planar transistor photograph from Fairchild.

Noyce's circuit, developed shortly after Kilby's, laid the foundation for the direction of IC manufacture. The drawing clearly shows all connections and devices lying on the same substrate, with no jumper wires or other external connectors.
#2,981,877

(TEXT ???)

DEFINATE: 3 Brochures (in Japanese)
2 modules
Photo #1 can be used
Other materials are optional

COMPUTER: Advertisement, or brochure, (in Japanese) describing the NEAC-2203; possibly a logic board as well; also an article in Datamation, May/June of the previous year, showing a photograph of Prof. Takahashi.

The NEAC 2203 was a fully-transistorized commercial computer.

(TEXT ????)

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stat from BPL

DEFINATE: ashtray plus New Yorker comment

SOFTWARE: Ash Tray illustrating APT

A computer directed in the APT language could control machine tools that shaped pieces of metal. This ash tray was the first object it produced

Gift of Douglas Ross.

(TEXT IN)

~~slot~~ photograph & print

DEFINATE: Jean Sammets handwritten note are to be statted (any size you choose) and then to be retuned to her. See Bill W. for the originals

SOFTWARE: memo, with handwritten notes, by Jean Sammett, on "Problems to be considered...,"

Courtesy of Jean Sammett

Put back in 1956

ERMA

DEFINATE: Photo
Book open to page with ERMA numbers
Use other materials as need to form a set

APPLICATION: ERMA photos; "Welcome to ERMA"; ERMA branch guide; ERMA manual; "Work with ERMA"; article in Computer & Automation on processing checks. Open up one of the pamphlets to show the MICR numbers.

Bank of America and the Stanford Research Institute jointly developed ERMA (Electronic Recording Machine, Accounting). The system was so widespread that its Magnetic-Ink Character Recognition (MICR) style of writing numbers became a symbol of "high tech." Actually, MICR characters consisted of only the ten decimal digits plus a few special characters; it never included the letters of the alphabet.

[photo]
Courtesy of Bank of America Archives

Detenation — Communist stuff

DEFINATE: SAGE "programmer" advertisment (using 2)

FILLER: SAGE advertisement for people to program the computer

10/26/84

60's documents to be mounted

		W	h	¼" panel w/stripping	mounting board	coming later
1.	Packard Bell PB-250 ad	8	11		✓	
2.	ALGOL Ad	8	11		✓	
3.	Polaris photos (4)	various			✓	
4.	Computer Drafting Ad	8	11	✓		
5.	JOVIAL spread	16½	11	✓		
6.	Inventory of Govt. comp.	4¾	11½		✓	✓
7.	AFIPS Constitution	15	11½	✓		✓
8.	Cover: Tower of Babel	8½	11	✓		
9.	Time Mag Cover: Space Race	8½	11	✓		
10.	Atlas Computer article	8	11	✓		
11.	Cover of M.A.D.	7⅝	11	✓		
12.	Teletype ad	8	11		✓	
13.	Cartoons / coloring book	8½	11	✓		✓
14.	IBM 360 brochure	8	11	✓		
15.	IBM 360 color photo (with text)	9½	10	✓		
16.	EDP Vol.1, No.1 title page	8½	11	✓		✓
17.	Scientific Am. spread	16	11½	✓		
18.	Diagram of PDP-6 timeshare	14	12½	✓		✓
19.	PDP-8 graphics plotter PDP-8 on potato picker (text)	9	16	✓		
20.	GO-to statement... (stet)	10¼	5½	✓		✓
21.	Viatron ad from Wall St. J.	16½	22½	✓		✓

60's photos + text to be mounted together*

	PHOTO		WITH TEXT	
	W	h	W	h
22. PDP-1 photo + text	9½"	6½"	9½	9
23. IBM 7030 photo + text	9½"	6½"	9½	9
24. LARC photo + text	7	5½	7	7½
25. Three founders of DG photo + text	6½	9½	6½	12½
26. TTL chip				
27. 2001 Photo				
28. NAND gate chip				
29. BIG TTL chip				

