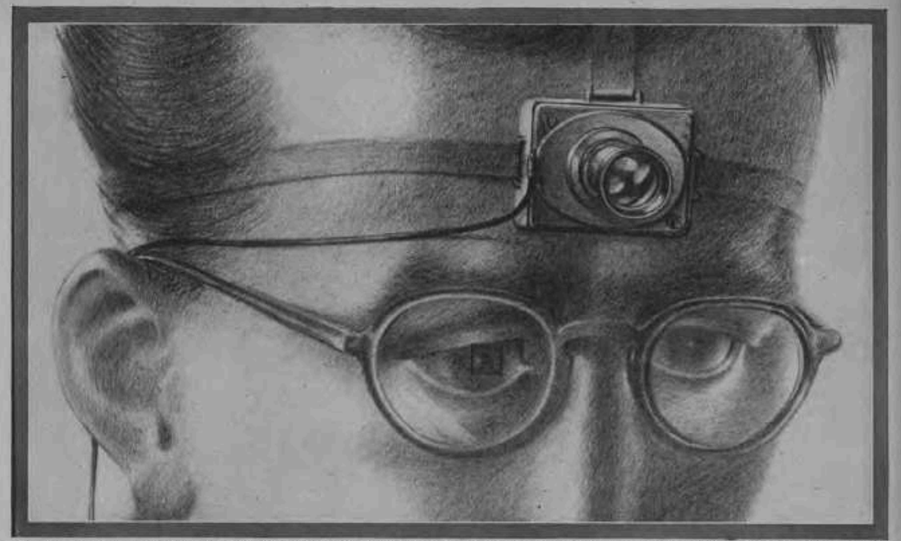
LUNDS UNIVERSITET

DIKA21.2 Digitaliseringens mediehistoria

Teorier – fortsättning (7,5 hp)

Professor Pelle Snickars
Institutionen för kulturvetenskaper
Avdelningen för ABM & digitala kulturer



A SCIENTIST OF THE FUTURE RECORDS EXPERIMENTS WITH A TINY CAMERA FITTED WITH UNIVERSAL-FOCUS LENS. THE SMALL SQUARE IN THE EYEGLASS AT THE LEFT SIGHTS THE OBJECT

AS WE MAY THINK

A TOP U. S. SCIENTIST FORESEES A POSSIBLE FUTURE WORLD IN WHICH MAN-MADE MACHINES WILL START TO THINK

by VANNEVAR BUSH

DIRECTOR OF THE OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT

Condensed from the *Atlantic Monthly*, July 1945

This has not been a scientists' war; it has been a war in which all have had a part. The scientists, burying their old professional competition in the demand of a common cause, have shared greatly and learned much. It has been exhilarating to work in effective partnership. What are the scientists to do next?

For the biologists, and particularly for the medical scientists, there can be little indecision, for their war work has hardly required them to leave the old paths. Many indeed have been able to carry on their war research in their familiar peacetime laboratories. Their objectives remain much the same.

It is the physicists who have been thrown most violently off stride, who have left academic pursuits for the making of strange destructive gadgets, who have had to devise new methods for their unanticipated assignments. They have done their part on the devices that made it possible to turn back the enemy. They have worked in combined effort with the physicists of our allies. They have felt within themselves the stir of achievement. They have been part of a great team. Now one asks where they will find objectives worthy of their best.

* * *

There is a growing mountain of research. But there is increased evidence that we are being bogged down today as specialization extends. The investigator is staggered by the findings and conclusions of thousands of other workers—conclusions which he cannot find time to grasp, much less to remember, as they appear. Yet specialization becomes increasingly necessary for progress, and the effort to bridge between disciplines is correspondingly superficial.

