



LUNDS UNIVERSITET

DIKA11.3 Digitaliseringens mediehistoria

Teorier – Introduktion (7,5 hp)

Professor Pelle Snickars

Institutionen för kulturvetenskaper

Avdelningen för ABM & digitala kulturer



Jameson

The Political Unconscious

PREFACE

Always historicize! This slogan—the one absolute and we may even say “transhistorical” imperative of all dialectical thought—will unsurprisingly turn out to be the moral of *The Political Unconscious* as well. But, as the traditional dialectic teaches us, the historicizing operation can follow two distinct paths, which only ultimately meet in the same place: the path of the object and the path of the subject, the historical origins of the things themselves and that more intangible historicity of the concepts and categories by which we attempt to understand those things. In the area of culture, which is the central field of the present book, we are thus confronted with a choice between study of the nature of the “objective” structures of a given cultural text (the historicity of its forms and of its content, the historical moment of emergence of its linguistic possibilities, the situation-specific function of its aesthetic) and something rather different which would instead foreground the interpretive categories or codes through which we read and receive the text in question. For better or for worse, it is this second path we have chosen to follow here: *The Political Unconscious* accordingly turns on the dynamics of the act of interpretation and presupposes, as its organizational fiction, that we never really confront a text immediately, in all its freshness as a thing-in-itself. Rather, texts come before us as the always-already-read; we apprehend them through sedimented

**Även den digitala kulturen har en historia –
och för att förstå sig på denna är det alltid
mödan värt att **historisera!****

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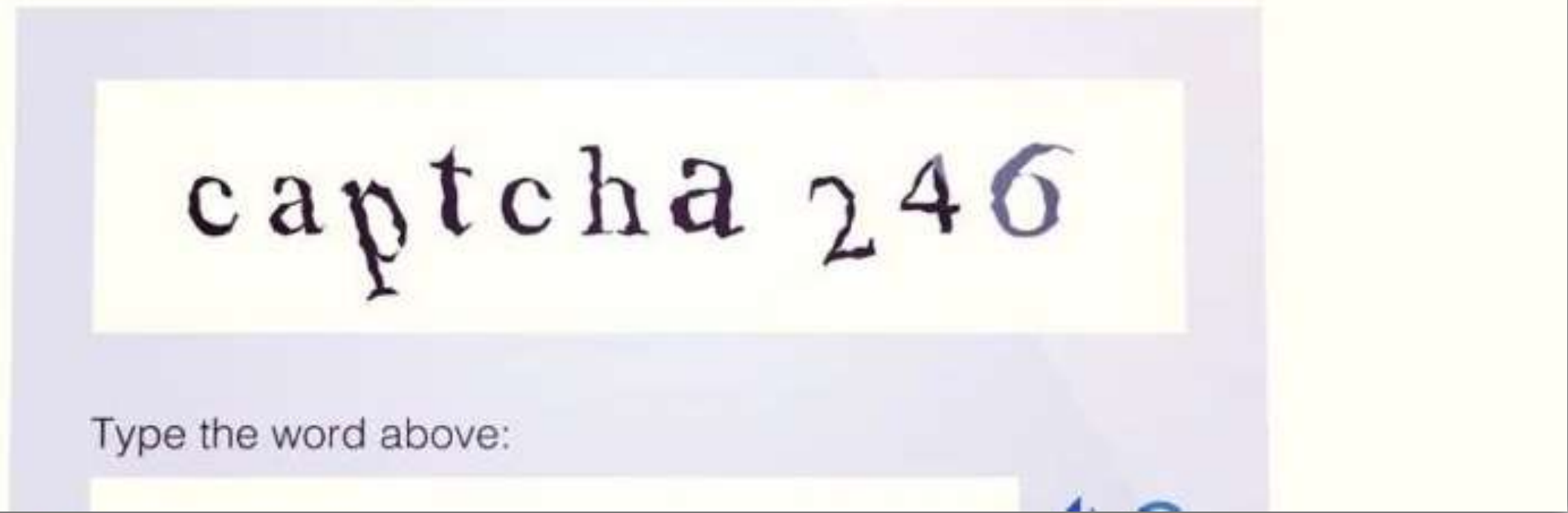
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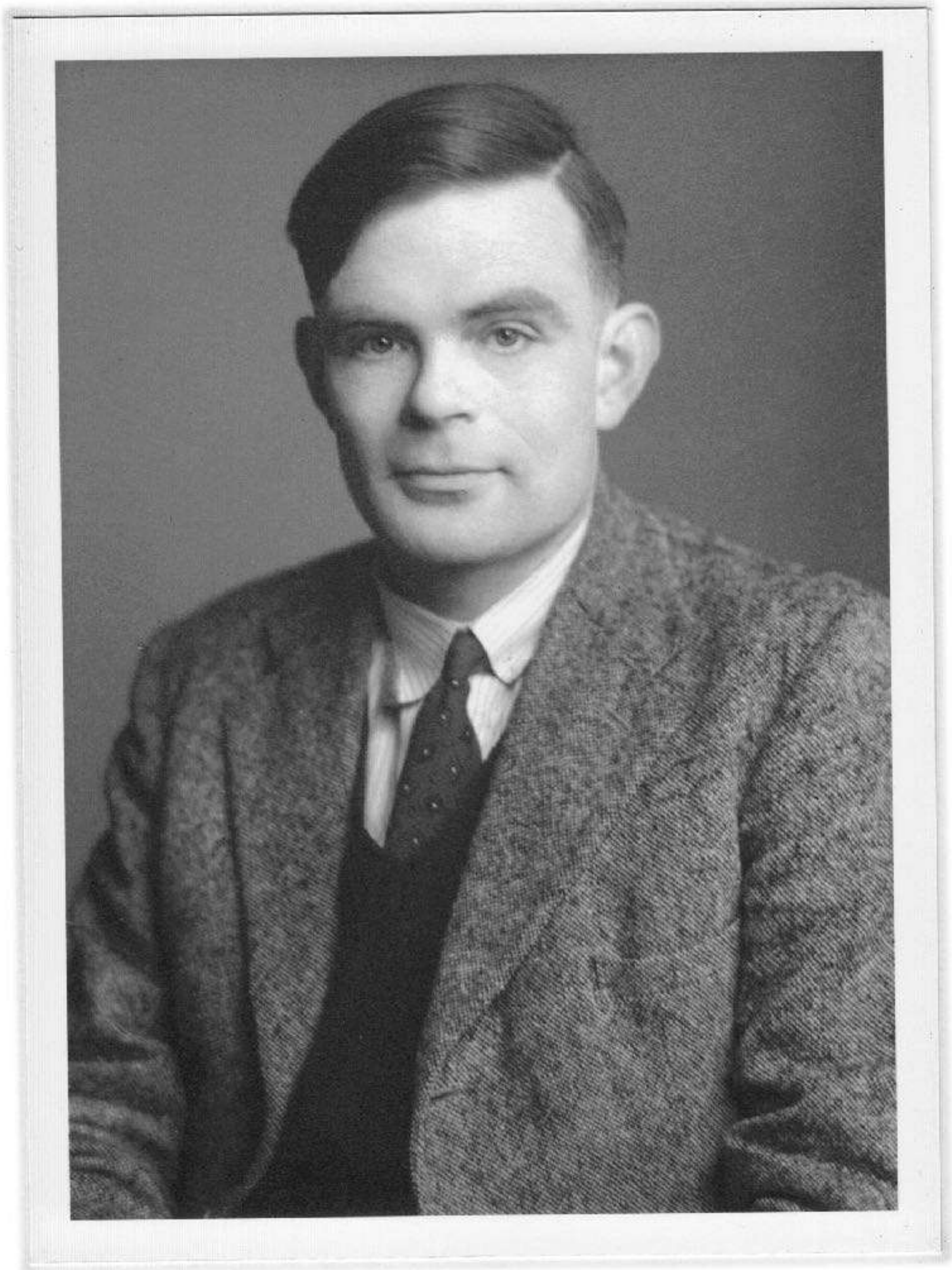
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"Completely Automated Public Turing test to tell Computers and Humans Apart"





COMPUTING MACHINERY AND INTELLIGENCE

BY A. M. TURING

1. *The Imitation Game.*

I propose to consider the question, 'Can machines think?' This should begin with definitions of the meaning of the terms 'machine' and 'think'. The definitions might be framed so as to reflect so far as possible the normal use of the words, but this attitude is dangerous. If the meaning of the words 'machine' and 'think' are to be found by examining how they are commonly used it is difficult to escape the conclusion that the meaning and the answer to the question, 'Can machines think?' is to be sought in a statistical survey such as a Gallup poll. But this is absurd. Instead of attempting such a definition I shall replace the question by another, which is closely related to it and is expressed in relatively unambiguous words.

The new form of the problem can be described in terms of a game which we call the 'imitation game'. It is played with three people, a man (A), a woman (B), and an interrogator (C) who may be of either sex. The interrogator stays in a room apart from the other two. The object of the game for the interrogator is to determine which of the other two is the man and which is the woman. He knows them by labels X and Y, and at the end of the game he says either 'X is A and Y is B' or 'X is B and Y is A'. The interrogator is allowed to put questions to A and B thus:

C: Will X please tell me the length of his or her hair?

Now suppose X is actually A, then A must answer, 'It is A's

Turingtestet

Turingtestet, test för att avgöra om en dator uppvisar intelligent beteende, utformat av den brittiske matematikern och logikern **Alan M. Turing**.

För att undvika den filosofiska frågeställningen om definitionen av verbet "tänka" föreslog Turing i stället ett test som av honom kallades "imitation game". I testet konverserar en domare genom en terminal dels med en människa, dels med en dator. Om domaren inte kan avgöra på ett tillförlitligt vis vilken konversationspartner som är människa och vilken som är dator anses den senare ha klarat testet.

Testet benämns numera Turingtestet och försöker inte avgöra om en dator är intelligent och därmed kan tänka utan om datorn uppvisar intelligent beteende. Huruvida detta är samma sak är en annan fråga.

<https://atozofai.withgoogle.com/intl/sv/turing-test/>





"BENEDICT CUMBERBATCH IS OUTSTANDING"

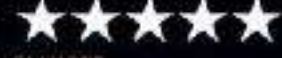
KADOO TIMES

"THE BEST BRITISH FILM OF THE YEAR"

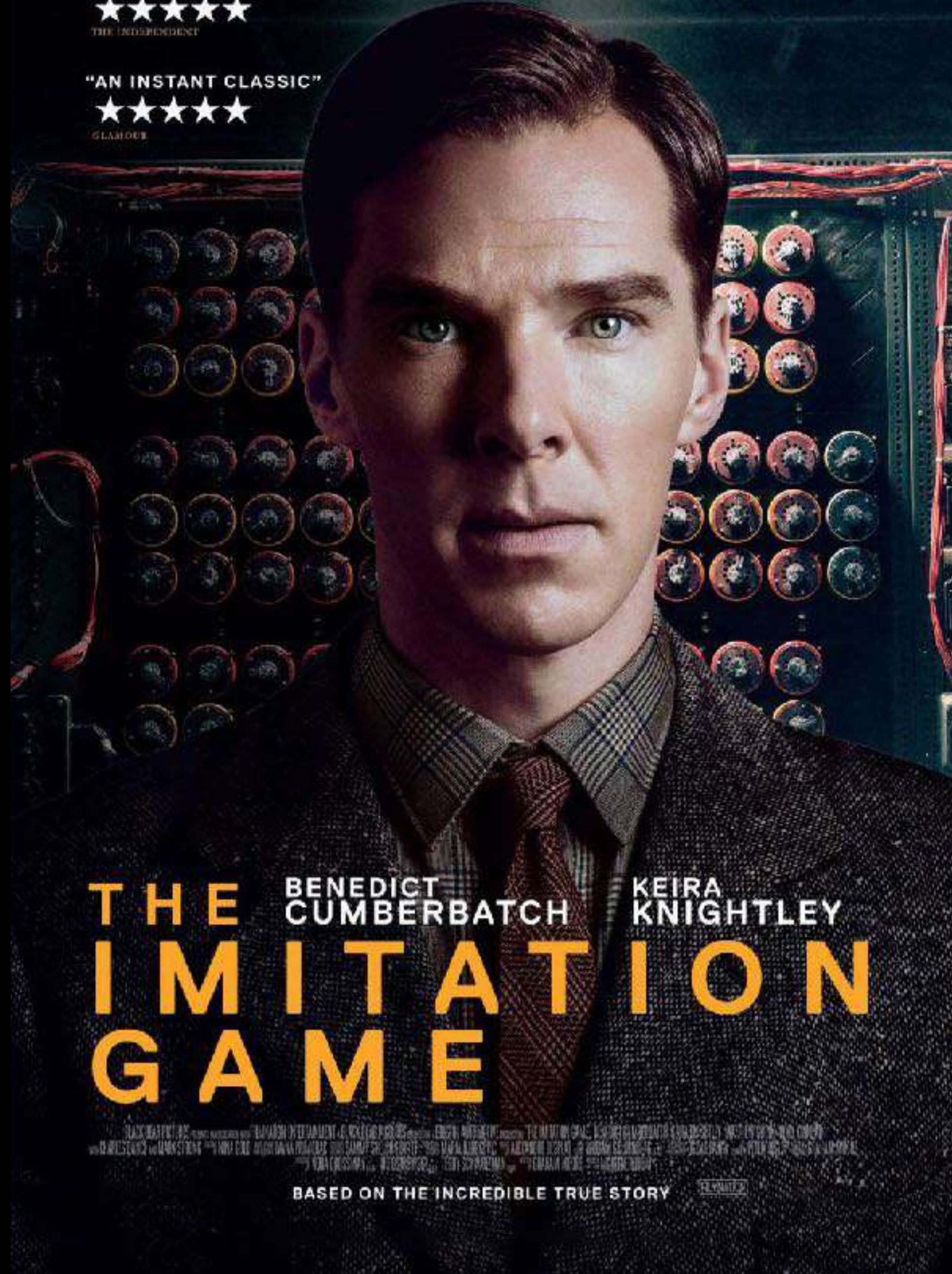


THE INDEPENDENT

"AN INSTANT CLASSIC"



GLAMOUR

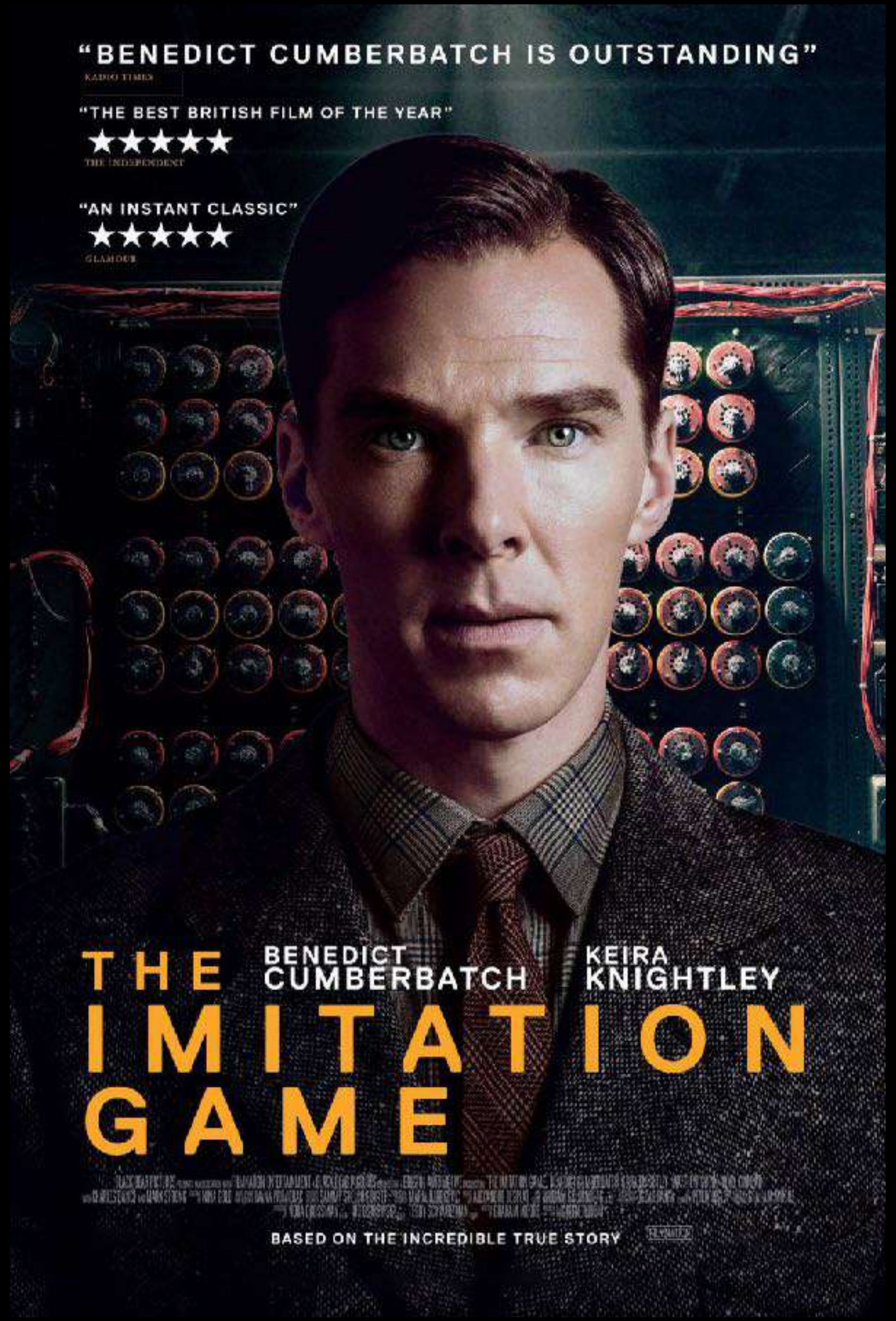


BENEDICT CUMBERBATCH KEIRA KNIGHTLEY
THE IMITATION GAME

THE IMITATION GAME IS A FILM BY JOY CHENG. CASTING BY JANE WOOD. COSTUME DESIGNER: JANE WOOD. HAIR BY JANE WOOD. MAKEUP BY JANE WOOD. PRODUCTION DESIGNER: JANE WOOD. EXECUTIVE PRODUCERS: JANE WOOD. PRODUCED BY JANE WOOD. WRITTEN BY JANE WOOD. DIRECTED BY JANE WOOD.

BASED ON THE INCREDIBLE TRUE STORY





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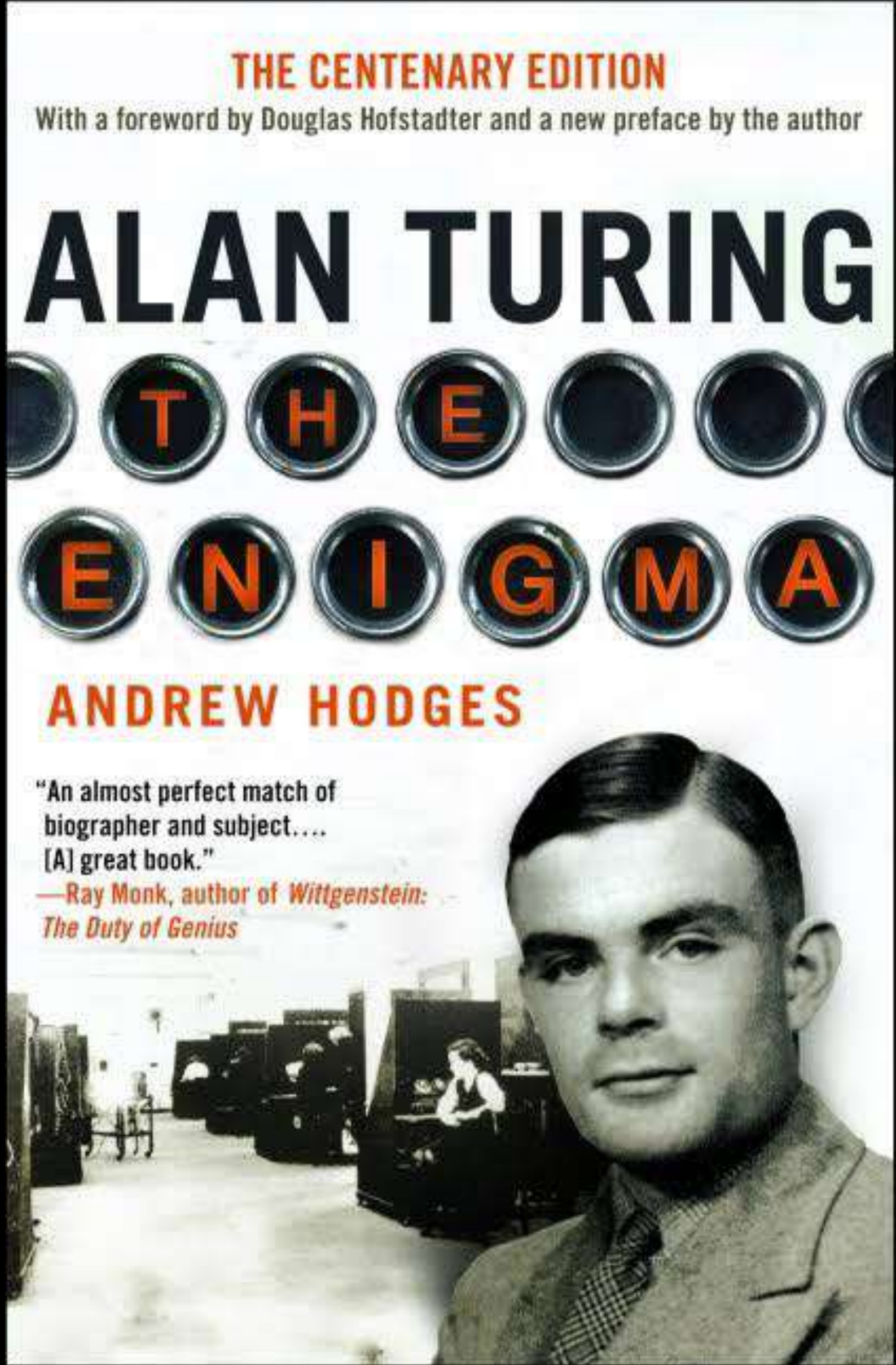


GLAMOUR

BENEDICT CUMBERBATCH KEIRA KNIGHTLEY
THE IMITATION GAME

THE IMITATION GAME: THE INCREDIBLE TRUE STORY OF THE MAN WHO BROKE THE ENIGMA. A FILM BY JOHN DAHL. CASTING BY JANE WOOD. COSTUME DESIGNER: JANE WOOD. HAIR: JANE WOOD. MAKEUP: JANE WOOD. PRODUCTION DESIGNER: JANE WOOD. EXECUTIVE PRODUCERS: JANE WOOD. PRODUCED BY JANE WOOD. WRITTEN BY JANE WOOD. DIRECTED BY JANE WOOD.