* also see items #15 and #19 on "documents to be mounted" list

60's Pedestals

	w	h	d
LARC modules:	12"	12"	6"
IBM 360 panel	28"	18"	8"
Anita Calculator	11"	16"	14"
ILLIAC II module	9"	4"	11"
Wire-wrap module	36"	6"	8"
HP 9100 A	10"	10"	18"
Core Stack	6"	6"	9"
Rope Memory	18"	6"	4½"
50's editions:			
Ashtray	7"	7"	7"

45 pica line max

20/21 Digital Equipment Corporation used these modules in their first computer, the PDP-1, built in a converted mill in Maynard, Massachusetts. They were also sold separately as components.
12/21 Courtesy of Digital Equipment Corporation

45 pica line max

20/21 IBM's "SMS" module was a packaging scheme for all IBM machines. The largest computer to use "SMS" was the "Stretch" (7030), shown here as it was at Lawrence Livermore National Laboratory.
12/21 Courtesy of Lawrence Livermore National Laboratory

20 CDC 160 module
12/21 Loan from Control Data Corporation (X92.82)

40 pica max

20/21 The Packard Bell PB-250 computer consisted of 145 of these modular cards, a magnetically-regulated power supply and a Flexowriter. The memory was a magnetostrictive delay line.
Packard Bell PB-250 module +10
12/16 Gift of Claude Kagan (X463.84)

35 pica line max

20/21 Univac's LARC was a one-of-a-kind supercomputer built for Lawrence Livermore National Laboratory.
12/21 Courtesy of Lawrence Livermore National Laboratory

30 pica line max

20/21 The General Electric KDF-9 was the first commercial computer with stack architecture to be announced. However they were only delivered in 1963, when Burroughs had already installed stack machines.
12/21 Gift of F.R.A. Hopgood

45 line max

20/21 Some programmers hoped that ALGOL would become the universal computer language. Although Burroughs supported it with enthusiasm, the language was eclipsed by FORTRAN, especially in the United States.

45 line max

20/21 Insistence by the Defense Department that computer manufacturers provide their machines with COBOL compilers helped to establish COBOL as the standard high-level language for business data processing.

40 pica line max

20/21 This Resistor-Transistor Logic (RTL) circuit was the industry's first monolithic integrated circuit.
12/21 Courtesy of Fairchild Camera and Instrument Corporation

30 pica line max

20/21 In October 1961, Texas Instruments delivered its Microminiature Computer to the Air Force. Designed by Jack Kilby, it was the first demonstration of a practical application of solid state circuits.
12/21 Gift of Texas Instruments (X463.84)

45 pica line max

20/21 In 1960, President Kennedy pledged that the U.S. would land on the Moon before the end of the decade. In 1961, The Polaris Missle Guidance Computer inaugurated new techniques to start this effort.
12/21 Courtesy of Charles Stark Draper Laboratory

20/21 The Anita was the first all-electronic calculator.
Anita +10
12/16 Gift of Leonard Woodall (XD209.80)

30 picas line max

20/21 Magnetic core planes, stacked in an array of 18x64x64 or 73,738 bits.
12/21 Gift of Digital Equipment Corporation (X470.84)

30 pica line max

20/21 This compact and rugged disk memory was used in the Minuteman Missile flight computer. +10
Minuteman Missile Fixed Head Disk Memory
12/16 Gift of Aron Insinga (XD107.80)

30 pica line max

20/21 The MINSK series of computers was one of the most widespread in the Soviet Union. +10
MINSK-2 Circuit Board
12/16 Gift of Dileep Bandaker (X327.84)

30 pica max

20/21 Developed at Manchester University, the Atlas pioneered the virtual memory concept. +10
Atlas 1 Circuit Board (XD1.75)
Atlas 1 Fixed Store (XD129.80)
12/16 Gifts of F.R.A. Hopgood

45 pica line max

20/21 MAD, a language based on ALGOL 58, was designed to provide rapid and easy translation of algebraic statements into machine code for pedagogical use.