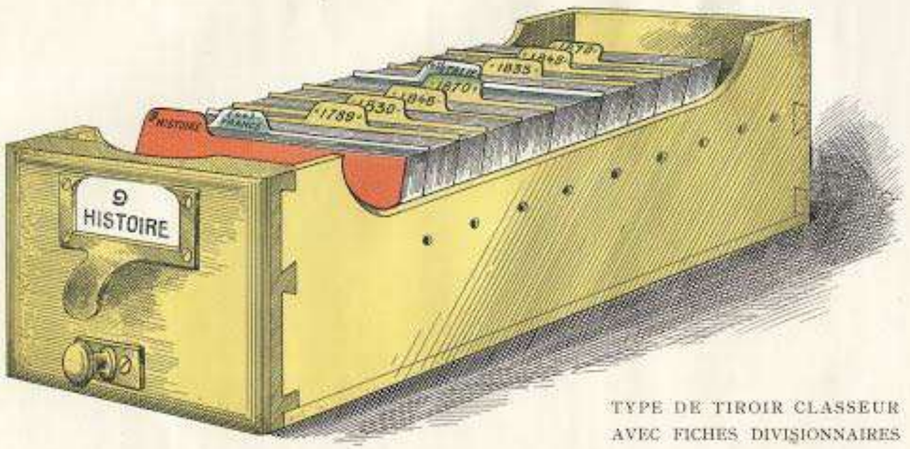
Professionally our methods of transmitting and reviewing the results of research are generations old and by now are totally inadequate for their purpose. If the aggregate time spent in writing scholarly works and in reading them could be evaluated, the ratio between these amounts of time might well be startling. Those who conscientiously attempt to keep abreast of current thought, even in restricted fields, by close and continuous reading might well shy away from an examination calculated to show how much of the previous month's efforts could be produced on call.

Mendel's concept of the laws of genetics was lost to the world for a generation because his publication did not reach the few who were capable of grasping and extending it. This sort