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THE CENTENARY EDITION

With a foreword by Douglas Hofstadter and a new preface by the author

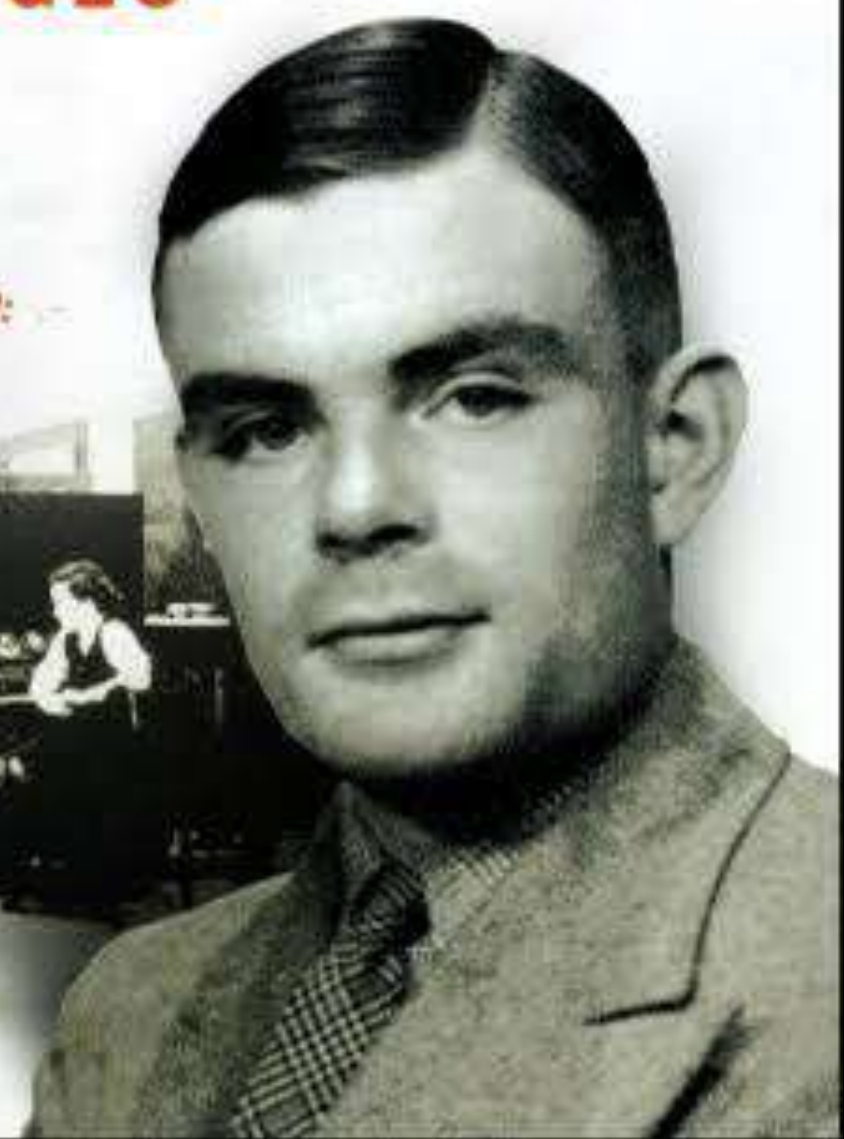
ALAN TURING

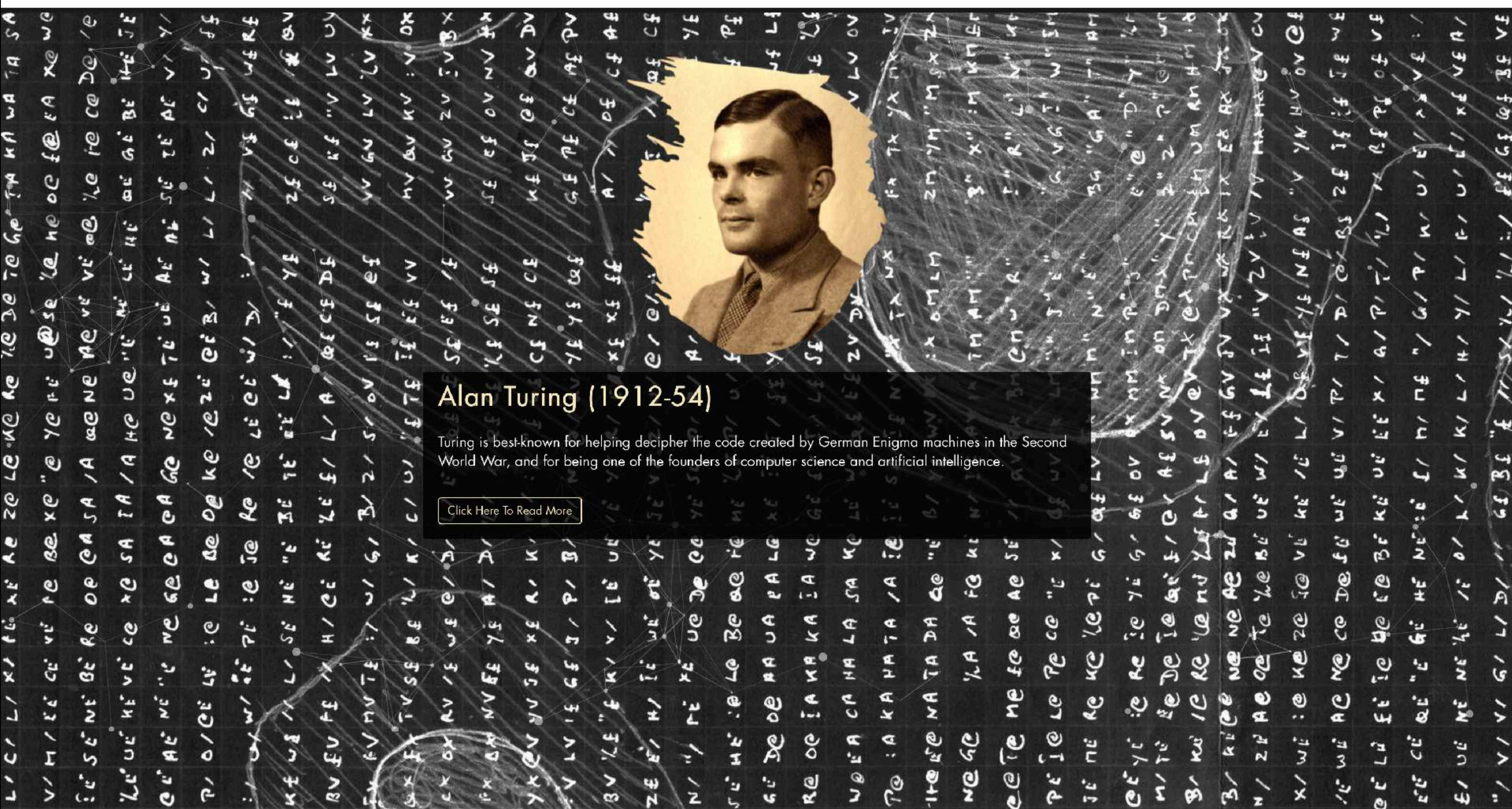
T H E
E N I G M A

ANDREW HODGES

"An almost perfect match of biographer and subject... [A] great book."

—Ray Monk, author of *Wittgenstein: The Duty of Genius*





Alan Turing (1912-54)

Turing is best-known for helping decipher the code created by German Enigma machines in the Second World War, and for being one of the founders of computer science and artificial intelligence.

[Click Here To Read More](#)

ON COMPUTABLE NUMBERS, WITH AN APPLICATION TO
THE ENTSCHIEDUNGSPROBLEM

By A. M. TURING.

[Received 28 May, 1936.—Read 12 November, 1936.]

The "computable" numbers may be described briefly as the real numbers whose expressions as a decimal are calculable by finite means. Although the subject of this paper is ostensibly the computable *numbers*, it is almost equally easy to define and investigate computable functions of an integral variable or a real or computable variable, computable predicates, and so forth. The fundamental problems involved are, however, the same in each case, and I have chosen the computable numbers for explicit treatment as involving the least cumbersome technique. I hope shortly to give an account of the relations of the computable numbers, functions, and so forth to one another. This will include a development of the theory of functions of a real variable expressed in terms of computable numbers. According to my definition, a number is computable if its decimal can be written down by a machine.

In §§ 9, 10 I give some arguments with the intention of showing that the computable numbers include all numbers which could naturally be regarded as computable. In particular, I show that certain large classes of numbers are computable. They include, for instance, the real parts of all algebraic numbers, the real parts of the zeros of the Bessel functions, the numbers π , e , etc. The computable numbers do not, however, include all definable numbers, and an example is given of a definable number which is not computable.

Although the class of computable numbers is so great, and in many ways similar to the class of real numbers, it is nevertheless enumerable. In § 8 I examine certain arguments which would seem to prove the contrary. By the correct application of one of these arguments, conclusions are reached which are superficially similar to those of Gödel†. These results

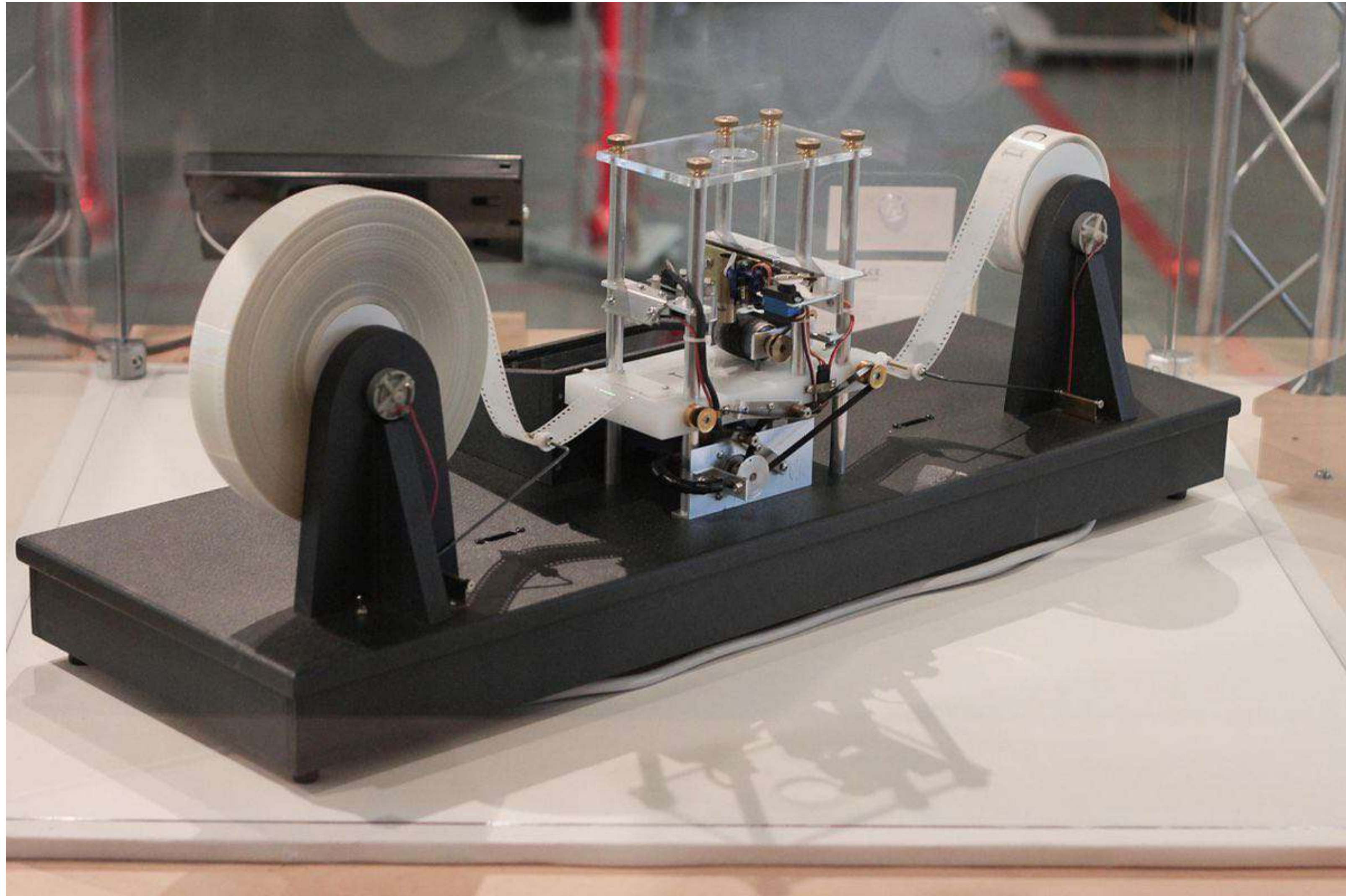
† Gödel, "Über formal unentscheidbare Sätze der Principia Mathematica und verwandter Systeme, I", *Monatshefte Math. Phys.*, 38 (1931), 173–198.

Turingmaskin

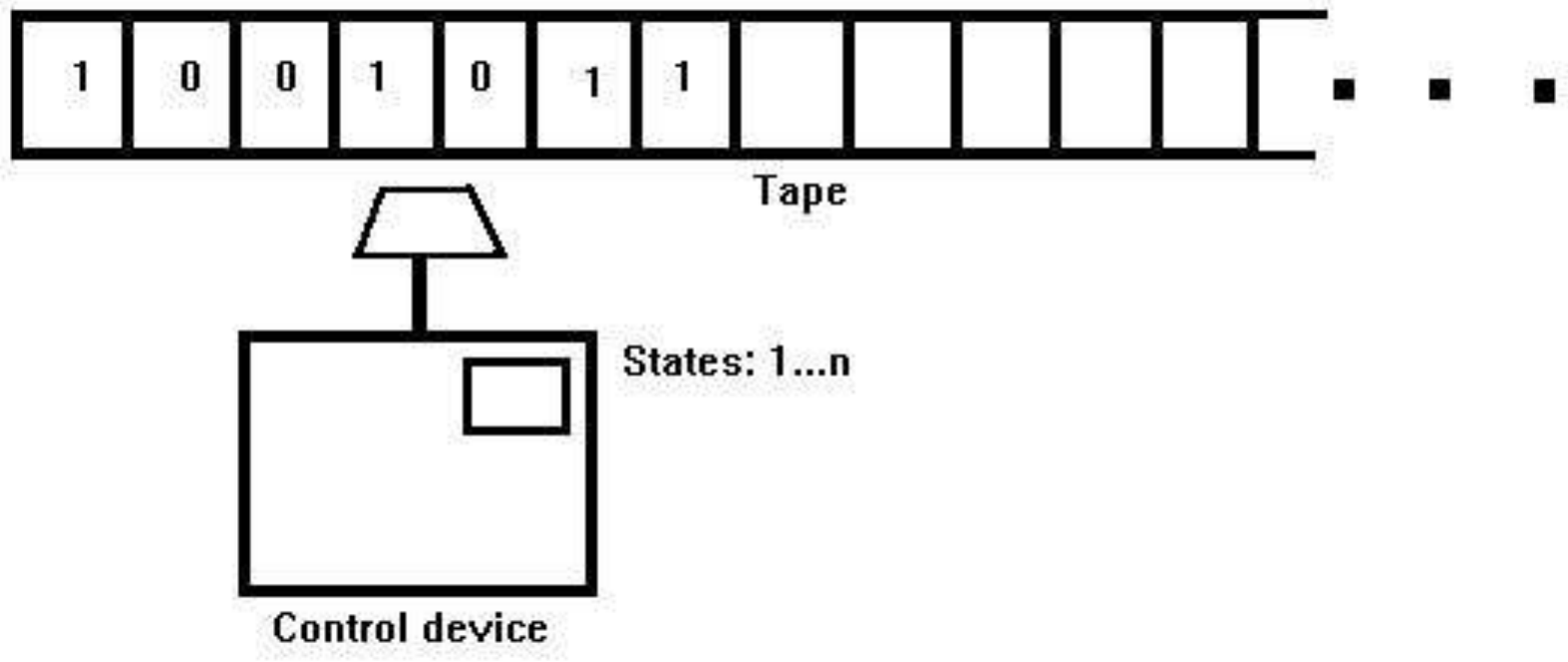
Turingmaskin [tju^ariŋ-], abstrakt
beräkningsmekanism, formulerad av Alan Turing
1936.

Turingmaskinen blev en tidig teoretisk modell för en dator och spelar en central roll i teorierna för beräkningsbarhet och beräkningskomplexitet och allmänt inom den matematiska logiken.

En Turingmaskin består av en *styrenhet* som befinner sig i ett av ett ändligt antal *tillstånd*, en *remsa* indelad i rutor som vardera innehåller en symbol samt ett läs-skrivhuvud som rör sig längs remsan på order av styrenheten. Maskinen arbetar i diskreta beräkningssteg och styrs av sin inbyggda *nästatillståndsfunktion*, som kan sägas vara dess program (se bild). Då ett *sluttillstånd* uppnås stannar maskinen med resultatet på remsan. Beräkningen kan misslyckas genom att maskinen aldrig uppnår ett sluttillstånd utan fortsätter i oändlighet.



Turing tänkte sig en helt abstrakt maskin – Turingmaskinen – vars låda kunde läsa och skriva på en tänkt remsa indelad i rutor. I varje ruta skrevs antingen **1** eller **0**, eller så kunde rutan förbli blank. Turingmaskinen var alltså helt rudimentär, men utgjorde likafullt prototypen för den moderna datorn.





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"It is not altogether unreasonable to describe digital computers as brains [...] I think it is probable for instance that at the end of the century it will be possible to programme a machine to answer questions in such a way that it will be extremely difficult to guess whether the answers are being given by a man or by the machine."

BBC-föredrag 1951, "Can Digital Computers Think?"

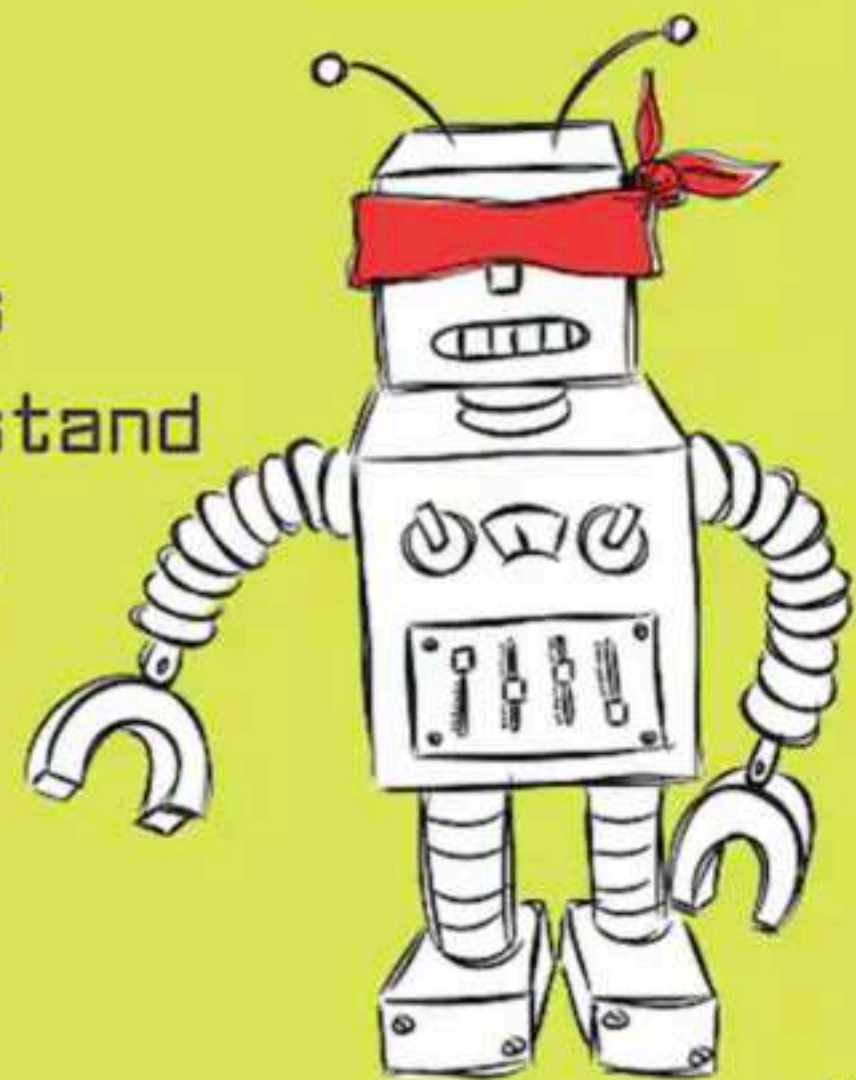
GPT Chatbot



OPENAI

ARTIFICIAL UNINTELLIGENCE

How
Computers
Misunderstand
the World



MEREDITH BROUSSARD

Filosofen **John Searle Chinese Room Experiment** – tankeexperimentet från 1980 som en sorts motpol till Turingtestet.

Instängd i ett rum finns en person som inte förstår ett ord kinesiska.

Rummet har två luckor, en genom vilken personen kan ta emot meddelanden skrivna på kinesiska och en annan för att lämna ut meddelanden. Till sin hjälp har personen i rummet en detaljerad instruktion och en uppsättning regler för hur kinesiska meddelandena ska utformas. Personen i rummet förstår inte kinesiska – även om det utifrån ser ut så. Personen följer bara slaviskt alla instruktioner.

Om personen var en dator skulle den då inte anses vara intelligent?