45 pica line max

20/21 Developed in 1959, the language LISP, with its emphasis on symbolic processing, is radically different from algebraic languages and is used for artifical intelligence applications.

45 pica line max

20/21 Called "the first desk-top computer," the Olivetti Programma 101 could execute a program stored by a magnetic card and its internal memory could hold up to 120 program steps.
Olivetti Programma 101 +10
12/16 Gift of GTE Systems (X300.83)

45 pica line max

20/21 The ILLIAC II was built at the University of Illinois using mesa transistors, an improvement over the earlier point-contact transistors. Mesa technology can be regarded as a stepping stone to the planar transistor.

ILLIAC II Module +10

12/16 Gift of University of Illinois, Department of Computer Science (XD120.80)

40 pica line max

20/21 The Teletype Model 33 represented a significant advance for data input and output over punched card machines. It quickly established itself for interactive computing and input-output for minicomputers and then later for the home hobbyist.

Teletype ASR Model 33 +10

12/16 Gift of Houghton Mifflin Company, TSC Division (X448.84)

45 pica line max

20/21 One of the first uses of graphical output was SYMAP, a program developed by Howard T. Fisher at the Harvard Graduate School of Design, to generate maps showing the spatial distribution of data.

45 pica line max

20/21 Flow chart template and cards issued to programmers of the NCR 390, a 200 word memory computer.

12/21 Gift of Antonia Oliver (X469.84)

45 pica line max

20/21 Read only rope memory from a DEC 338 Display Processor defined 64 characters as 32-bit numbers describing vectors to draw. This 338 was the first, stored program display processor.
Rope Memory Character Generator 342 +10
12/16 Gift of Digital Equipment Corporation (D393.83)

45 pica line max

20/21 Texas Instruments built their integrated circuits in the form of "bars". This bar is a high-performance operational amplifier.
12/21 Courtesy of Texas Instruments

45 pica line max

20/21 The IBM 360 was a family of compatible computers that covered a broad price and performance range and bridged the division between business and scientific use. +10
IBM 360/30 Console Panel
12/16 Loan from IBM (X461.84)

20- ICT 1900 brochure
Gift of F.R.A. Hopgood
12/21

45 pica line max

20/21 The first operational amplifier generally used throughout the computer industry.

12/21 Courtesy of Fairchild Camera and Instrument Corporation

45 pica line max

20/21 The Burroughs B-500 was one of the many machines to be wired automatically by Gardner-Denver wirewrap machines. The process increased reliability and lowered manufacturing costs.

Burroughs B-500 Wire-wrap Module Unit +10

12/16 Loan from Design Pak, Inc. (X317.84)

40 pica line max

20/21 Perhaps the first commercially published textbook on a high-level programming lanugage, this book remains in print.

12/21 Loan from Dick Rubinstein

20 Button

Loan from Jana Buchholz (X427.84)

12/21

35 pica line max

Transistor-transistor logic such as that used in this TTL NAND gate is still a workhorse of the industry.
Courtesy of Fairchild Camera and Instrument Corporation

35 pica line max

The PDP-6 was the first commercial computer designed and used for timesharing.

45 pica line max

20/21 The development of Metal-Oxide-Semiconductor (MOS) circuits allowed chip manaufacturers to produce integrated circuits having very high circuit densities and low power consumption. The development of microprocessors relied on MOS circuits.

12/21 Courtesy of Fairchild Camera and Instrument Corporation

45 pica line max

20/21 The HP 9100A is a desk calculator and a stored program computer that was designed for engineering and scientific calculations. It cost a little more than half a PDP-8/I for about the same amount of physical hardware and could calculate a floating-point square root faster than the IBM System/360 Model 30.