of catastrophe is undoubtedly being repeated all about us as truly significant attainments become lost in the mass of the inconsequential.

Publication has been extended far beyond our present ability to make real use of the record. The summation of human experience is being expanded at a prodigious rate, and the means we use for threading through the consequent maze to the momentarily important item is the same as was used in the days of square-rigged ships.

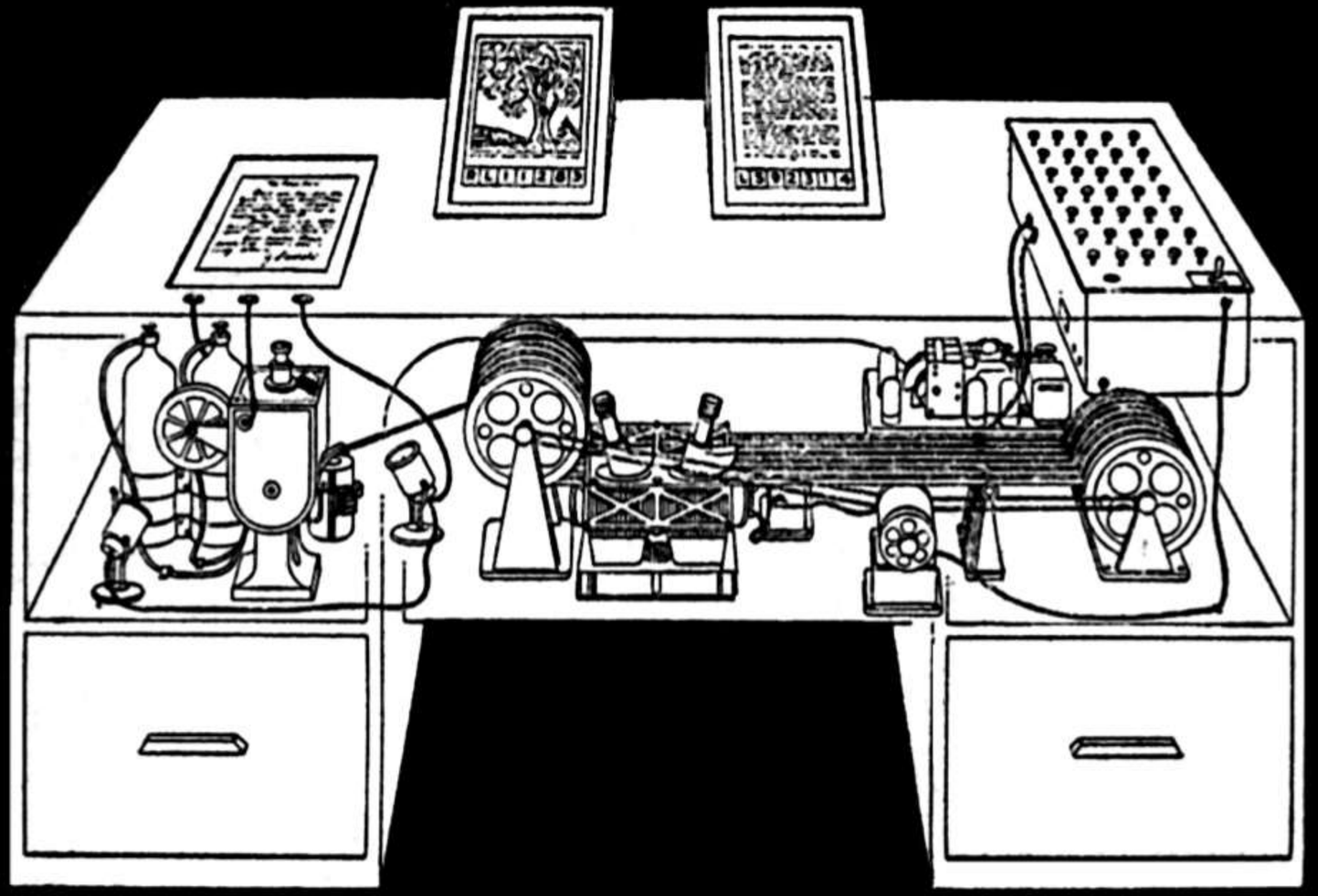
But there are signs of a change as new and powerful instrumentalities come into use. Photocells capable of seeing things in a physical sense, advanced photography which can record what is seen or even what is not, thermionic tubes capable of controlling potent forces under the guidance of