... liten **gruppvövning (5-6 minuter) –
diskutera i grupper om 3-4 studenter ...**



- > fungerar Turingtestet? Om inte – hur är det med CAPTCHAs?**
- > i ljuset av det Kinesiska Rummet – förstår chatGPT vad den skriver?**
- > kan man lita på artificiell intelligens?**

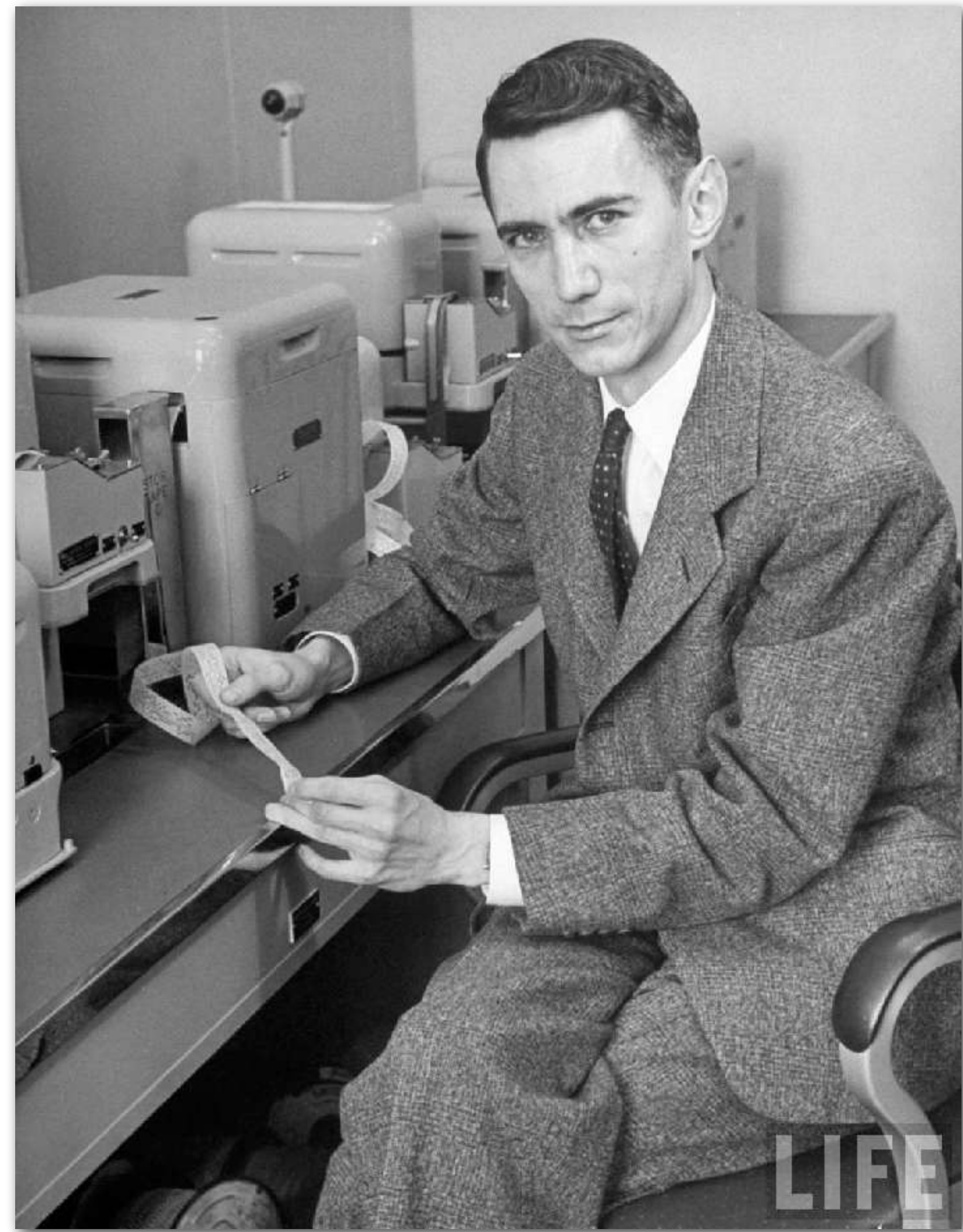
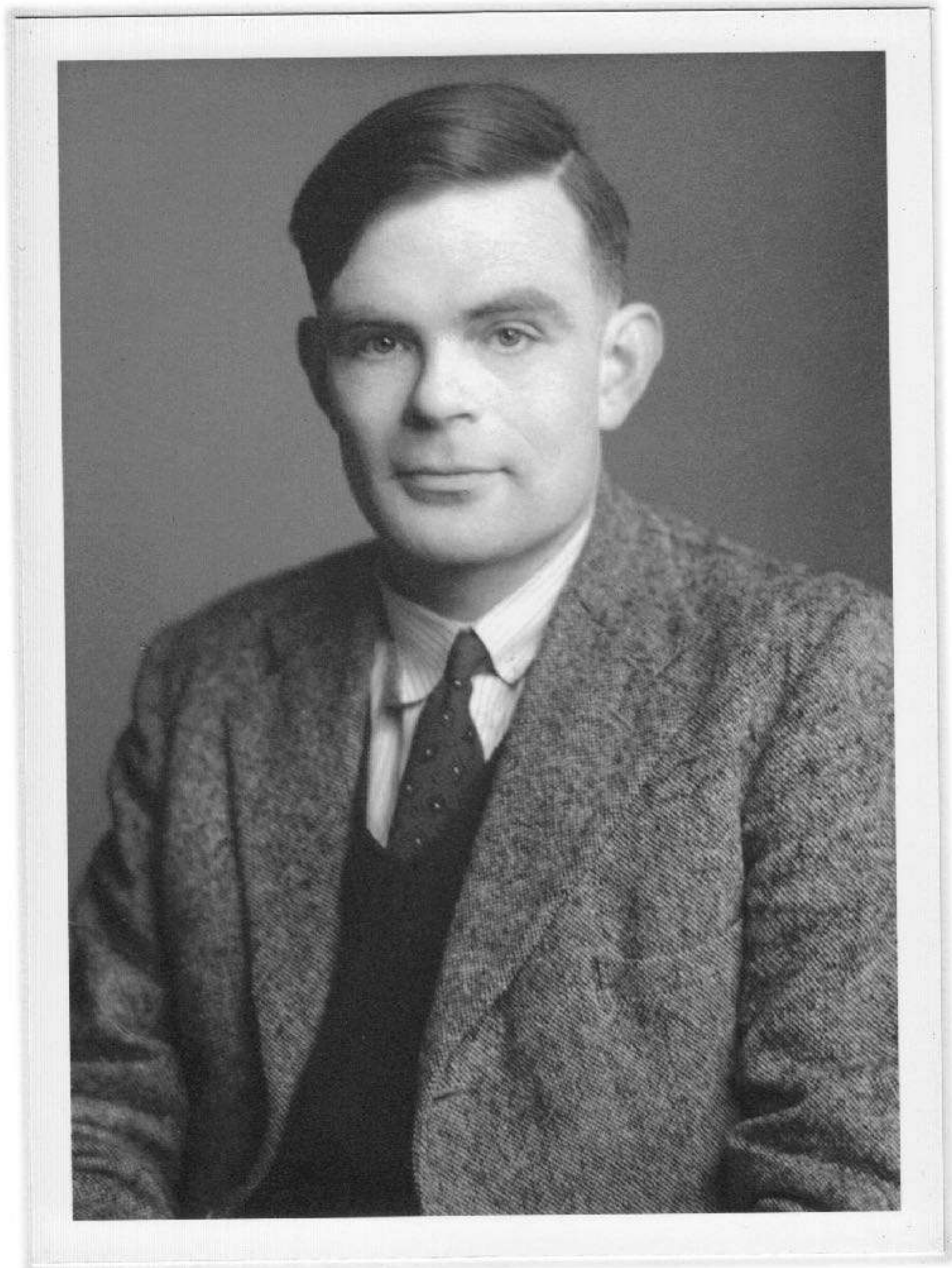


förstår chatgpt vad den skriver?



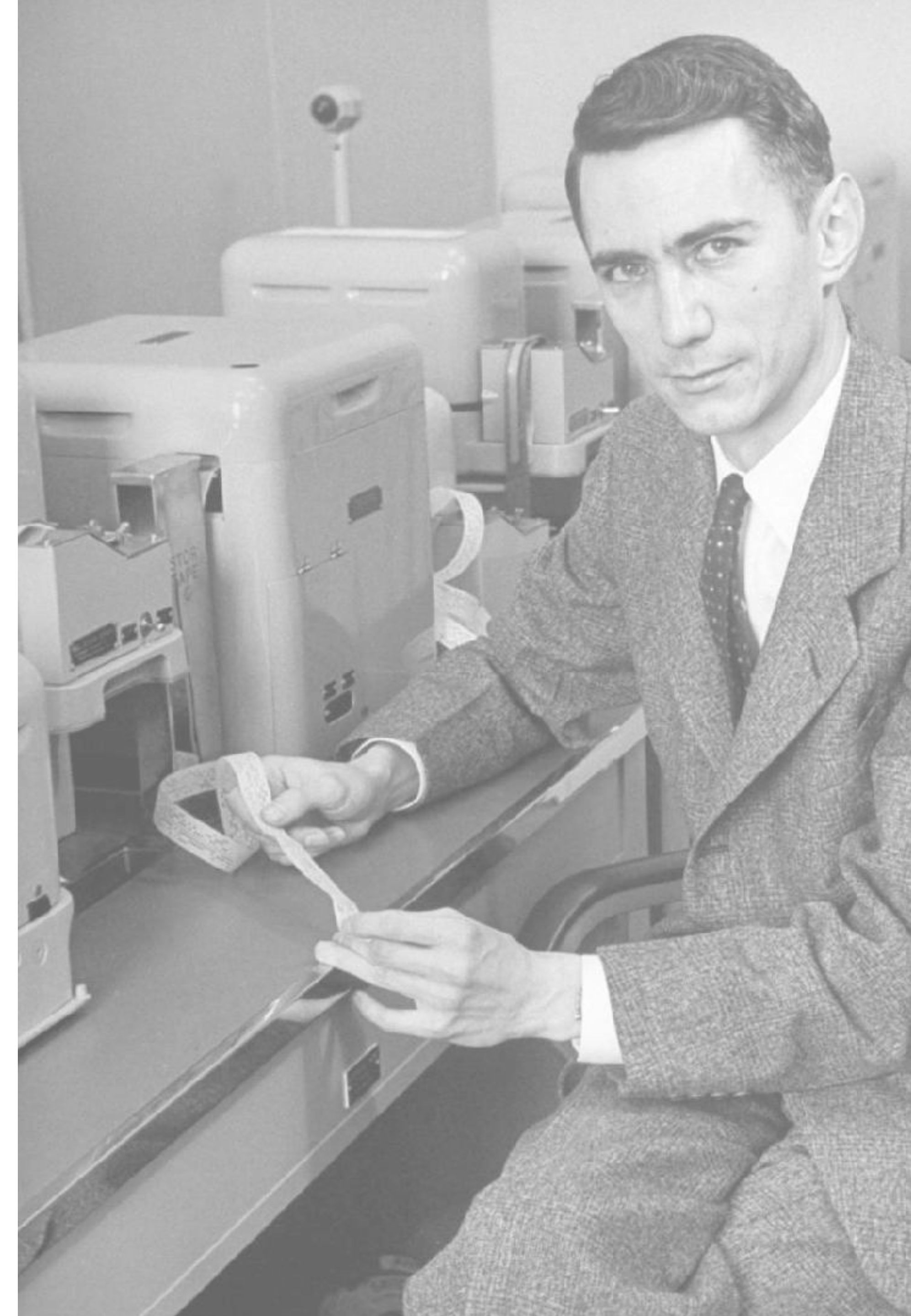
Som en AI-språkmodell har jag inte full förståelse på samma sätt som människor gör. Jag kan generera text baserat på de mönster jag har lärt mig under träningen, men jag har inte medvetande, medvetenhet eller förståelse på samma sätt som en människa har. Min uppgift är att försöka producera meningsfulla och relevanta svar baserat på den information som jag har fått under träningen.

Det är viktigt att komma ihåg att även om jag kan vara till hjälp och ge användbara svar, är jag begränsad av mina inlärningsdata och min förmåga att bearbeta information. Ibland kan jag göra felaktiga antaganden eller ge svar som inte är korrekta. Användare bör alltid vara kritiska till information som jag ger och inte lita på mig som den enda källan till sanning.



Claude Shannon

Shannon "A Symbolic Analysis of Relay and Switching Circuits" (1937) – i vilken han kombinerade **boolsk algebra med elektronisk logik**, ett koncept som alltsedan dess ligger till grund för det mesta inom elektronisk datadesign.



1. BOOLESK ALGEBRA

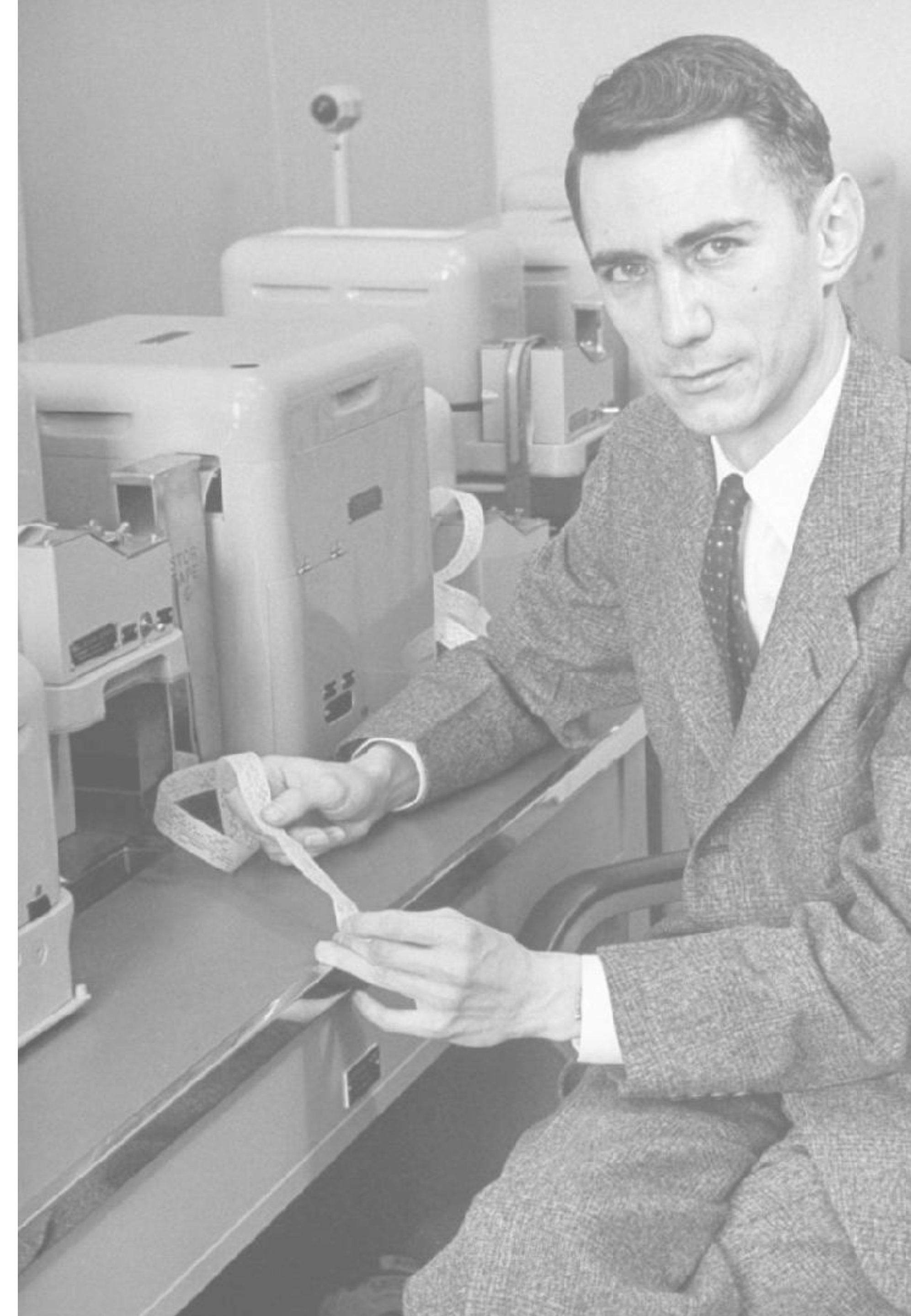
Grunden för boolesk räkning är följande två räknetabeller:


$$\begin{array}{c|cc} + & 0 & 1 \\ \hline 0 & 0 & 1 \\ 1 & 1 & 1 \end{array} \quad ; \quad \begin{array}{c|cc} \cdot & 0 & 1 \\ \hline 0 & 0 & 0 \\ 1 & 0 & 1 \end{array} \quad ; \text{ samt } \begin{cases} \bar{1} = 1 - 1 = 0 \\ \bar{0} = 1 - 0 = 1 \end{cases}$$

De fungerar som vanlig addition och multiplikation sånär som på att alla icke-noll-värden representeras av 1. Värdena 0 och 1 kan tolkas som “falskt” och “sant”, varvid $+$ motsvarar “eller” (OR) och \cdot motsvarar “och” (AND). Komplement, \bar{x} , motsvarar “icke” (NOT).

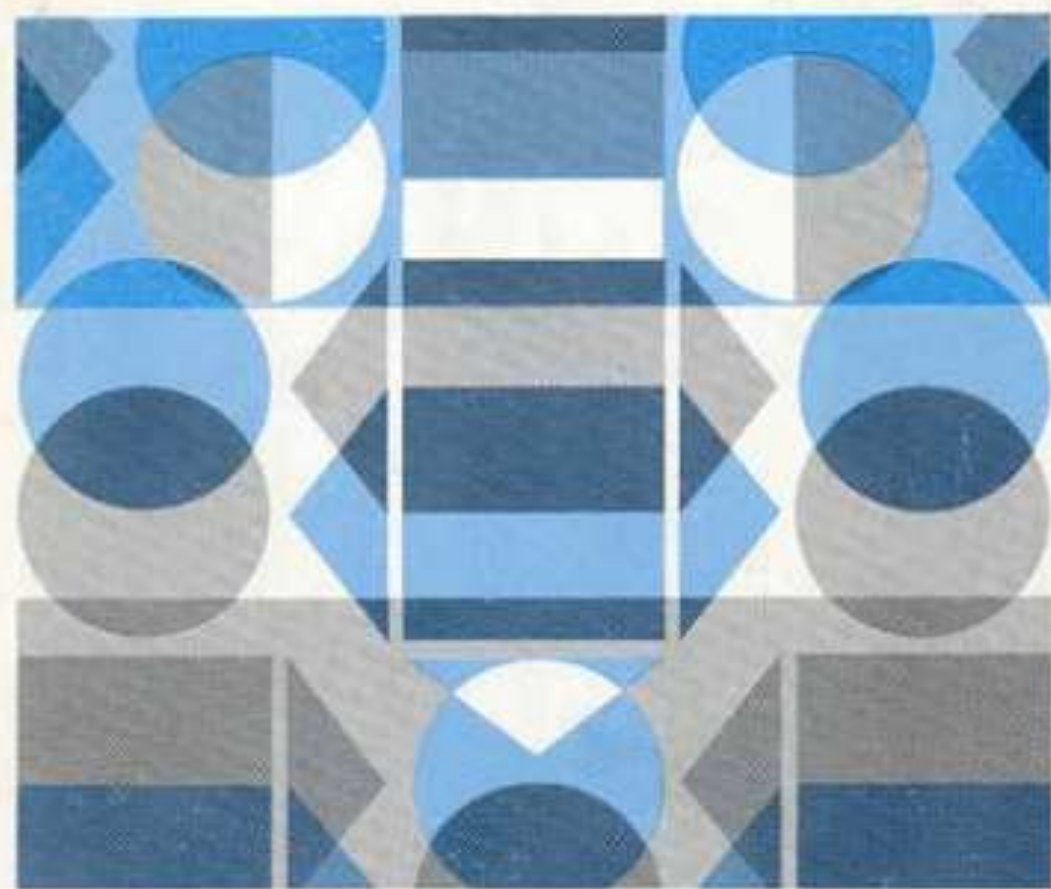
Shannon började under andra världskriget att använda termen **bit** – en förkortning för **binary digit** – som informativ måttenhet.

I Shannons tappning blev en *bit* till en enhet för den information som ett utfall av en slumpmässig händelse genererade: "**a unit for measuring information**".