Hewlett-Packard 9100A +10

12/16 Gift of Clyde Still (X83.82)

30 pica line max

20/21 By the end of the sixties, few universities remained in the business of designing and building computers. One exception was the University of Illinois at Urbana where the ILLIAC III was built.
ILLIAC III Module +10
12/16 Gift of Clifford Carter (XD333.81)

45 pica line max

20/21 Original Equipment Manufacturers embedded minicomputers into their own products, greatly extending the range of applications for computers. A PDP-8 is embedded in an automatic potato picker.
12/21 Courtesy of Digital Equipment Corporation

30 pica line max

20/21 This book collected, analyzed, and for the first time, clarified the informal programming techniques developed over the years by computer scientists.

45 pica line max

20/21 2001: A Space Odyssey featured computer control of space travel.
Courtesy of the Modern Museum of Art 12'

20/21 MAC = "MEN AND COMPUTERS"
MAC = "MACHINE-AIDED-COGNITION"
MAC = "MULTIPLE-ACCESS COMPUTERS"
12/21 Loan from Dick Rubinstein

45 pica line max

20/21 The integrated circuit had grown from the first chips containing a few circuits to ones of such complexity that they needed the help of a computer to design them.

12/21 Courtesy of Fairchild Camera and Instrument Corporation

40 pica line max

20/21 IBM upgraded its 360 series by adopting integrated circuits, virtual storage and semiconductor memory. The 360 model 195 marked the transition to the new 370 series.

IBM 360/195 Modules +10

12/16 Gift of Rutherford Appleton Laboratory (X180.83)

32 picas line max

20/21 In 1968 Henry Burkhardt, Herbert Richman, and Edson de Castro founded Data General. The NOVA, the company's first computer, was a fast, powerful and inexpensive mini that pioneered the use of medium scale integrated circuits and bus architecture.

Data General Nova +10

12/16 Gift of Data General (X84.82)

30 picas line max

20/21 This card format was an attempt to keep punch card technology alive. The next year, IBM introduced the floppy disk, which became the dominant storage medium for small computer systems for the next decade. +10

IBM 96-column cards used on the IBM, System 3

12/16 Gift of Allied Plywood Corporation (X428.84)