PLANCHE III.

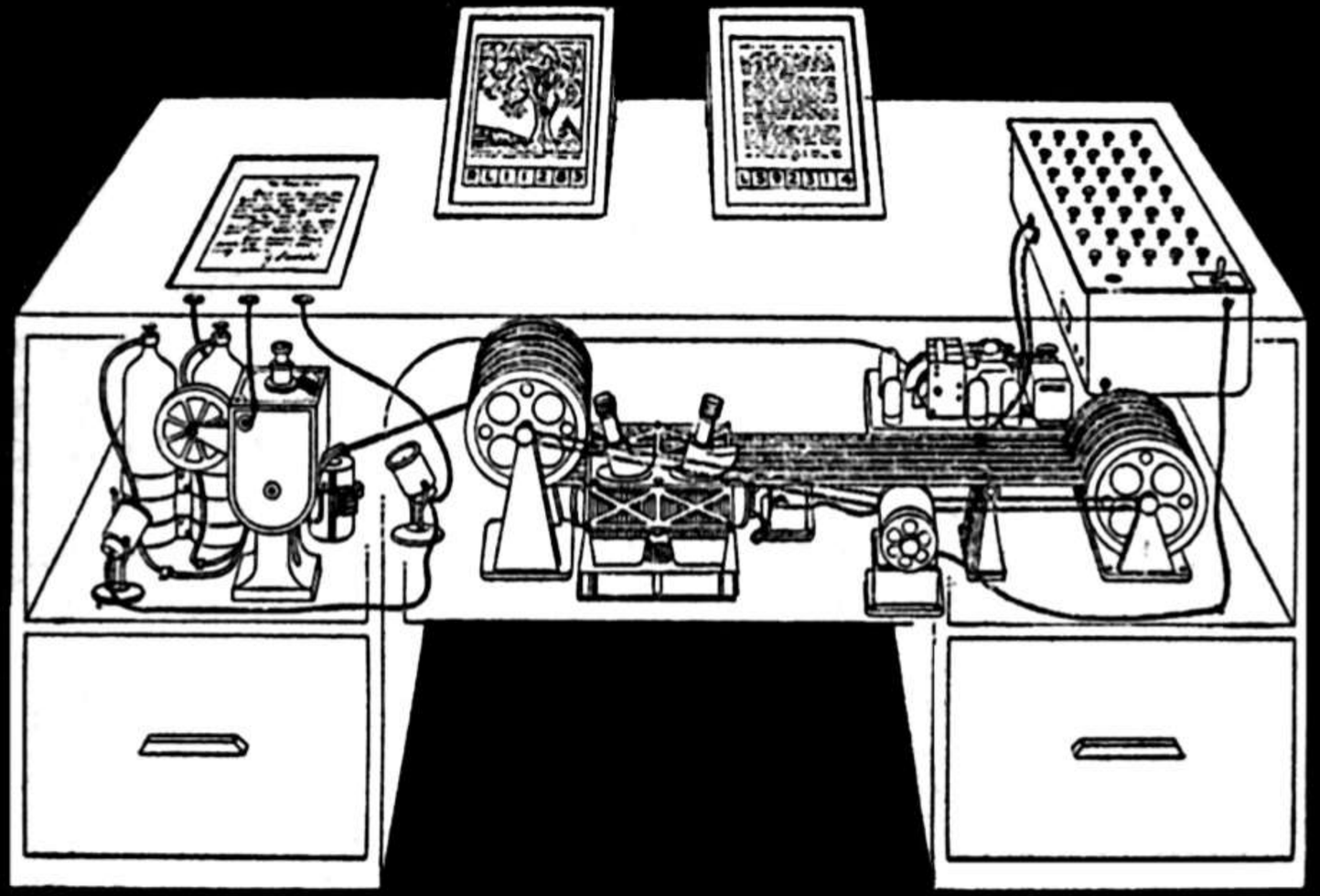


TYPE DE TIROIR CLASSEUR
AVEC FICHES DIVISIONNAIRES

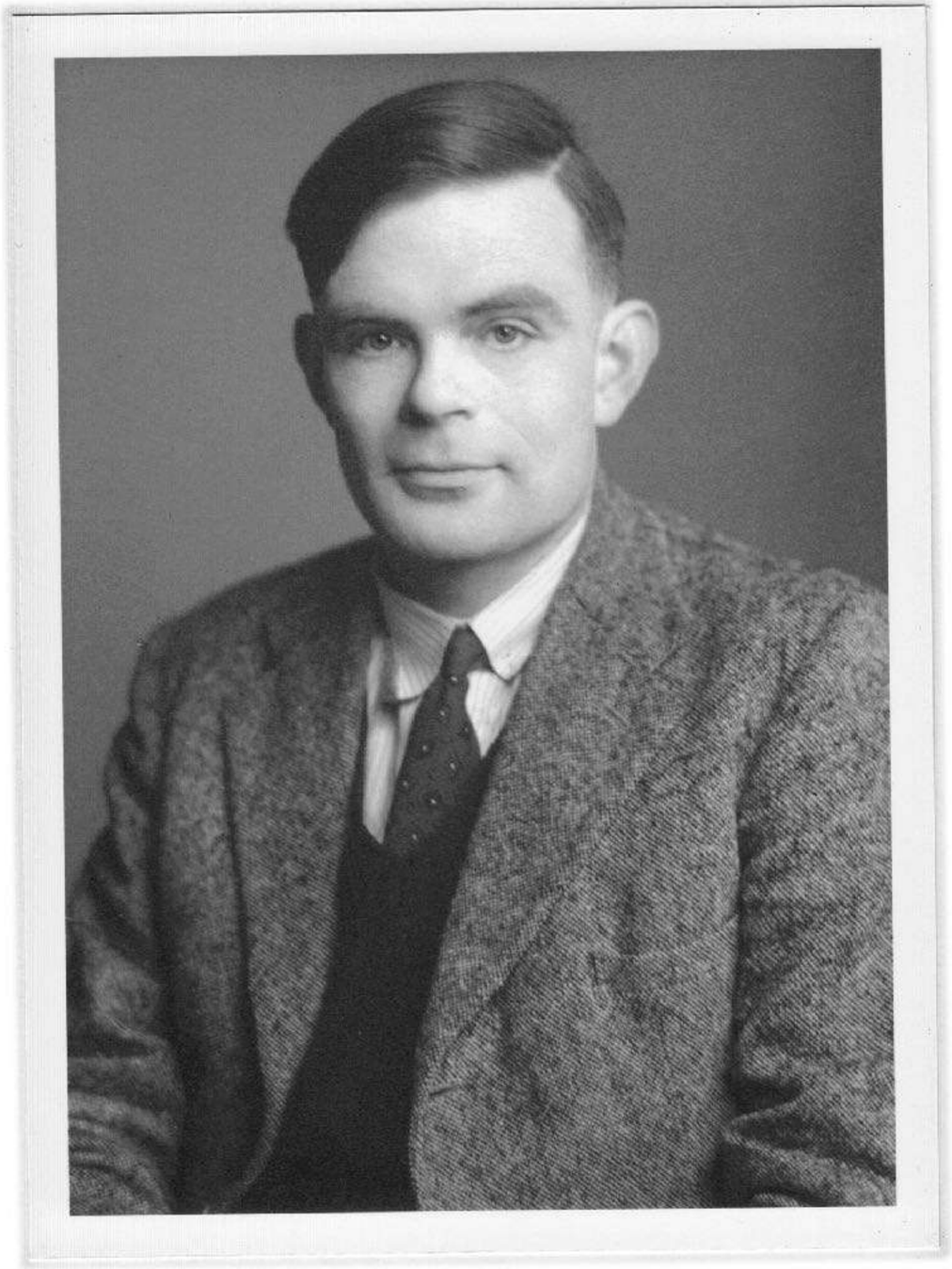
La division principale 9 *Histoire* est indiquée par une fiche divisionnaire du premier cran, de couleur orange.
Les subdivisions de lieu (44) *France*, (45) *Italie*, sont indiquées par des fiches divisionnaires du deuxième cran, de couleur verte. — Les subdivisions de temps « 1789 », « 1830 », etc., sont indiquées par des fiches divisionnaires du troisième cran, de couleur jaune. — L'histoire de France, en 1789, est classée à 9 (44) « 1789 ».