ILLINI BOOKS  IB-13/\$.95

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THE MATHEMATICAL THEORY OF COMMUNICATION

by Claude E. Shannon and Warren Weaver

34

The Mathematical Theory of Communication

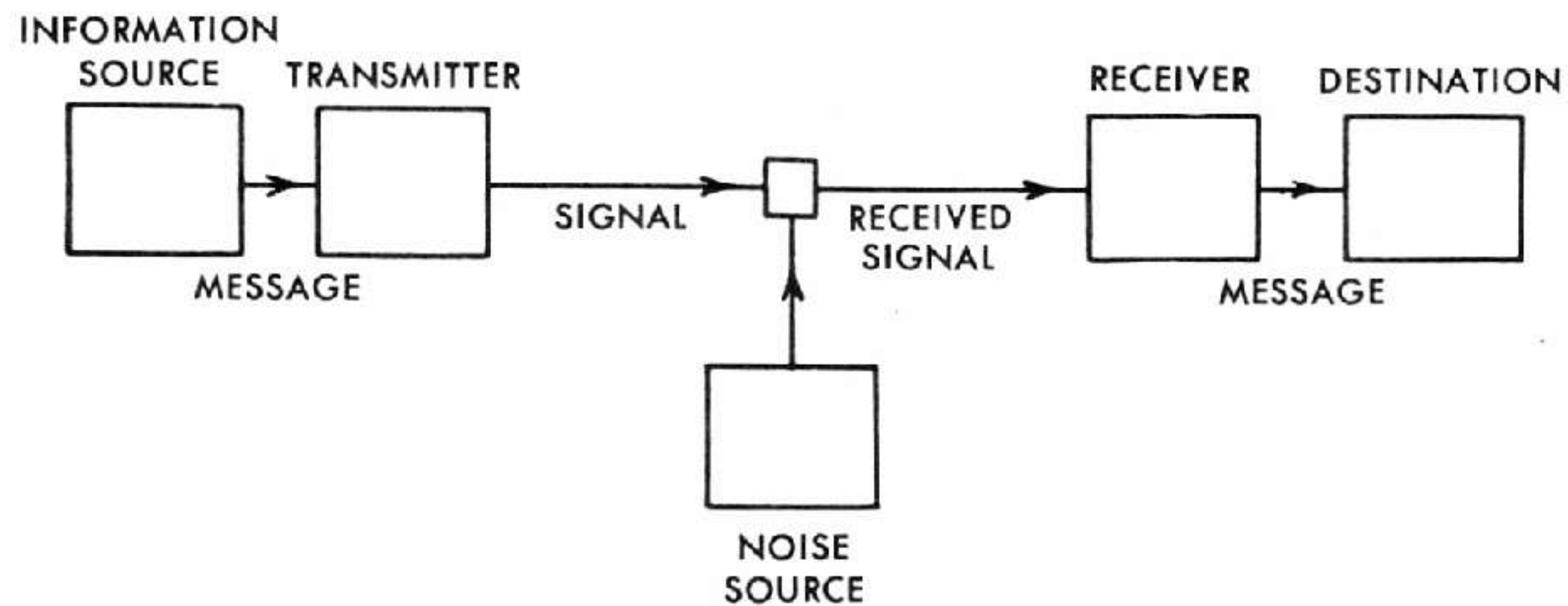
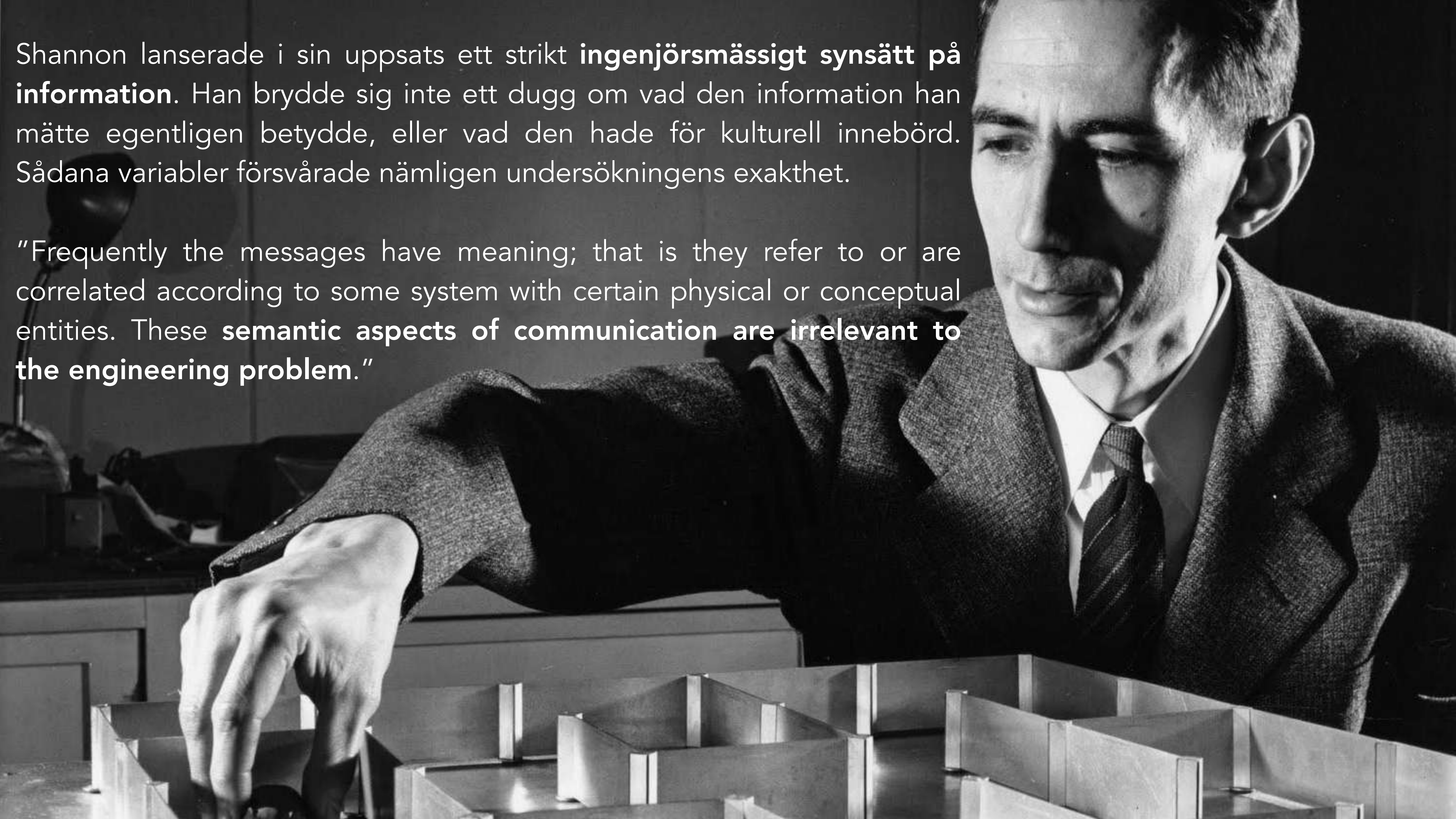
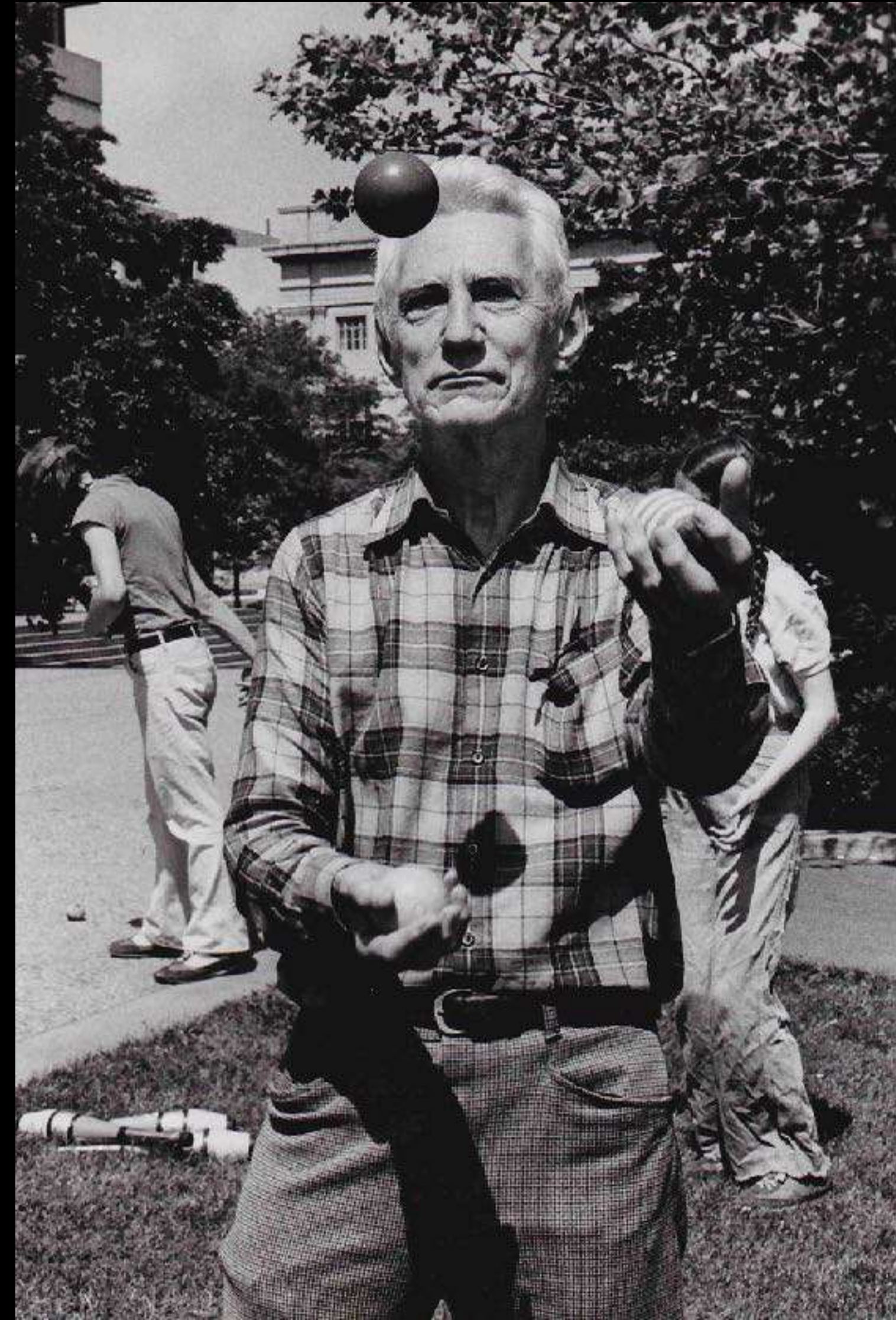
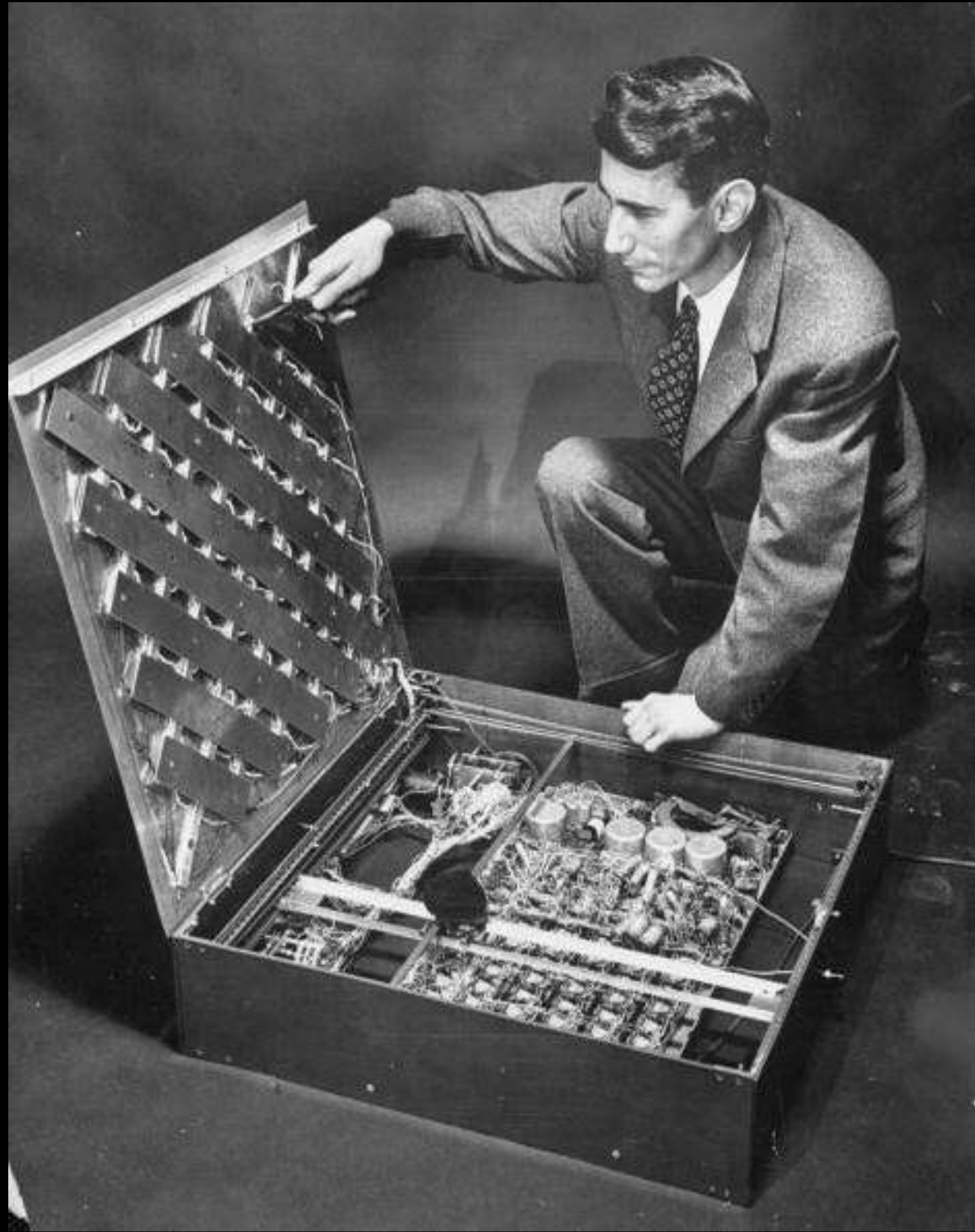


Fig. 1. — Schematic diagram of a general communication system.



Shannon lanserade i sin uppsats ett strikt **ingenjörsmässigt synsätt på information**. Han brydde sig inte ett dugg om vad den information han mätte egentligen betydde, eller vad den hade för kulturell innebörd. Sådana variabler försvårade nämligen undersökningens exakthet.

“Frequently the messages have meaning; that is they refer to or are correlated according to some system with certain physical or conceptual entities. These **semantic aspects of communication are irrelevant to the engineering problem.**”





NATIONAL BESTSELLER

JAMES GLEICK

BESTSELLING AUTHOR OF *CHAOS*

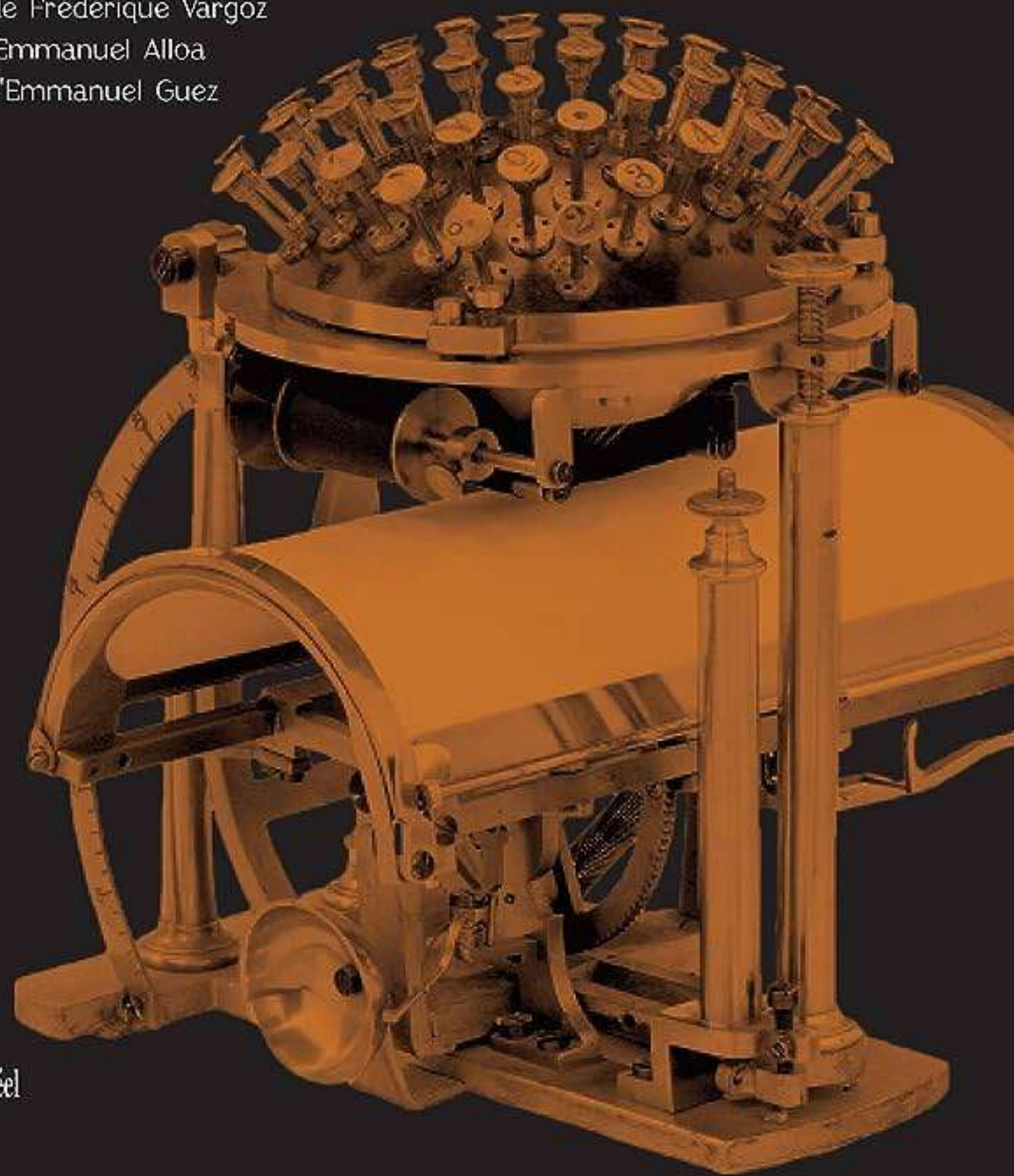
THE INFORMATION

A HISTORY, A THEORY, A FLOOD

"AMBITIOUS, ILLUMINATING AND SEXILY THEORETICAL."
— THE NEW YORK TIMES

FRIEDRICH KITTLER GRAMOPHONE, FILM, TYPEWRITER

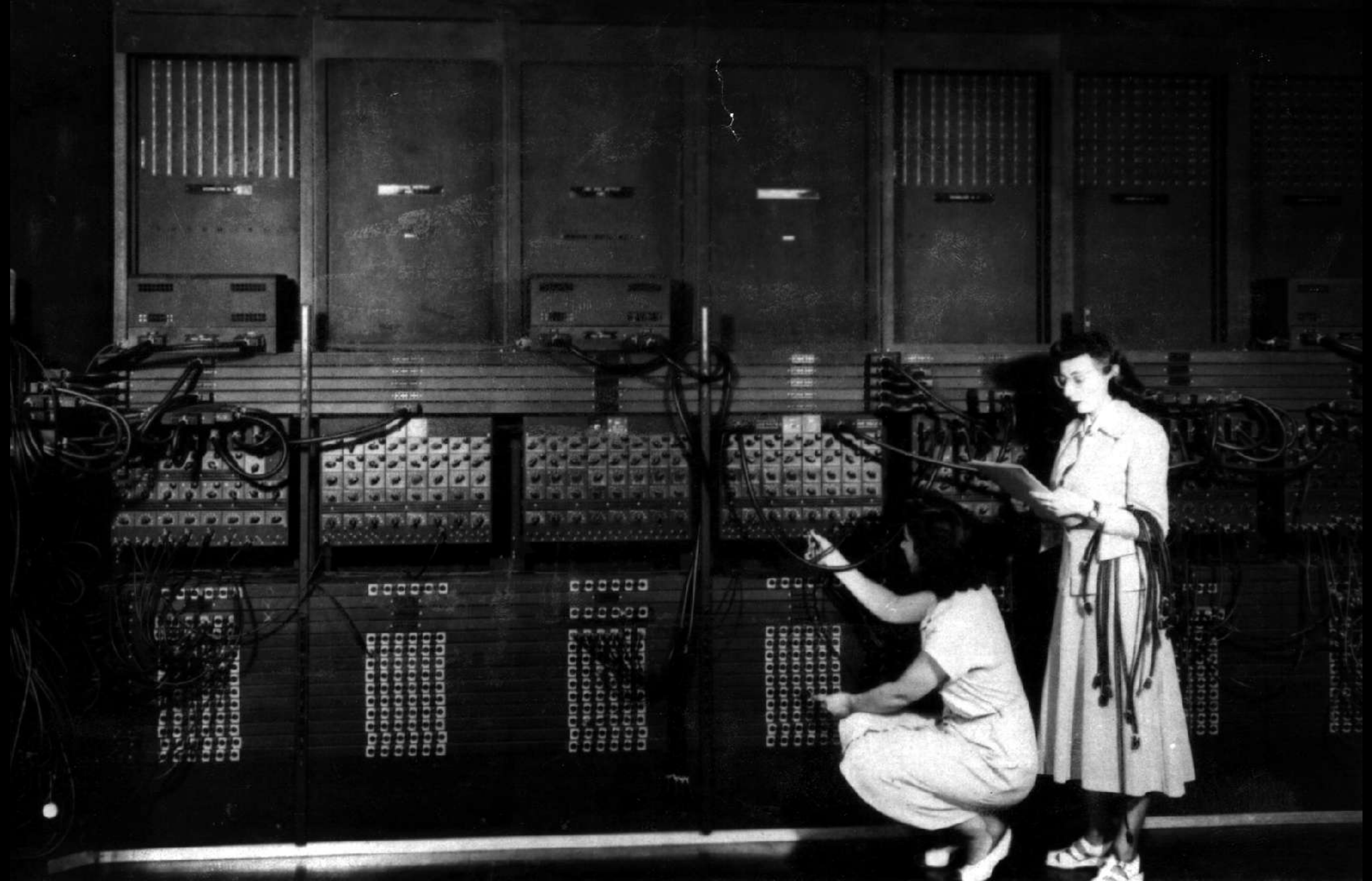
Glossaire de Frédérique Vargoz
Préface d'Emmanuel Alloa
Postface d'Emmanuel Guez

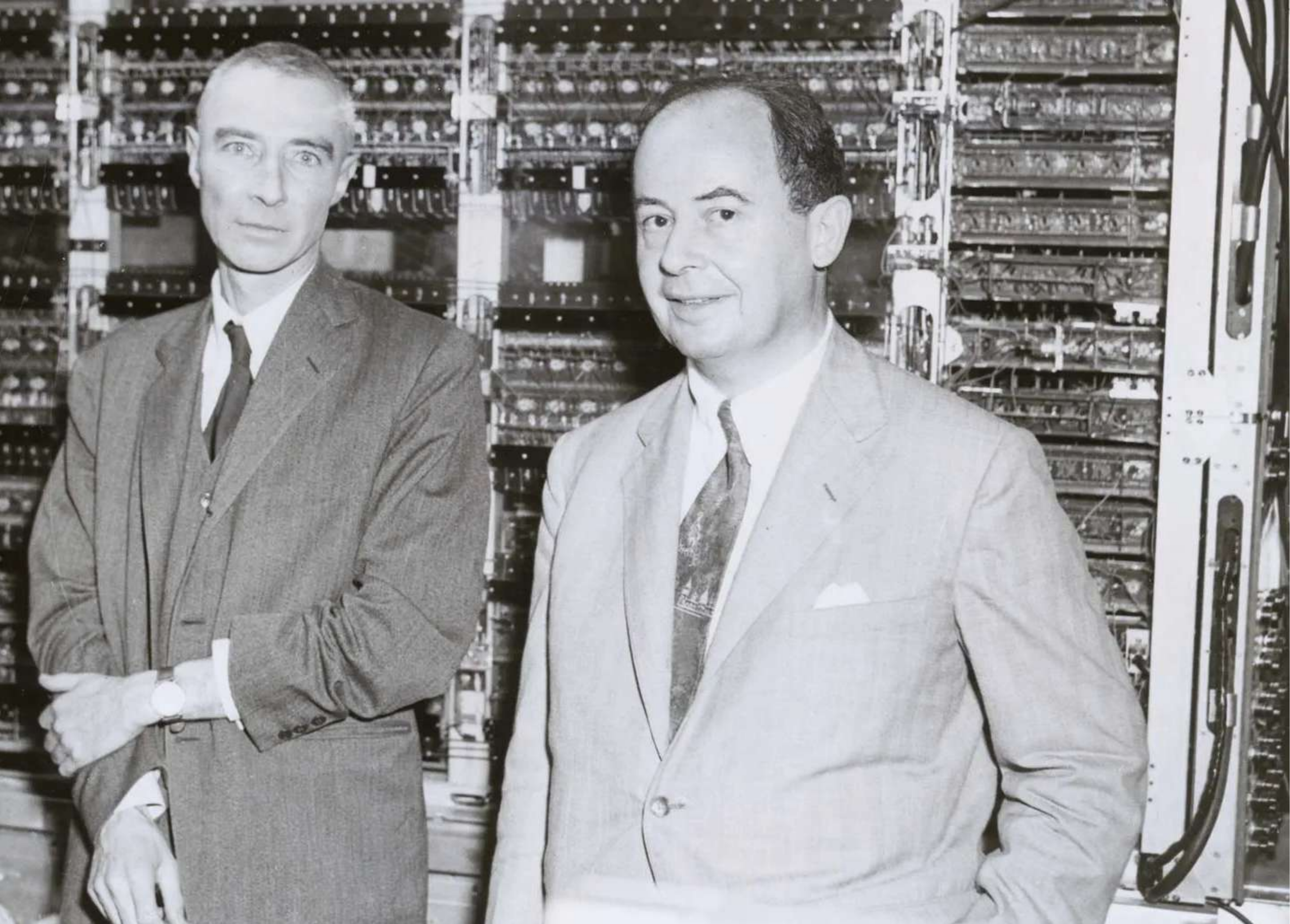


les presses du réel

Den tyske medieteoretikern Friedrich Kittler har hävdats att det inte var någon tillfällighet att filmen utvecklades ungefär samtidigt som automatvapen kring 1900; mekaniken i den första helautomatiska Maximkulsprutan påminner om den i en filmprojektor. På samma sätt har han argumenterat för att det finns likheter mellan hur radarteknologi och television utvecklades under andra världskriget, där tv närmast var en sorts biprodukt – för att inte tala om hur ett mekaniserat och allt mer automatiserat kodknäckande då lade grunden för den moderna datorn.

Ett återkommande inslag hos Kittler är att krig driver medieutveckling snabbare än allt annat.