10pt — Computers Introduced in 1956 — 30pt rule 1X45

Computers Introduced in 1957 same

Computers Introduced in 1958 same

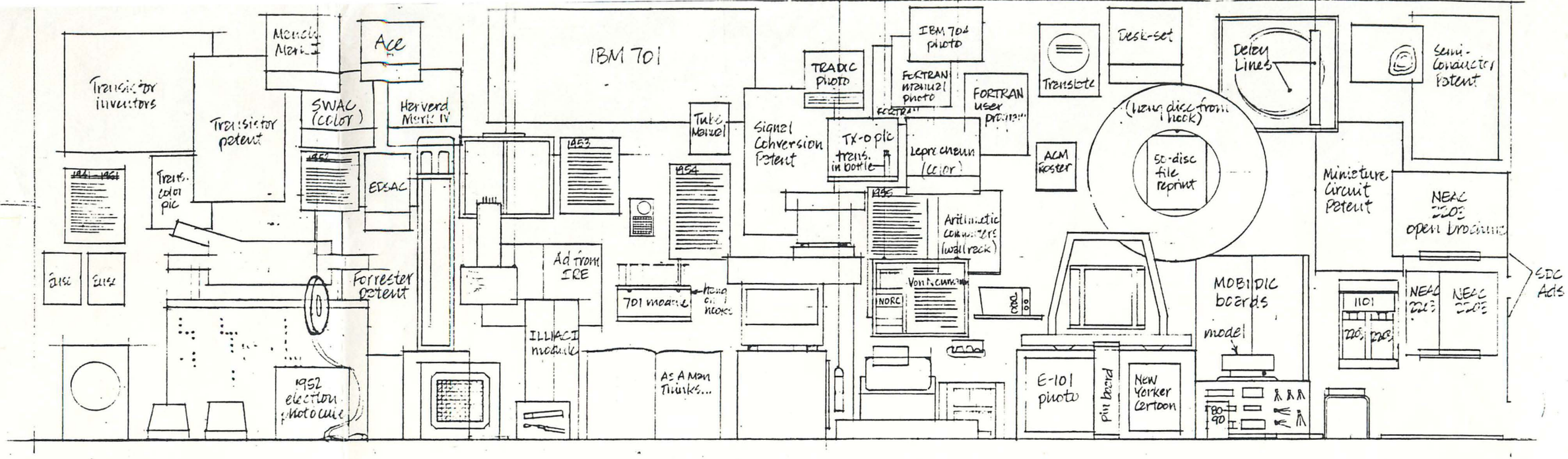
Computers Introduced in 1959 same

Computers Introduced in 1960 same

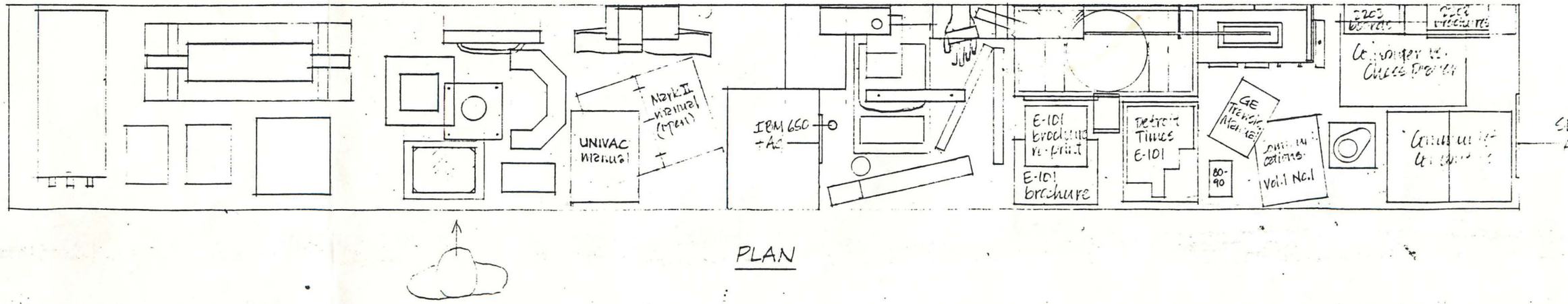
Computers Introduced in 1961 same