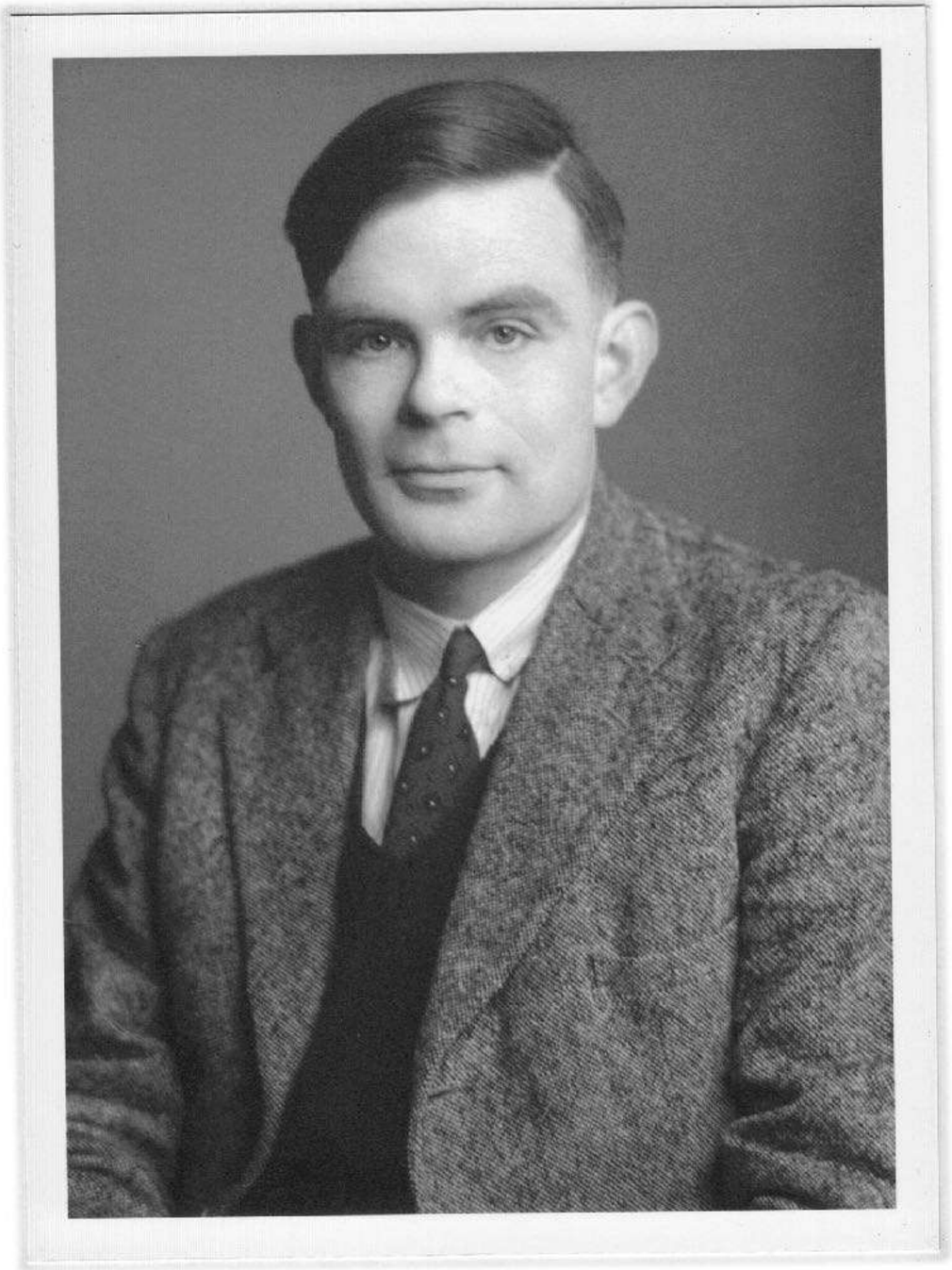


Den hypotetiska Memex-apparaten var en sorts avancerad **mikrofilmsläsare** med tusentals rullar fotograferat vetande – vilken därför inte sällan betraktats som föregångare till dagens webb.



Memex





Turingmaskin

Turingmaskin [tjuᵊˈriŋ-], 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.

ON COMPUTABLE NUMBERS, WITH AN APPLICATION TO THE ENTSCHEIDUNGSPROBLEM

By A. M. TURING.

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

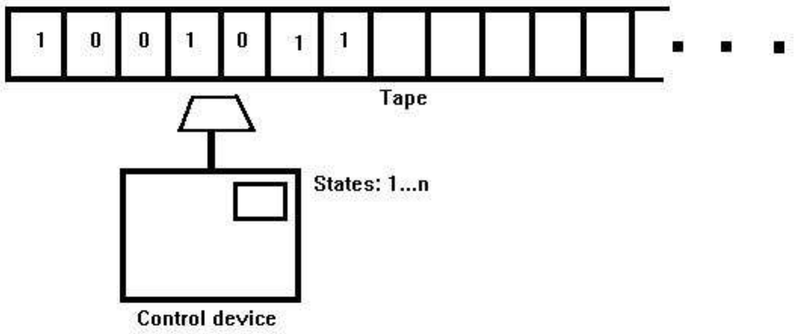
The "computable" numbers may be described briefly as the real numbers whose expressions as a decimal are calculable by finite means. Although the subject of this paper is ostensibly the computable *numbers*, it is almost equally easy to define and investigate computable functions of an integral variable 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 cumbrous 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.