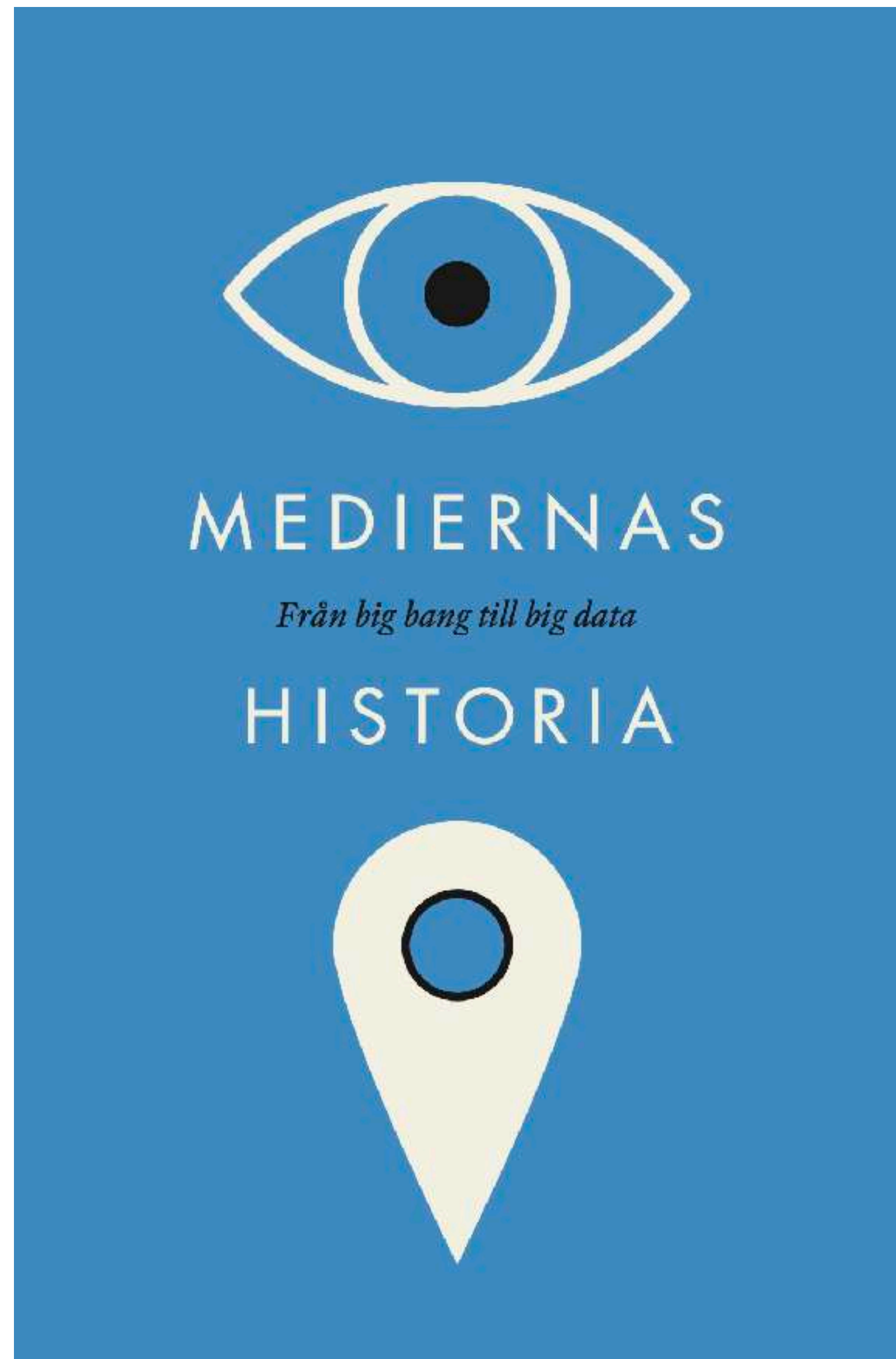




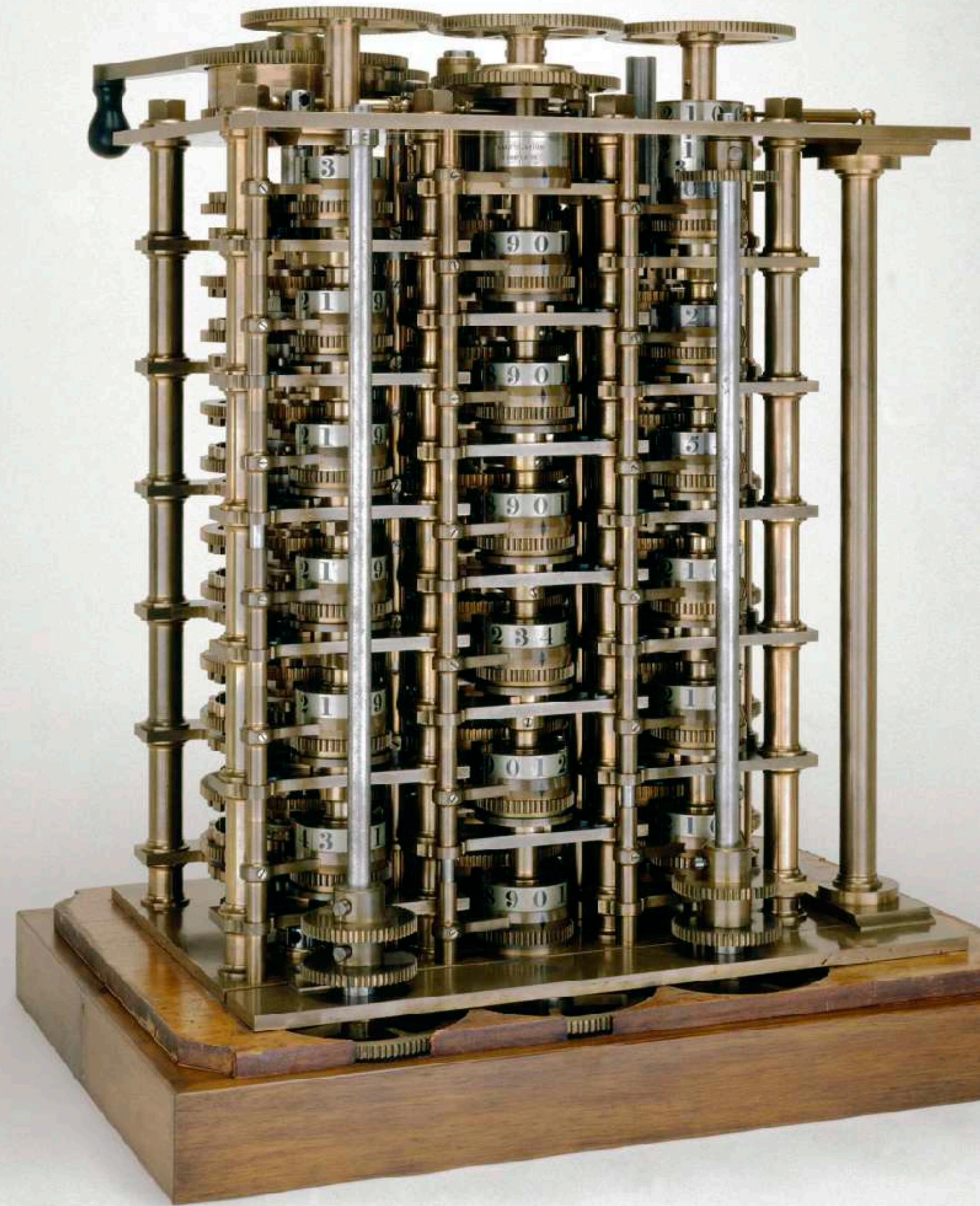
John von Neumann

Utvecklandet av så kallad **von-Neumann-arkitektur** i form av en modell för hur en dator praktiskt fungerar – till skillnad från Turings hypotetiska maskin – som under nästan ett halvt sekel utgjorde grunden för all datarkitektur.

Datorn skulle för det första vara **programmeringsbar**, inte hårdkodad som tidigare via fysiska kopplingar och reläer. För det andra skulle **data och program båda lagras i datorns minne** – för att kunna återanvändas i olika sammanhang för olika uppgifter.



Digitaliseringens och datoriseringens förflutna är en mediehistoria med många olika utvecklingslinjer som inbegriper både maskiner, tekniker, publikker och skiftande användningsområden.

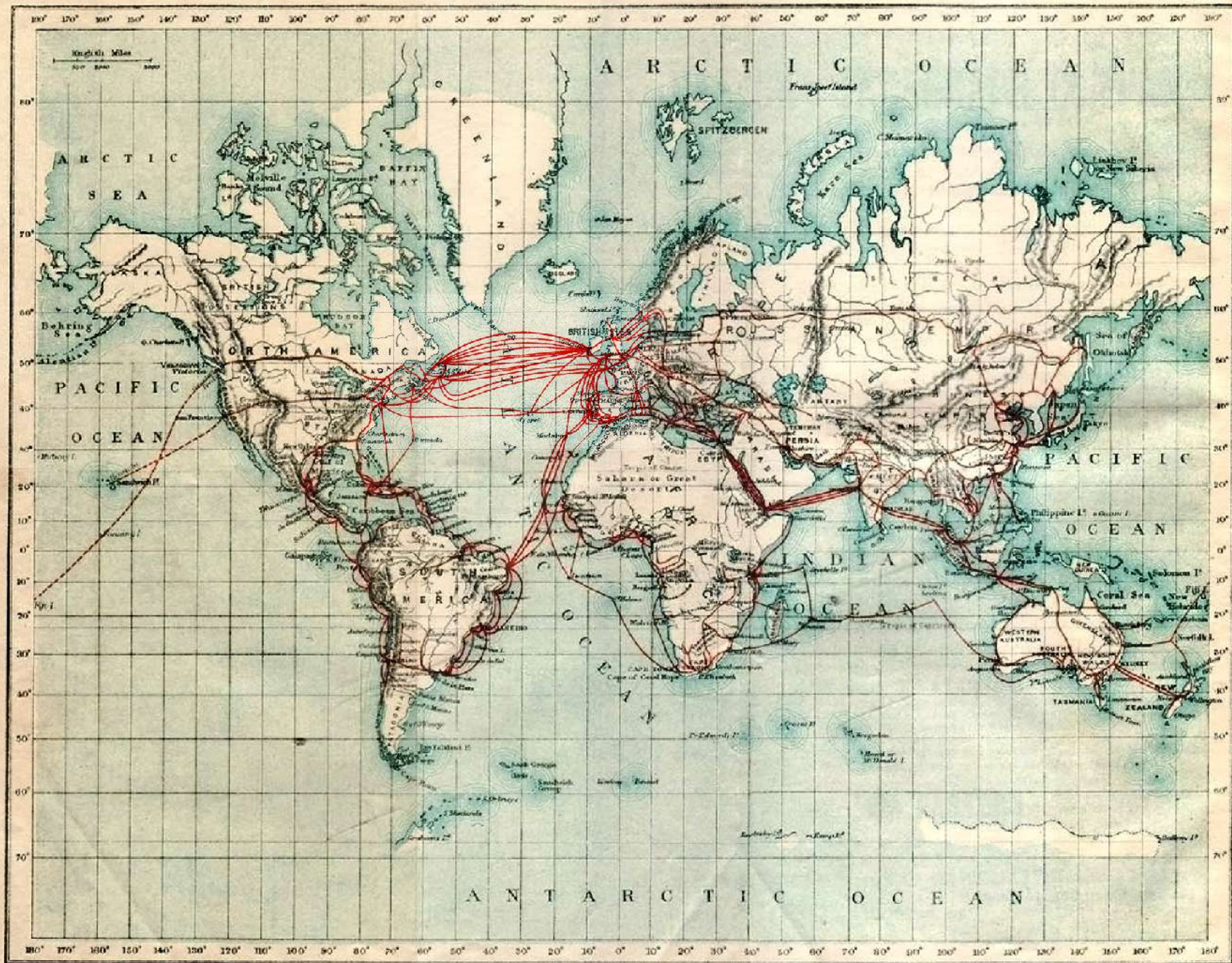


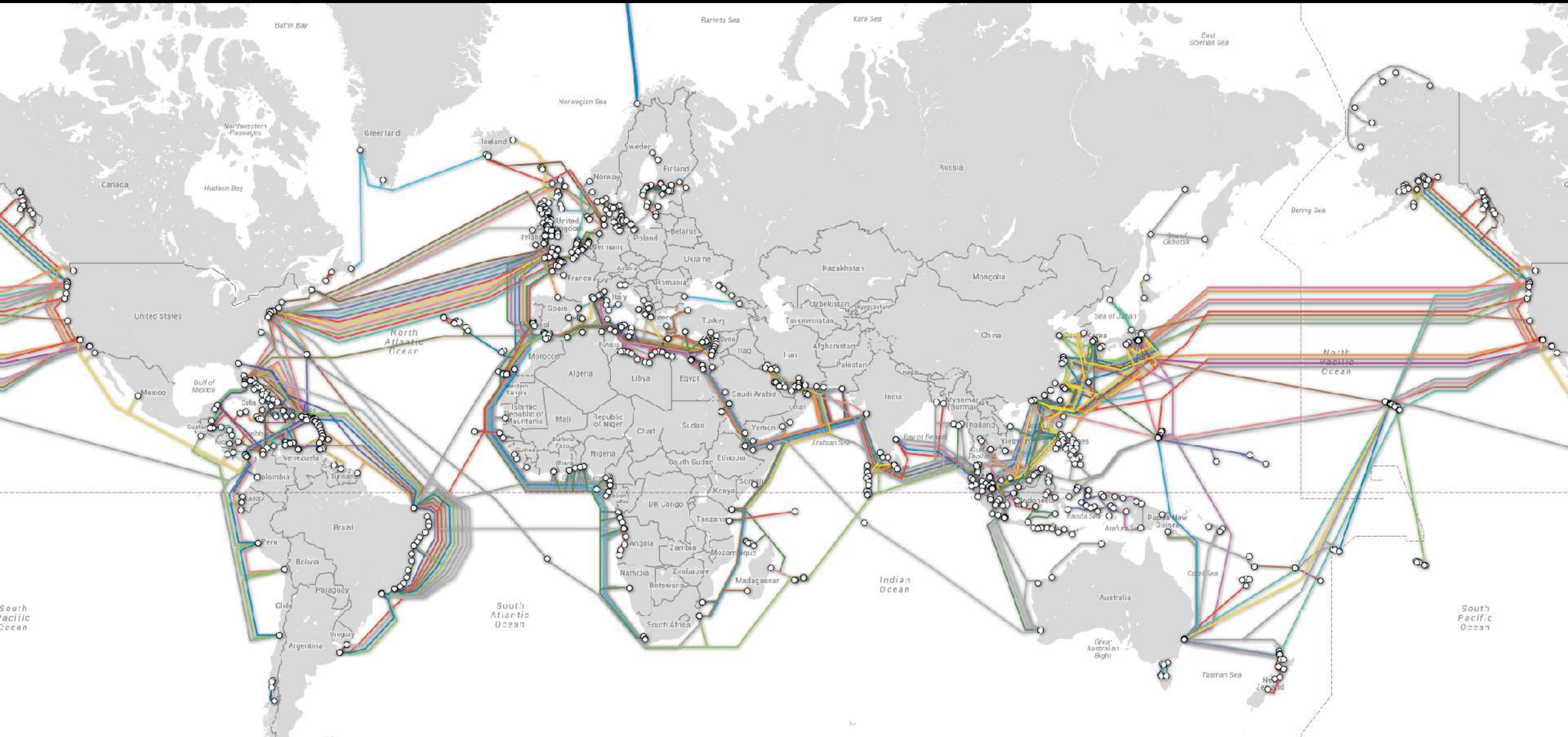


THE ARRIVAL OF THE ATLANTIC CABLE, IN NEW FOUNDLAND.

July 27th 1866.

EASTERN TELEGRAPH CO'S SYSTEM AND ITS GENERAL CONNECTIONS.





Analog & digital



MEDIERNAS

Från big bang till big data

HISTORIA



Att det binära talsystemets 1 och 0 utgör grundval för både datorer och digitala medier känner de flesta till. Detta talsystem utnyttjar endast två siffror, vanligen 0 och 1, med vilken alla andra siffror kan uttryckas (siffran 9 är exempelvis lika med 1 0 0 1). Binär talrepresentation har därför kommit till praktisk tillämpning i datorer eftersom digital elektronik kan programmeras i repetitiva och blixtsnabba kommandon för på och av. Om analog elektronik arbetar med kontinuerliga signaler, använder digital elektronik istället så kallade diskreta spänningsnivåer i binär form, det vill säga tydligt separerade värden i form av 1 och 0. Sådana värden kallas diskreta eftersom de är strikt åtskilda från varandra. Information i analog form har alltid en sorts mellanlägen – som det varierande djupet i ett inristat spår på en fonografrulle – medan digital information sparas som hela (separerade) variabler med bestämd noggrannhet.

TELEGRAFEN

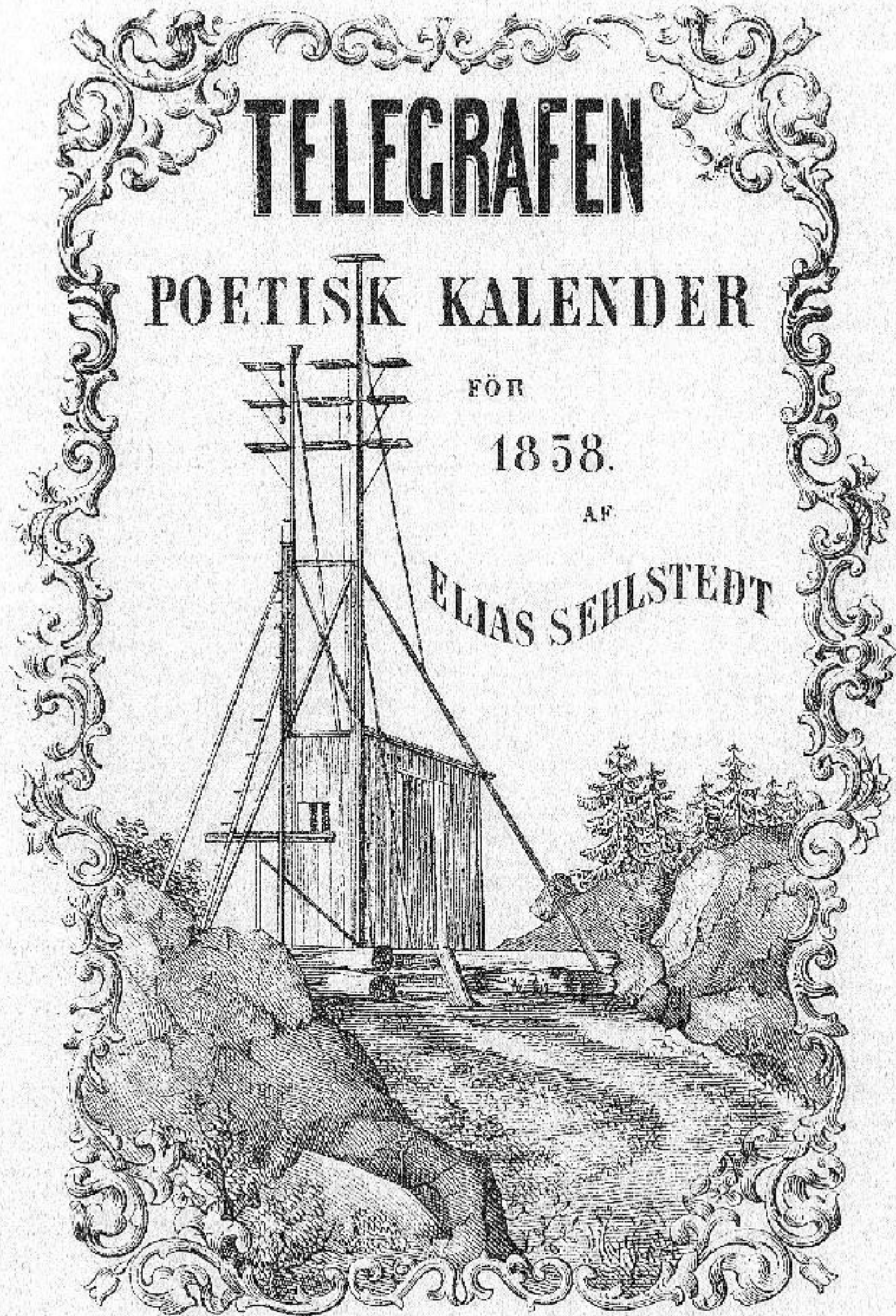
POETISK KALENDER

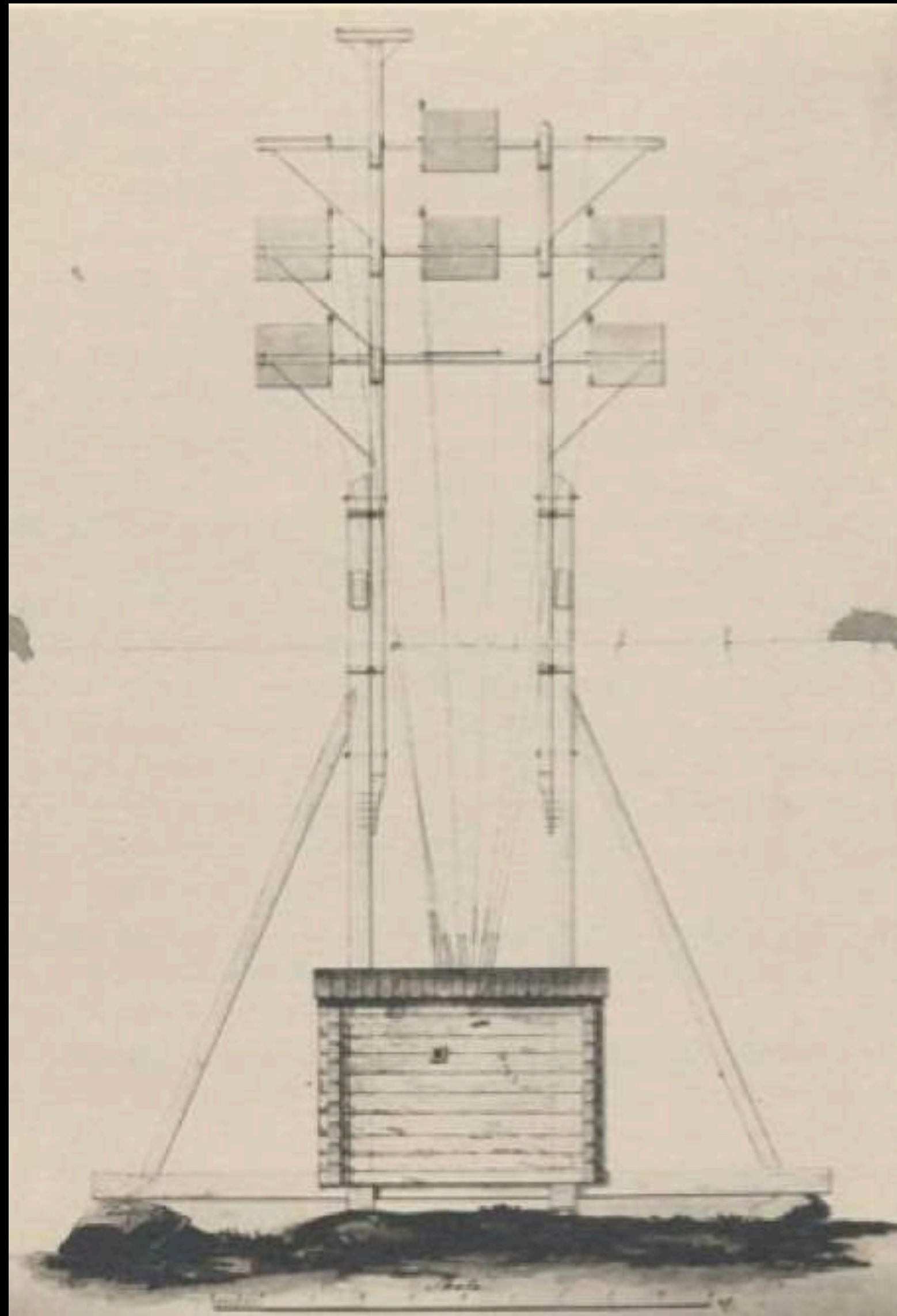
FÖR

1858.