Computers Introduced in 1962 same

Computers Introduced in 1963 same



ELEVATION

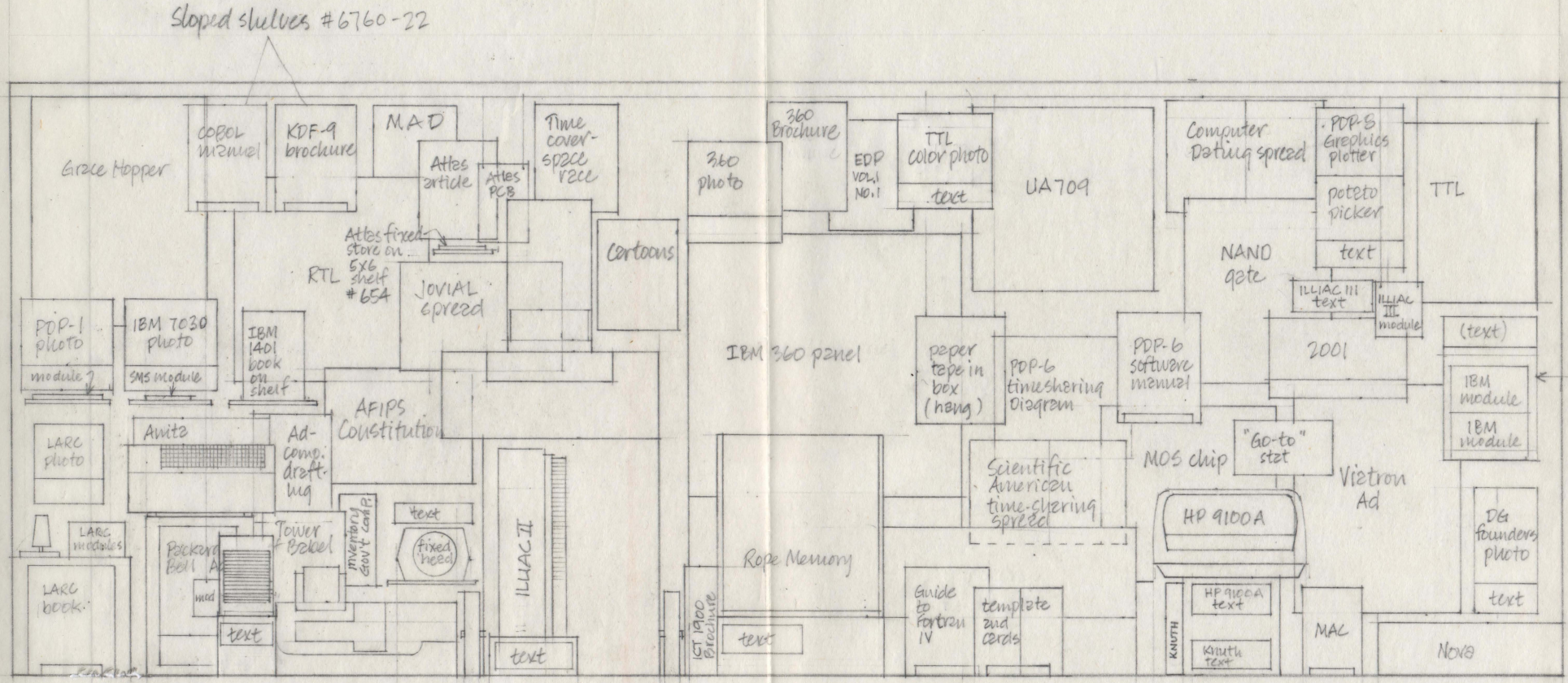


PLAN

50's TIMELINE

SCALE: 3/4" = 1'-0

COMPUTER MUSEUM TIME-LINE COLLAGE: 1960-1969



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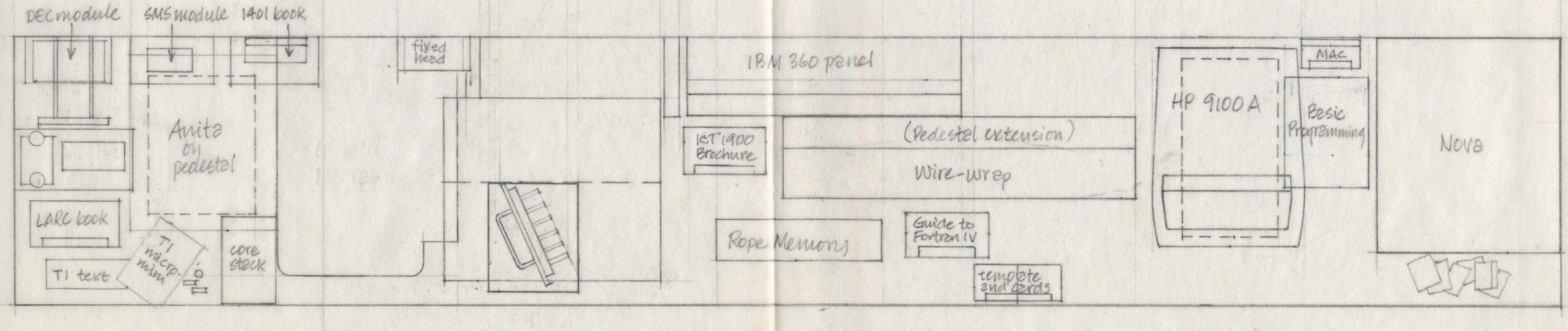

PLAN