AF

ELIAS SEHLSTEDT





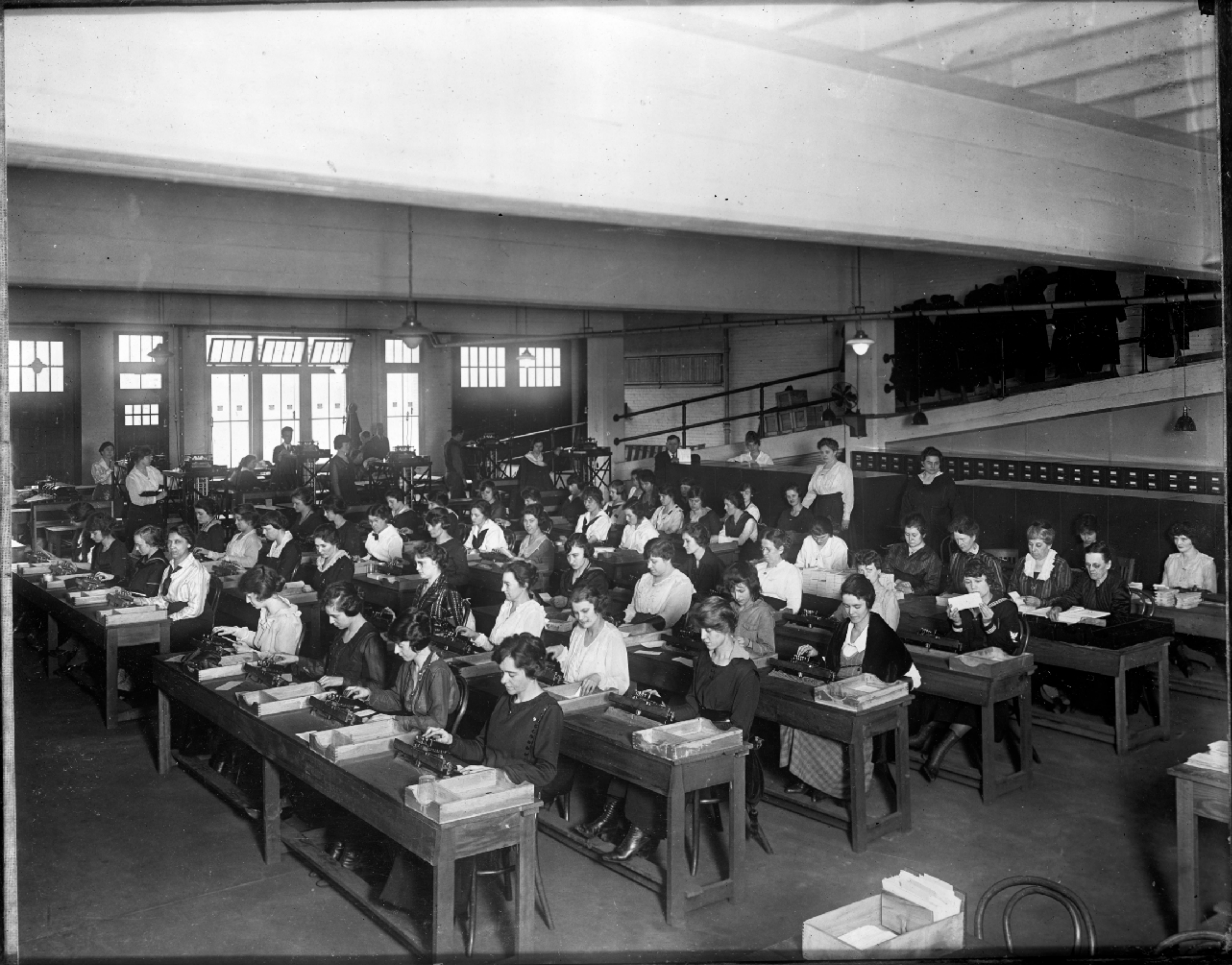
Den optiska telegrafen var inte bara digital utan även binär – det bestod av luckor som antingen var öppna (noll) eller stängda (ett). Med hjälp av en kod kunde sedan de mottagna sifferkombinationerna tolkas.

Hålkortets historia – det vill säga, en styv perforerad kartongbit använd som datamedium – har sin utgångspunkt i den amerikanske ingenjören Herman Hollerith. Genom att lagra information på kodade, hålslagna papperskort, hade han på 1880-talet börjat med att konstruera så kallade hålkortsmaskiner, vilka bland annat kom till praktisk användning i 1890 års amerikanska folkräkning.

1	1	3	0	2	4	10	On	S	A	C	E	a	c	e	g	EB	SB	Ch	Sy	U	Sh	Hk	Br	Rm
2	2	4	1	3	E	15	Off	IS	B	D	F	b	d	f	h	SY	X	Fp	Cn	R	X	Al	Cg	Kg
3	0	0	0	0	W	20		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	1	1	1	1	0	25	A	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
B	2	2	2	2	5	30	B	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
C	3	3	3	3	0	3	C	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
D	4	4	4	4	1	4	D	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
E	5	5	5	5	2	C	E	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
F	6	6	6	6	A	D	F	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Q	7	7	7	7	B	E	Q	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
H	8	8	8	8	a	F	H	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
I	9	9	9	9	b	c	I	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9



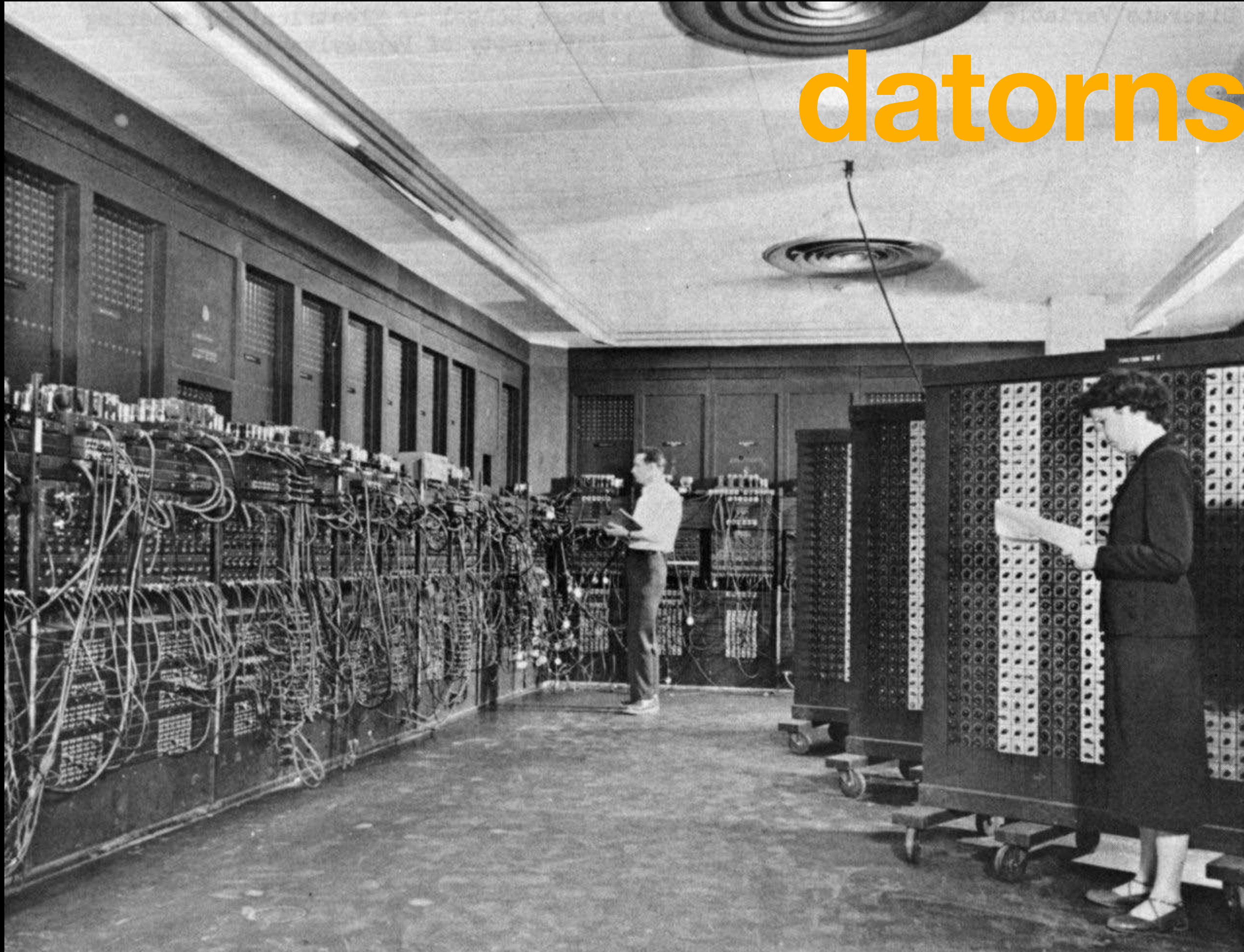
KG 91219 Tabulating Machine Co.





**Computer History
Archives Project**

datorns födelse



På ett generellt plan har det funnits tre sätt att beskriva informationssamhällets framväxt, och datorns eller datoriseringens historia.

För det första existerar det en **teknisk och vetenskaplig berättelse** kring vakuumrör, reläer och transistorer – vilken sedermera uppgraderas till att handla mer om mjukvara och algoritmer.

Långt mer populär är **datorns ekonomiska historia**; en berättelse om rikedom och förmögenheter som vinnas – och förloras – med försäljning och marknadsföring av datorn och dess programvara som ständigt ledstjärna.

Slutligen finns det en mer **visionär datorhistoria** med fokus på innovationer och datalogiskt nytänk, ett slags datorns idéhistoria.

Ted Nelson

COMPUTER LIB

**"You can and must
understand computers NOW"**

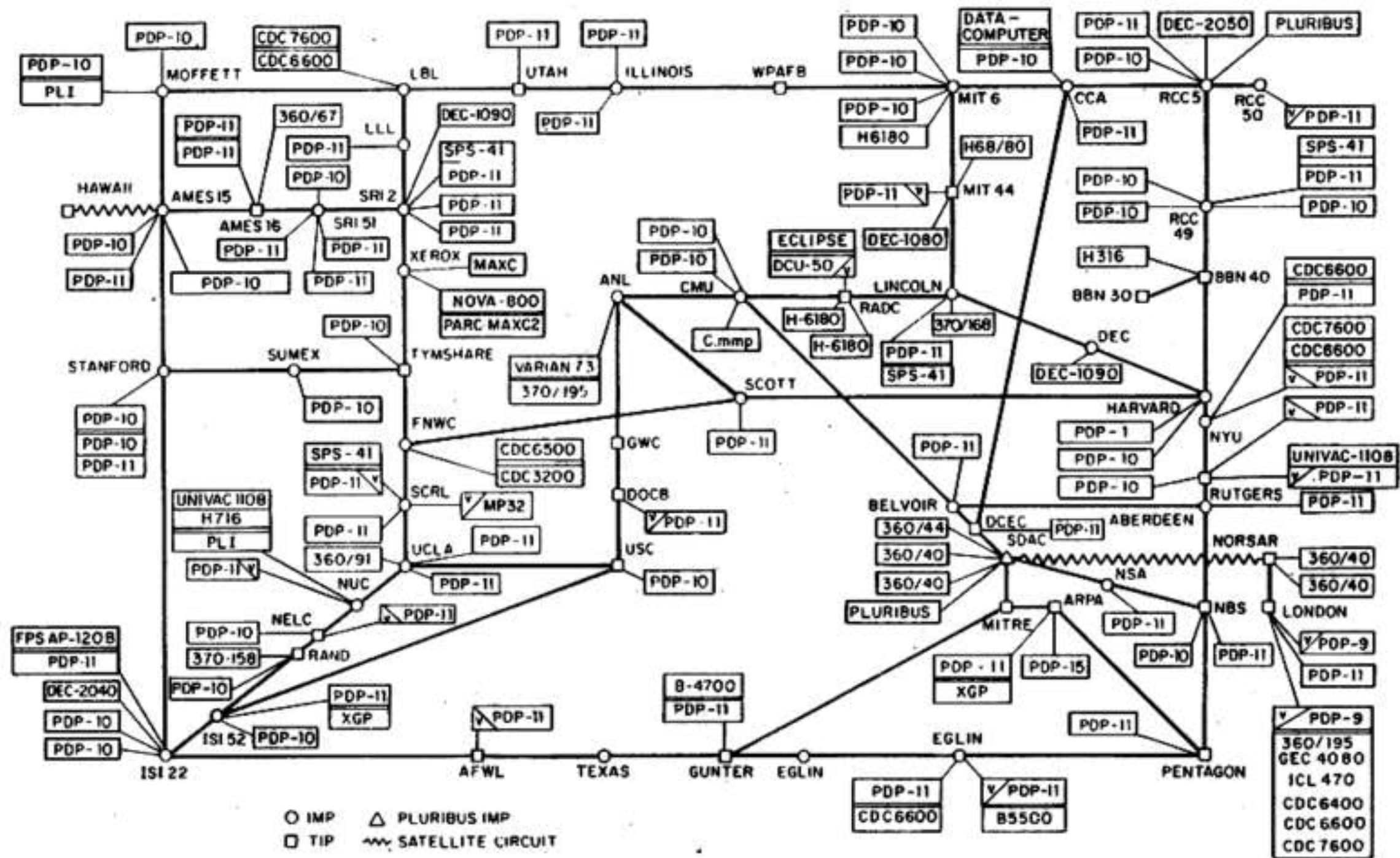
Ted Nelson, 1974



1957

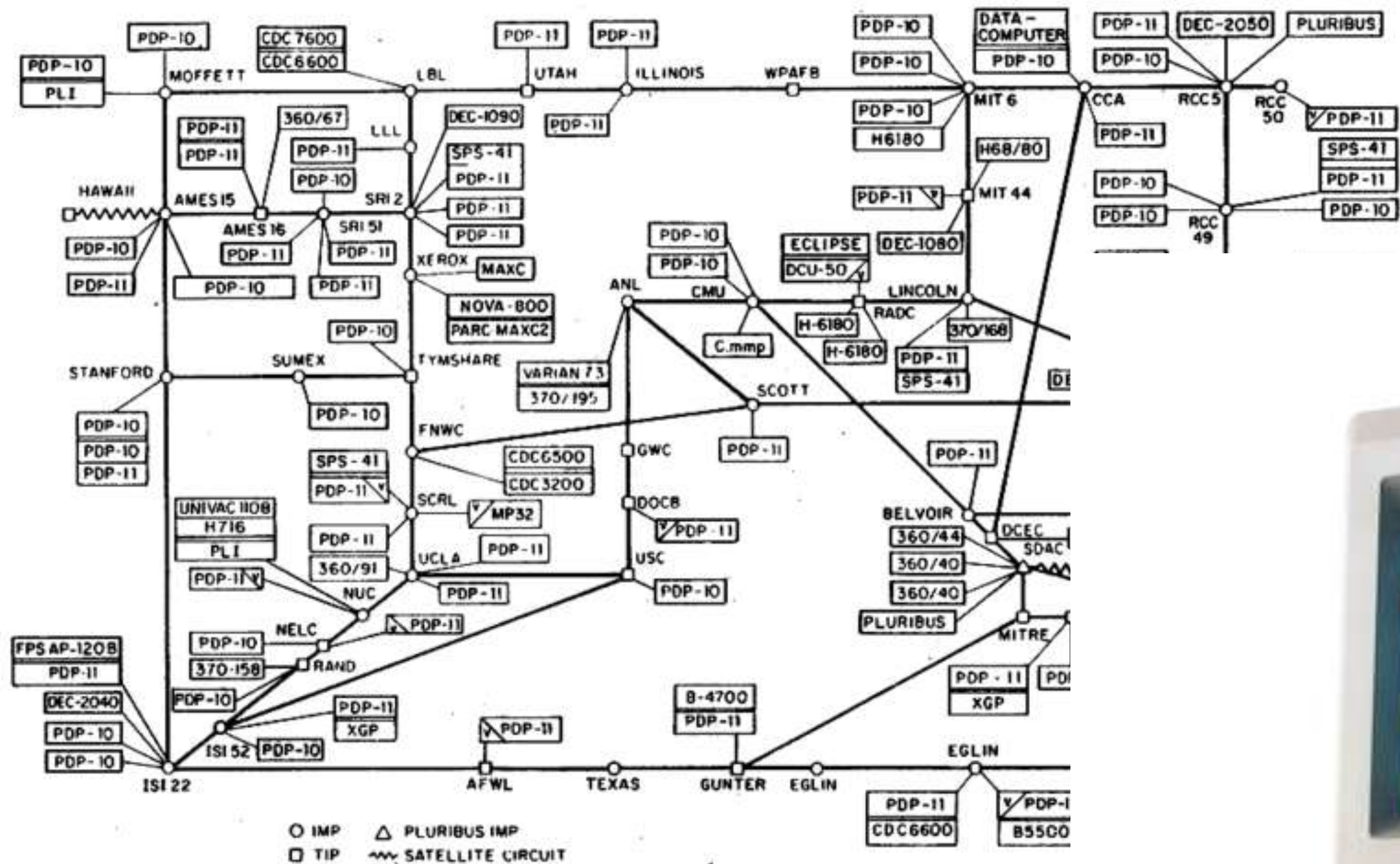


ARPANET LOGICAL MAP, MARCH 1977



(PLEASE NOTE THAT WHILE THIS MAP SHOWS THE HOST POPULATION OF THE NETWORK ACCORDING TO THE BEST INFORMATION OBTAINABLE, NO CLAIM CAN BE MADE FOR ITS ACCURACY)

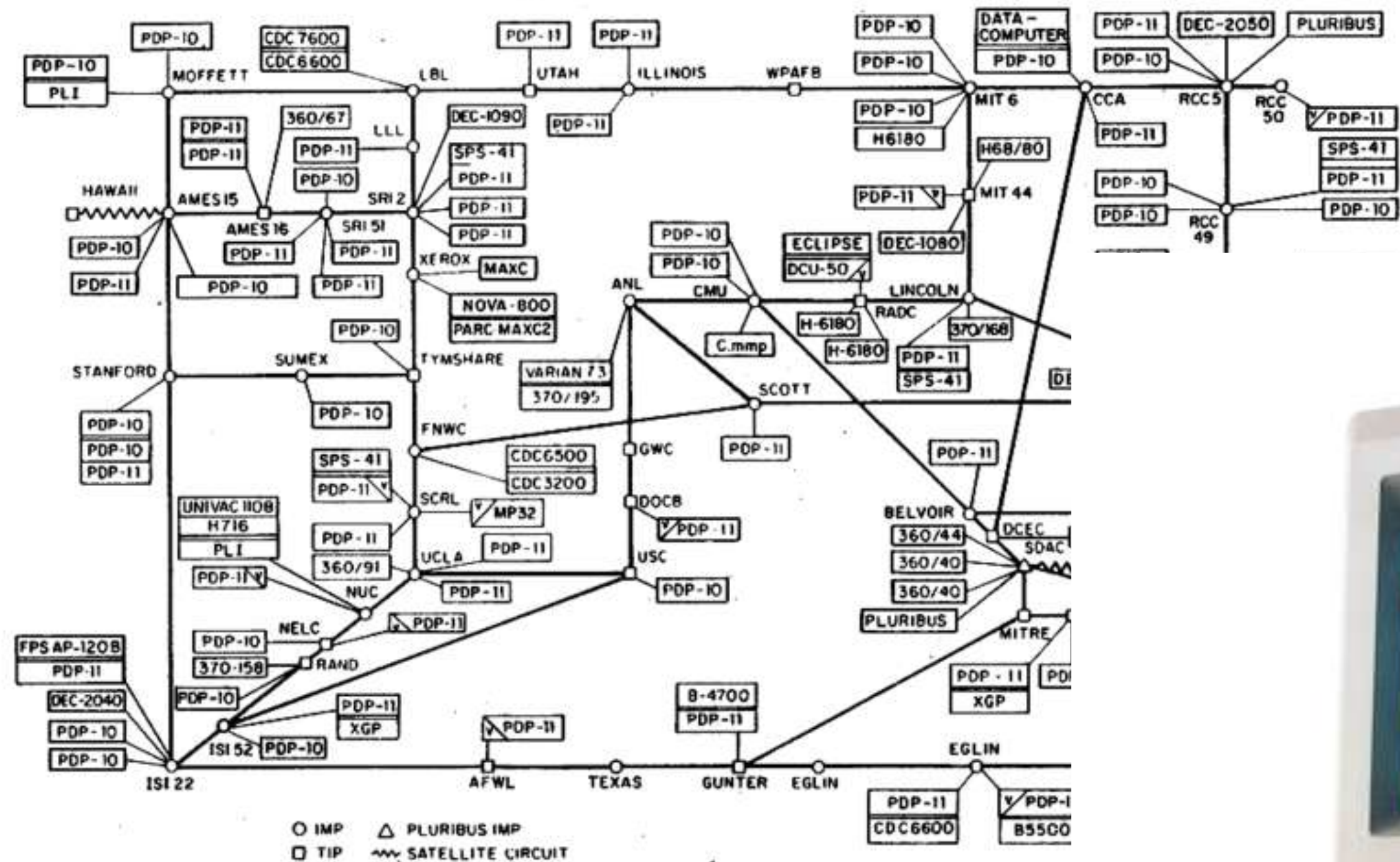
ARPANET LOGICAL MAP, MARCH 1977



(PLEASE NOTE THAT WHILE THIS MAP SHOWS THE HOST POPULATION OF THE NETWORK ACCORDING TO THE BEST INFORMATION OBTAINABLE, NO CLAIM CAN BE MADE FOR ITS ACCURACY)



ARPANET LOGICAL MAP, MARCH 1977



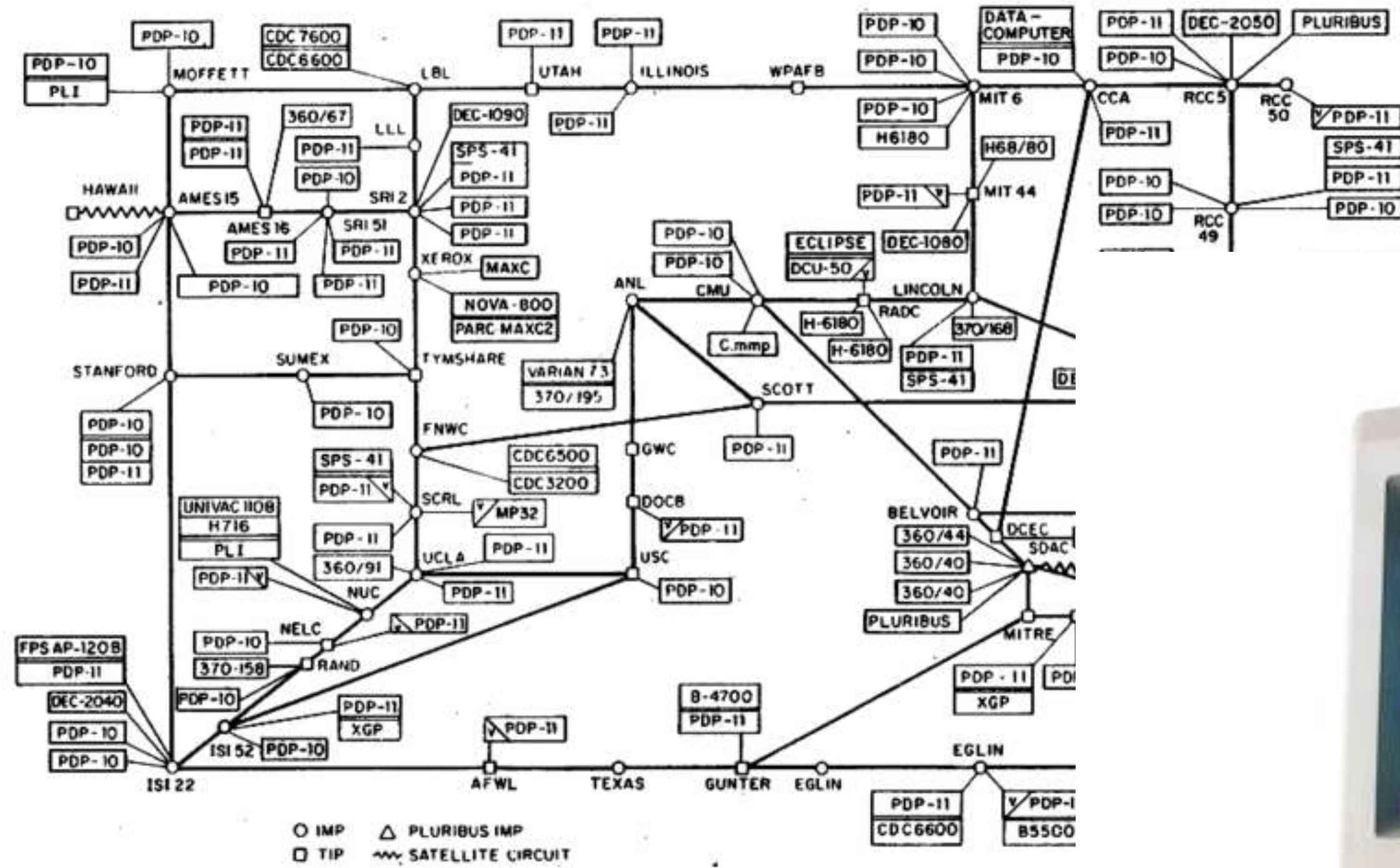
(PLEASE NOTE THAT WHILE THIS MAP SHOWS THE HOST POPULATION OF THE NETWORK ACCORDING TO THE BEST INFORMATION OBTAINABLE, NO CLAIM CAN BE MADE FOR ITS ACCURACY)



MICROSOFT

nätverk, hårdvara & mjukvara

ARPANET LOGICAL MAP, MARCH 1977



MICROSOFT





Den digitala utvecklingen ses oftast som blixtnabb – samtidigt har datorn varit ett tämligen **trögt medium**, som funnits alltsedan 1940-talet.



I ett övergripande mediehistoriskt perspektiv har datorer omprogrammerats från att vara **siffermaskiner som processar data** – till att bli **kreativa verktyg för hur data gestaltas.**



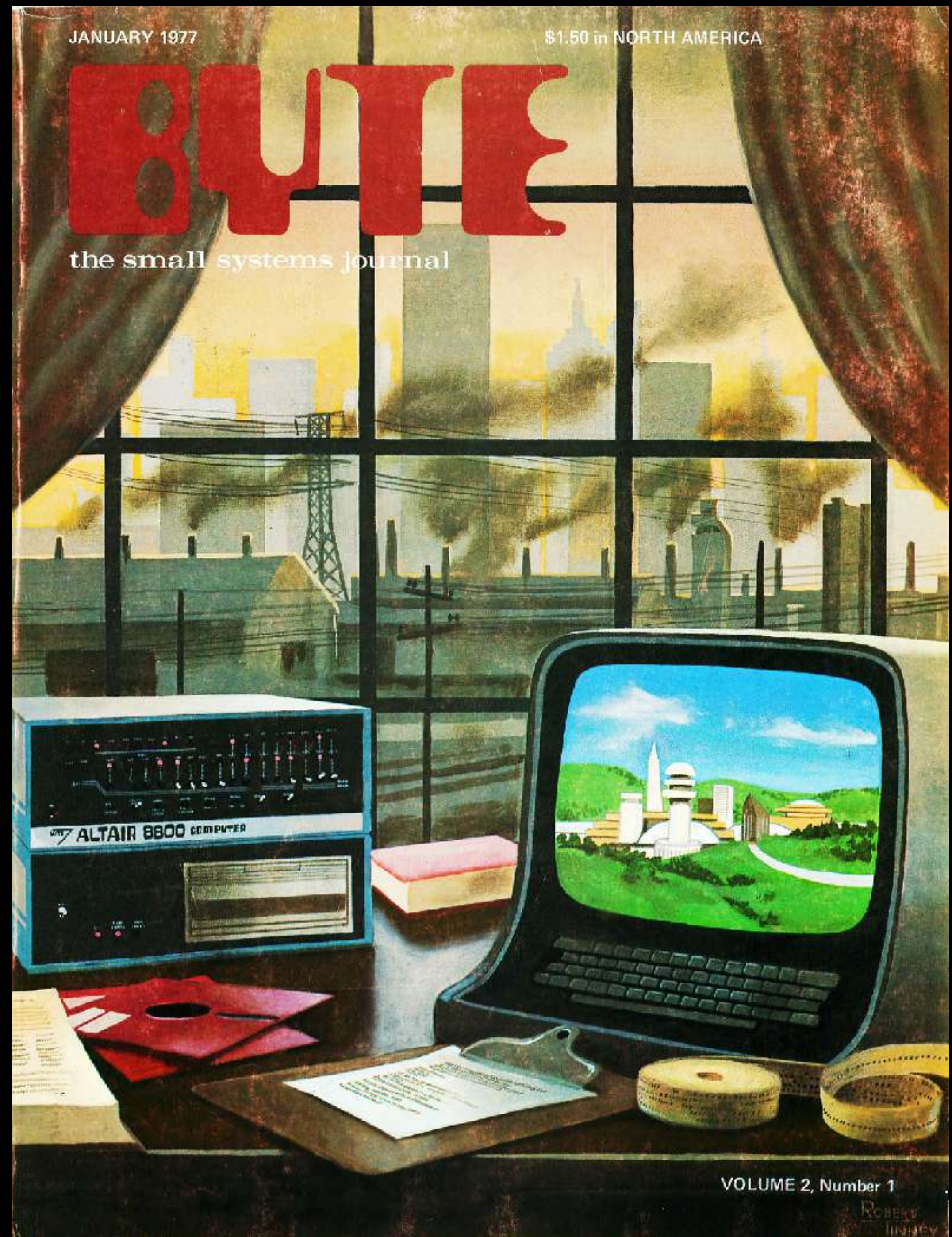
Icke desto mindre har datorn alltid betraktats som ett **framtidsmedium** – vilket också gäller vår samtida diskurs kring *digitalisering*, vilken i regel beskrivs som en **framtidbildande teknik**.

JANUARY 1977

\$1.50 in NORTH AMERICA

BYTE

the small systems journal

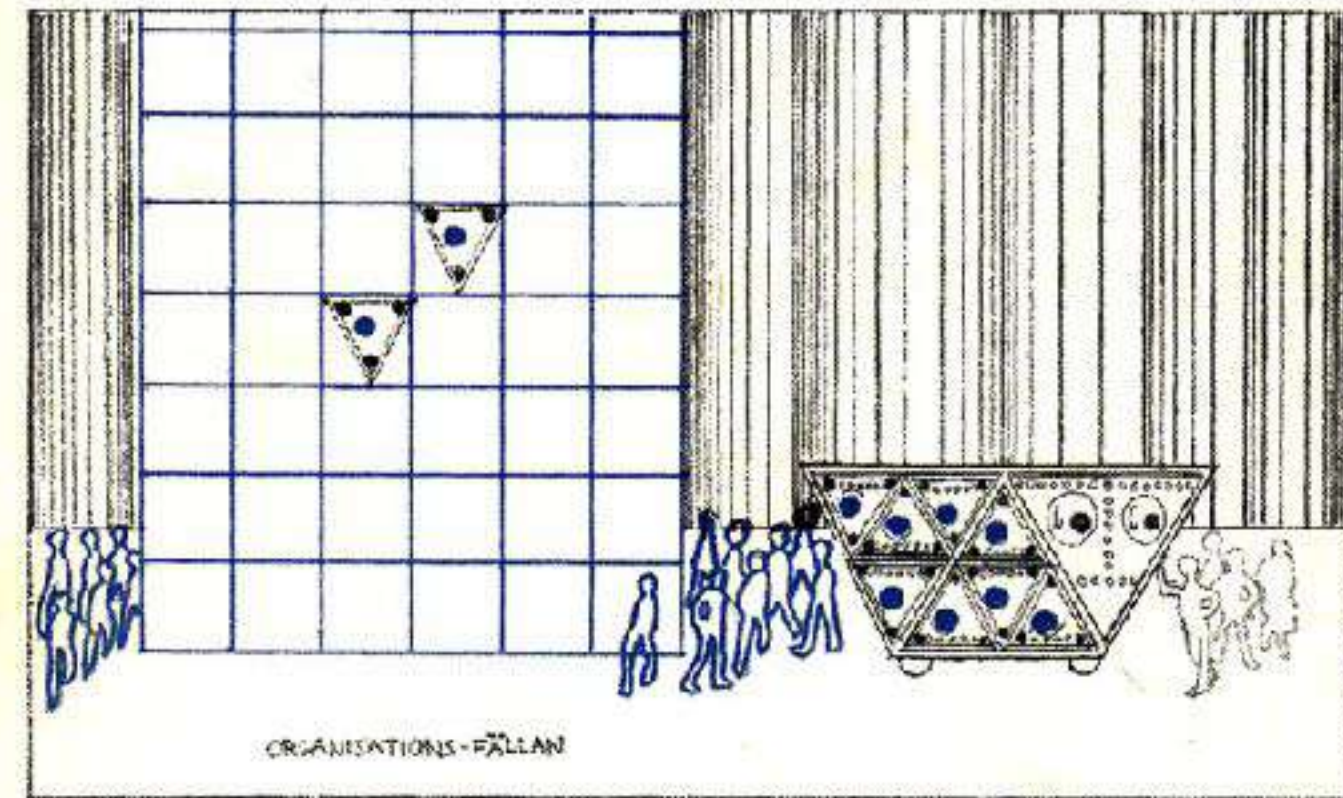


VOLUME 2, Number 1

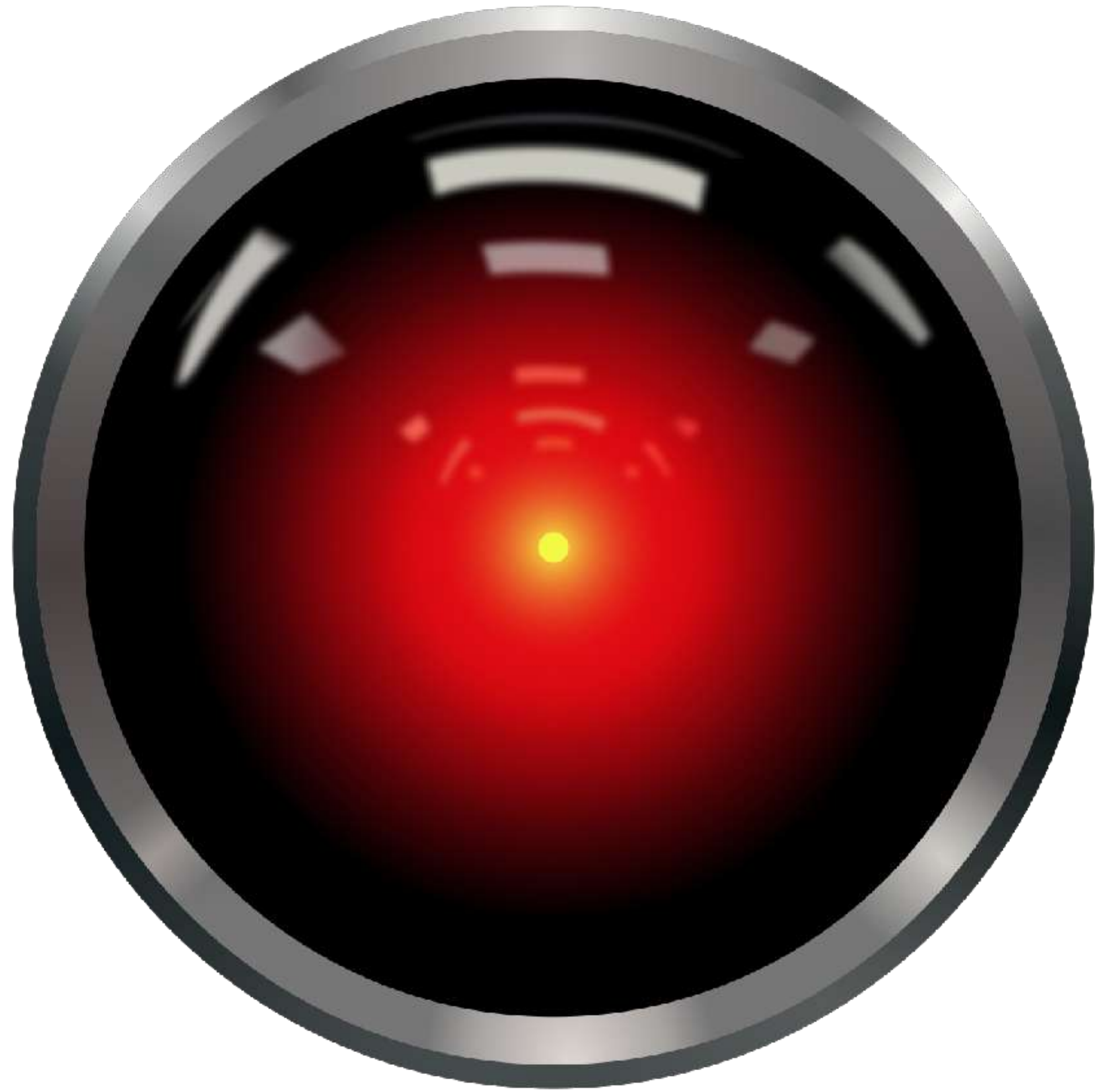
ROBERT
LIVNEY

Olof Johannesson Sagan om den stora datamaskinen

Delfinserien

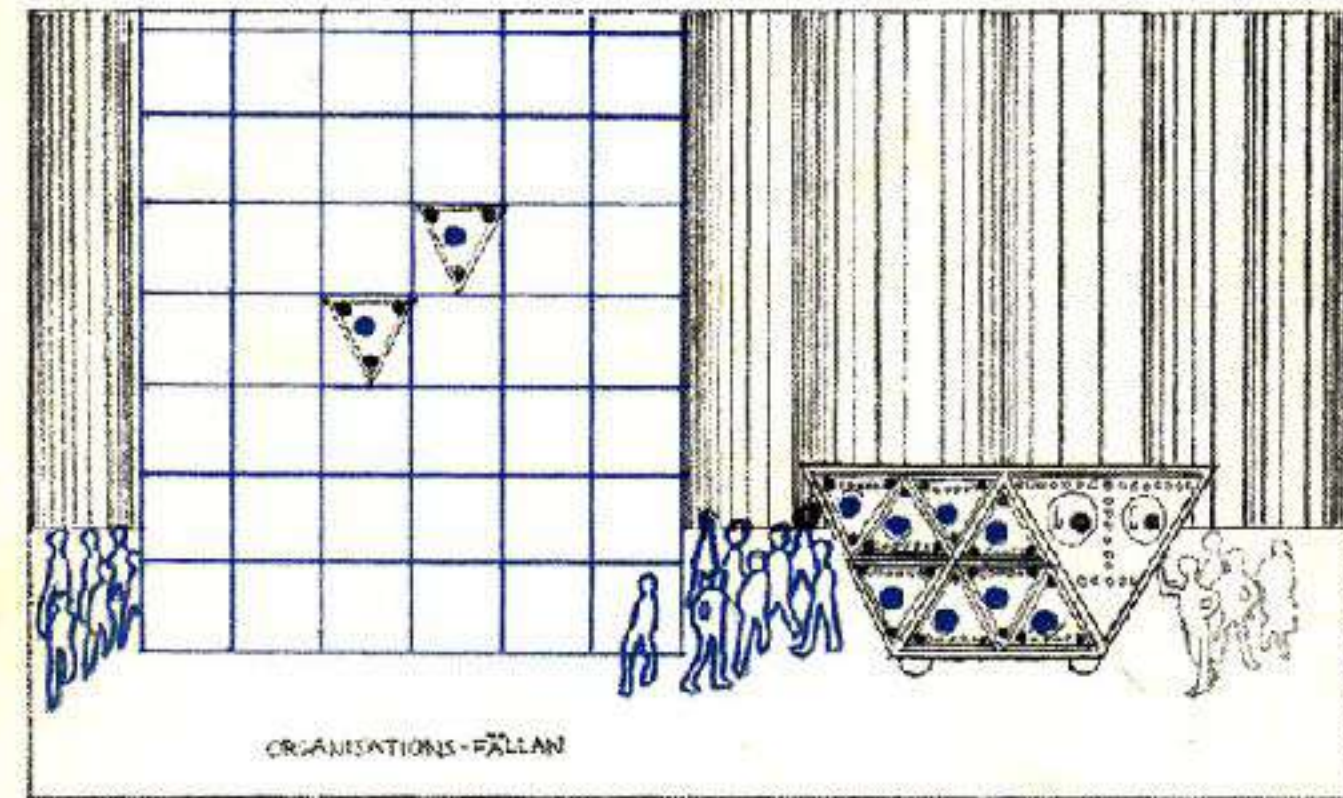


ORGANISATIONS-FÄLLAN

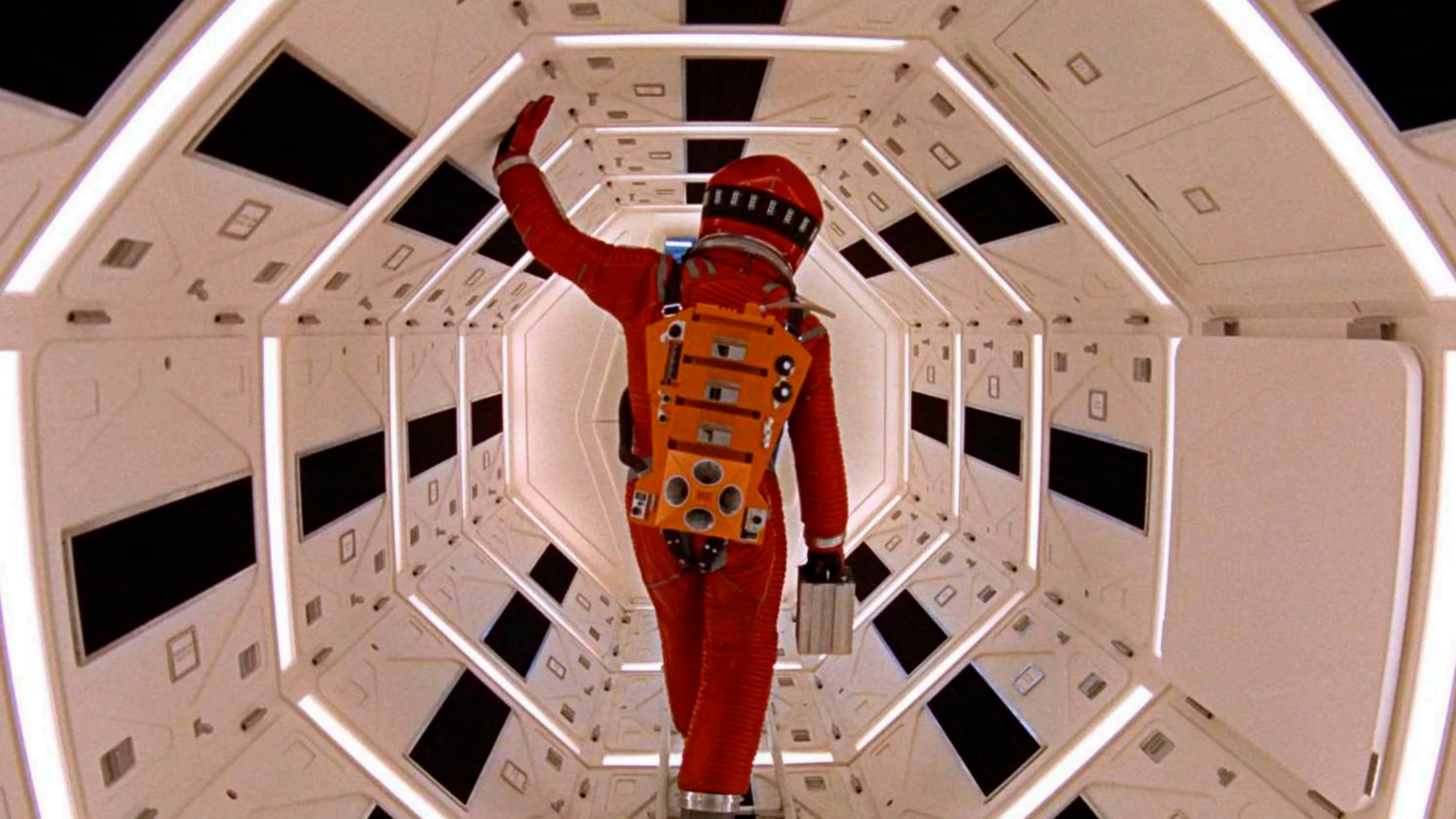


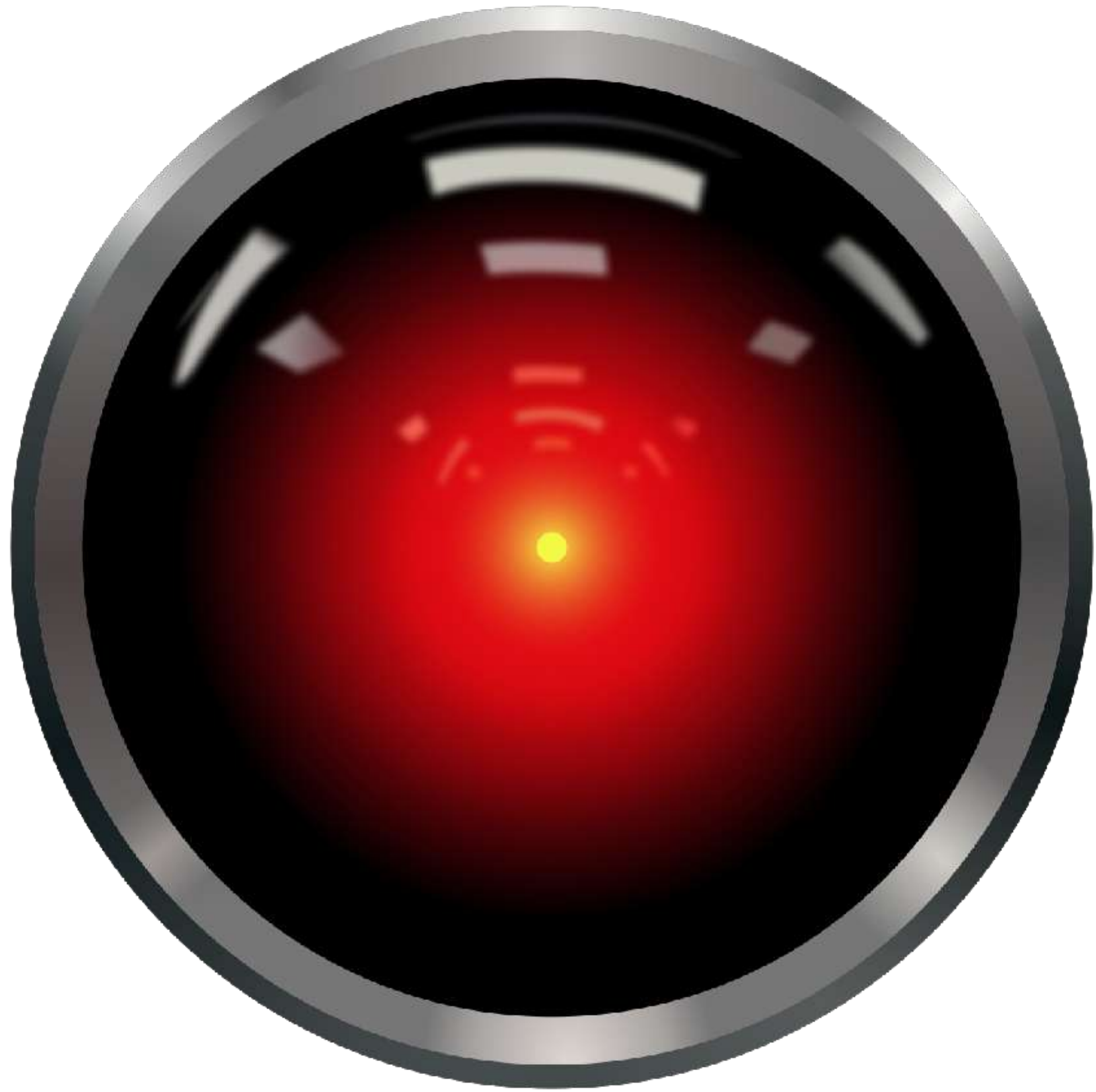
Olof Johannesson Sagan om den stora datamaskinen

Delfinserien



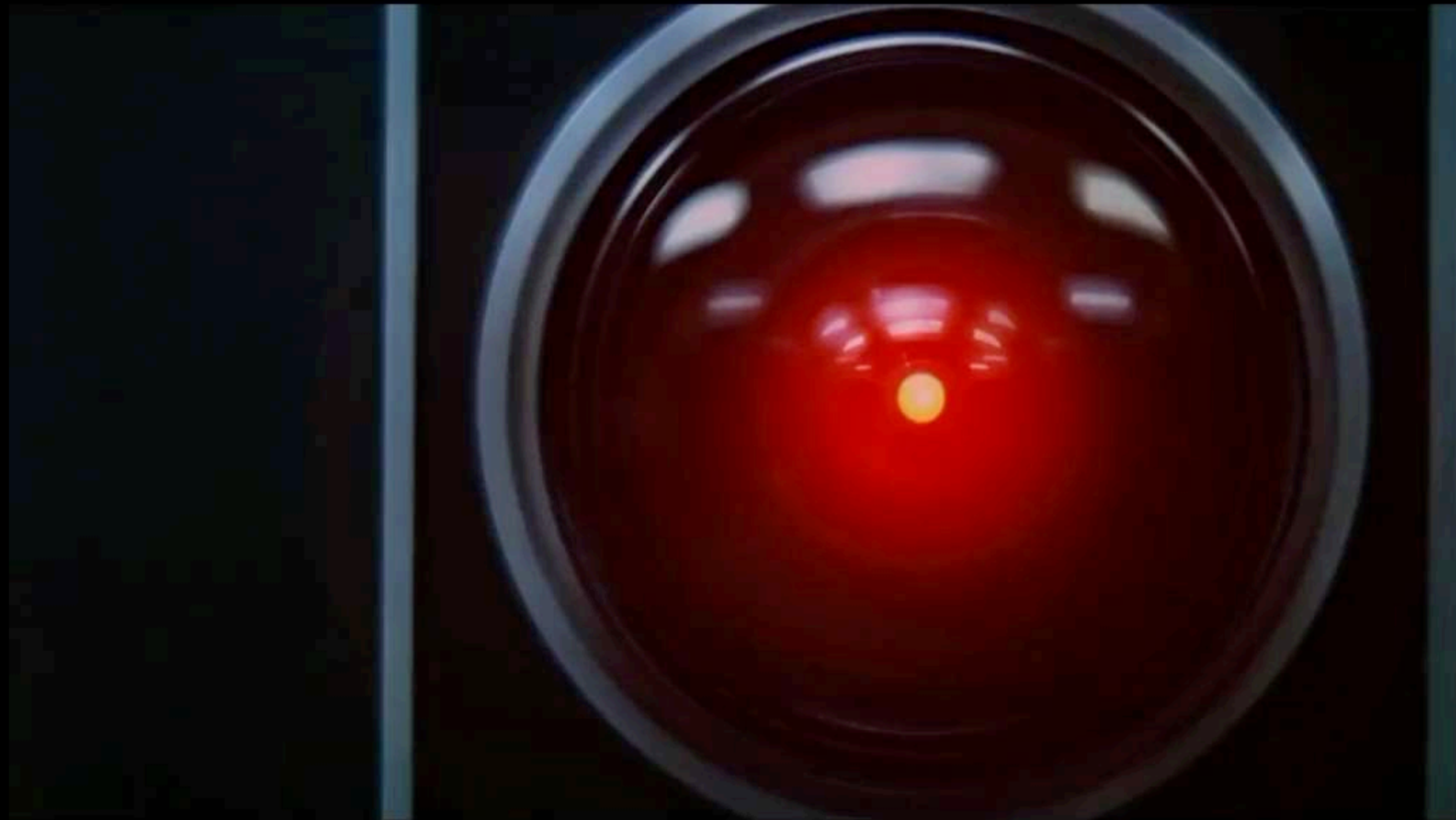
ORGANISATIONS-FÄLLAN

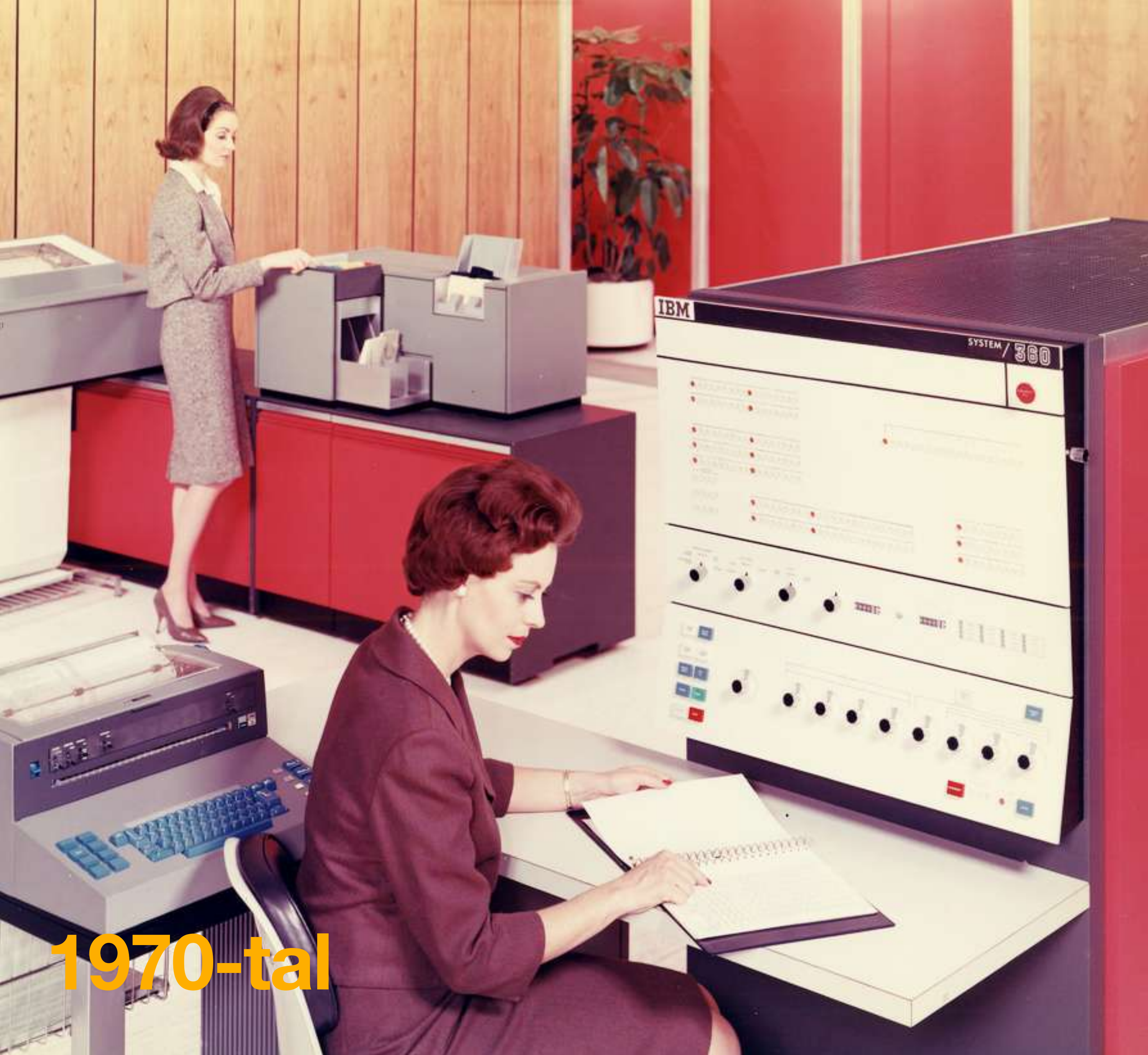




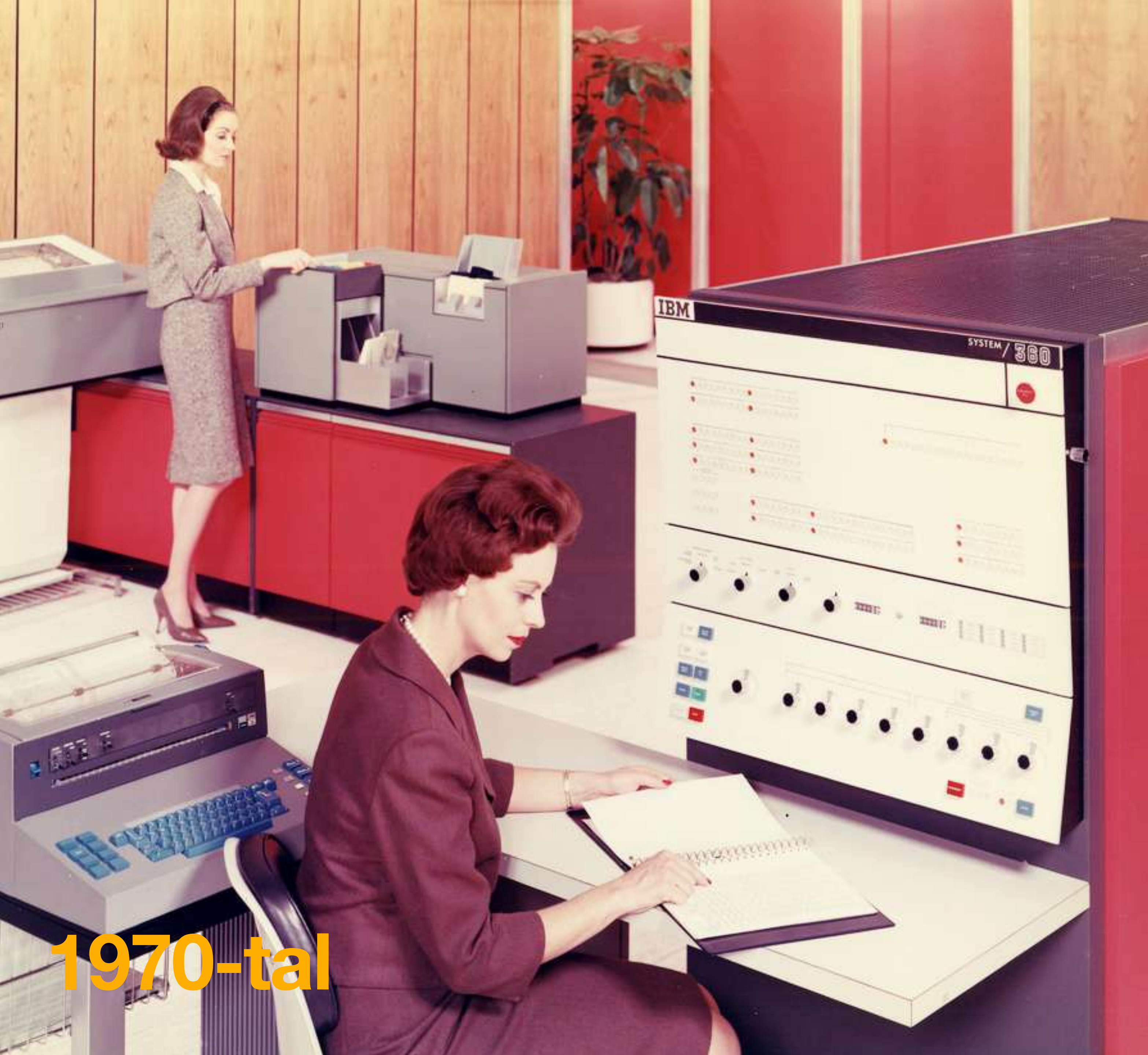
HAL

IBM





1970-tal

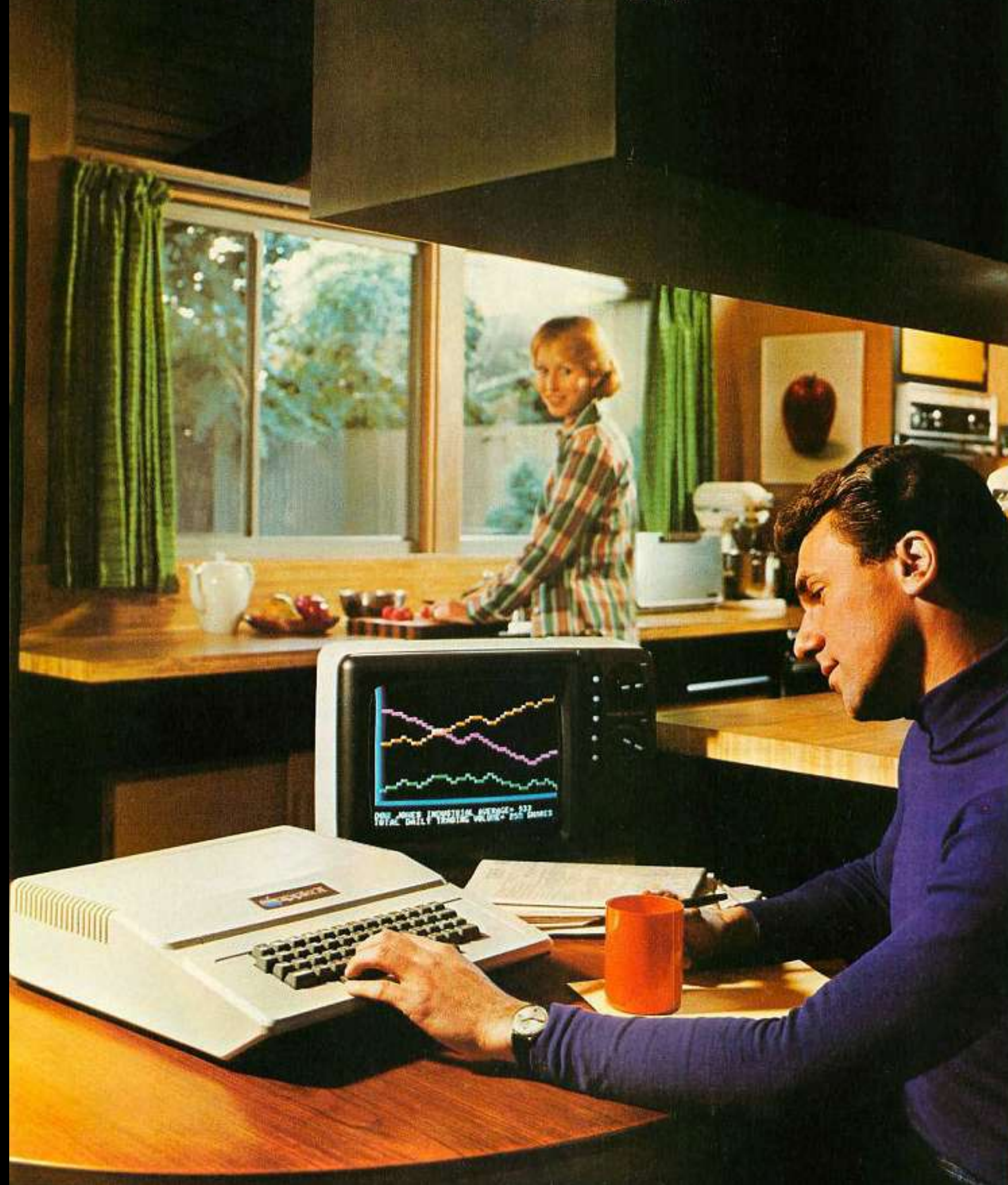


1970-tal



Xerox Alto

Introducing Apple II.™



You've just run out of excuses for not owning a personal computer.

Clear the kitchen table. Bring in the color TV. Plug in your new Apple II,* and connect any standard cassette recorder/player. Now you're ready for an evening of discovery in the new world of personal computers. Only Apple II makes it that easy. It's a

cassette interface, so you can swap with other Apple II users.

You can create dazzling color displays using the unique color graphics commands in Apple BASIC. Write simple programs to display beautiful kaleidoscopic designs. Or invent your own games. Games like PONG—using the game paddles supplied. You can even add the dimension of sound through Apple II's built-in speaker.

But Apple II is more than an advanced, infinitely flexible game machine. Use it to teach your children arithmetic, or spelling for instance. Apple II makes learning fun.

Apple II can also manage household finances, chart the stock market or index recipes, record collections, even control your home environment.

Right now, we're finalizing a peripheral board that will slide into one of the eight available motherboard slots and enable you to compose music electronically.

And there will be other peripherals announced soon to allow your Apple II to talk with another Apple II, or to interface to a printer or teletype.

Apple II is designed to grow with you as your skill and experience with computers grows. It is the state of the art in personal computing today, and compatible upgrades and peripherals will keep Apple II in the forefront for years to come.

Write us today for our detailed brochure and order form. Or call us for the name and address of the Apple II dealer nearest you. (408) 996-1010. Apple Computer Inc., 20863 Stevens Creek Boulevard, Bldg. B3-C, Cupertino, California 95014.



complete, ready to use computer, not a kit. At \$1298, it includes video graphics in 15 colors. It includes 8K bytes ROM and 4K bytes RAM—easily expandable to 48K bytes using 16K RAMs (see box). But you don't even need to know a RAM from a ROM to use and enjoy Apple II. For example, it's the first personal computer with a fast version of BASIC permanently stored in ROM. That means you can begin writing your own programs the first evening, even if you've had no previous computer experience.

The familiar typewriter-style keyboard makes it easy to enter your instructions. And your programs can be stored on—and retrieved from—audio cassettes, using the built-in



Apple II™ is a completely self-contained computer system with BASIC in ROM, color graphics, ASCII keyboard, light-weight, efficient switching power supply and molded case. It is supplied with BASIC in ROM, up to 48K bytes of RAM, and with cassette tape, video and game I/O interfaces built-in. Also included are two game paddles and a demonstration cassette.

SPECIFICATIONS

- **Microprocessor:** 6502 (1 MHz).
- **Video Display:** Memory mapped, 5 modes—all Software-selectable:
 - Text—40 characters/line, 24 lines upper case.
 - Color graphics—40h x 48v, 15 colors
 - High-resolution graphics—280h x 192v; black, white, violet, green (12K RAM minimum required)
 - Both graphics modes can be selected to include 4 lines of text at the bottom of the display area.
 - Completely transparent memory access. All color generation done digitally.
- **Memory:** up to 48K bytes on-board RAM (4K supplied)
 - Uses either 4K or new 16K dynamic memory chips
 - Up to 12K ROM (8K supplied)
- **Software**
 - Fast extended BASIC in ROM with color graphics commands
 - Extensive monitor in ROM
- **I/O**
 - 1500 bps cassette interface
 - 8-slot motherboard
 - Apple game I/O connector
 - ASCII keyboard port
 - Speaker
 - Composite video output



Apple II is also available in board-only form for the do-it-yourself hobbyist. Has all of the features of the Apple II system, but does not include case, keyboard, power supply or game paddles. \$598.

PONG is a trademark of Atari Inc.
*Apple II plugs into any standard TV using an inexpensive modulator (not supplied).

 **apple computer inc.™**



Macintosh HD

4 objekt 18

Systemma

Claris Works 3.0

Skärm 1

Annat

3 objekt 557K i skiva 228K I

Captain Blood

Blood

SBlood

Skärm 1

Kopiera

Objekt kvar att kopiera: 1

Skriver: Skärm 1

Stopp

Macintosh HD

Claris Works

Captain BLOOD

Papperskorg

The image shows the classic Apple Computer logo, which consists of a silhouette of an apple with a bite taken out of it, followed by the text "apple computer inc." in a lowercase, sans-serif font. The entire logo is rendered in a glowing, yellowish-white color against a dark, textured background.

apple computer inc.

Datorn som en digital mediemaskin ...



Rip. Mix. Burn.
The new iMac. Now with iTunes and CD-RW.



Apple iMac G3 (1998)





File Edit Find Channels User Tools Web Help Sat 6:47:13 PM 9717 Users sharing 1743953 files (7384 Gigs) Napster

Search results for turtles

Artist: turtles 100 Results

Title: so happy together Search

Show advanced search options

Name	Size	Bitrate	Line Speed	Length	User	Ping
Turtles - So Happy Together .mp3	4.0 MB	192 Kbps	Cable	3:00 minutes	murda55	timeout
Turtles_So Happy Together.mp3	4.0 MB	192 Kbps	Cable	2:59 minutes	Jpkcr1	timeout
Turtles - So Happy Together.mp3	3.9 MB	192 Kbps	Cable	2:55 minutes	cfankeny	timeout
Me First and Gimie Gimmes - So Happy Together (punk Turtles co...	1.8 MB	128 Kbps	T3+	2:01 minutes	dave87777	timeout
Copy of A New Found Glory - So Happy Together (punk Turtles cover...	1.8 MB	128 Kbps	T3+	2:01 minutes	corky273	timeout
Turtles--So Happy Together.mp3	2.6 MB	128 Kbps	T1	2:56 minutes	Zena5000	timeout
A New Found Glory - So Happy Together (punk Turtles cover).mp3	1.8 MB	128 Kbps	T1	2:01 minutes	keanie	timeout
The Turtles - So Happy Together.mp3	2.6 MB	128 Kbps	DSL	2:58 minutes	vizbiz	timeout
Turtles-So Happy Together.mp3	2.6 MB	128 Kbps	DSL	2:56 minutes	whazoo100	timeout

Transfer Manager

Download Order	Progress	Size	Speed	Time
Andrew Lloyd Webber - Think of Me - The Phantom of the Opera - Disc 1 ...	<div style="width: 20%;"></div>	4.9 MB	5.5 K/sec	10
John Williams - Duel Of The Fates.mp3	<div style="width: 60%;"></div>	4.8 MB	14.2 K/sec	2
02_-_john_williams_-_duel_of_the_fates.mp3	<div style="width: 60%;"></div>	4.8 MB	4.9 K/sec	5
Paul Simon - You Can Call Me Al.mp3	<div style="width: 10%;"></div>	5.3 MB	2.8 K/sec	29
Paul Simon-You Can Call Me Al.mp3	<div style="width: 10%;"></div>	5.3 MB	3.0 K/sec	26
Paul Simon-You Can Call Me Al.mp3	<div style="width: 5%;"></div>	5.3 MB	1.6 K/sec	54
FF4- Main theme (Enya Remix).mp3	<div style="width: 30%;"></div>	4.2 MB	12.4 K/sec	3

- tack!



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