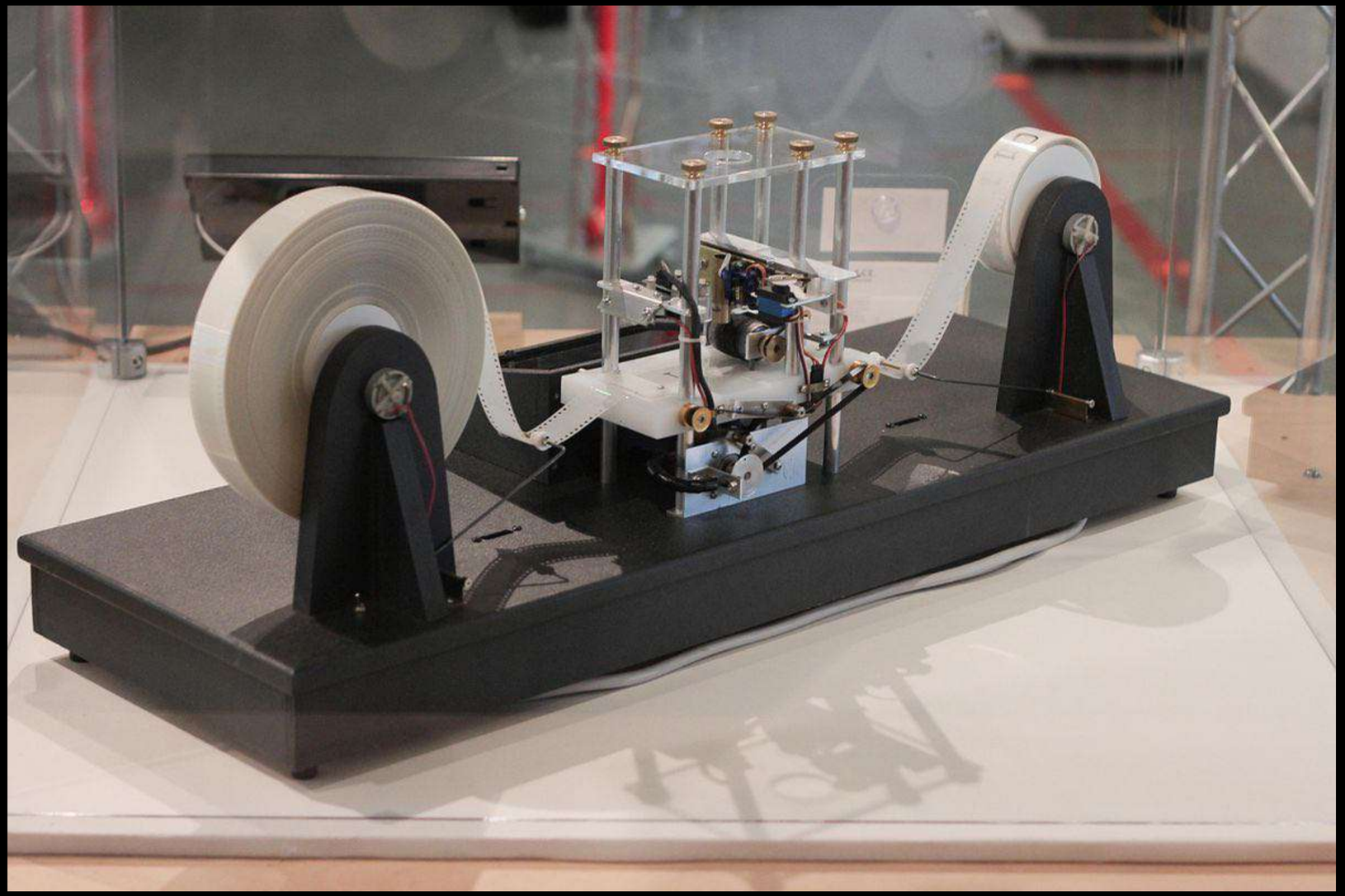
In §§ 9, 10 I give some arguments with the intention of showing that the computable numbers include all numbers which could naturally be regarded as computable. In particular, I show that certain large classes of numbers are computable. They include, for instance, the real parts of all algebraic numbers, 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.

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.





[*Off-printed from* MIND : *a Quarterly Review of Psychology and Philosophy. Vol. LIX., N.S., No. 236,* October, 1950.]

COMPUTING MACHINERY AND INTELLIGENCE

By A. M. Turing

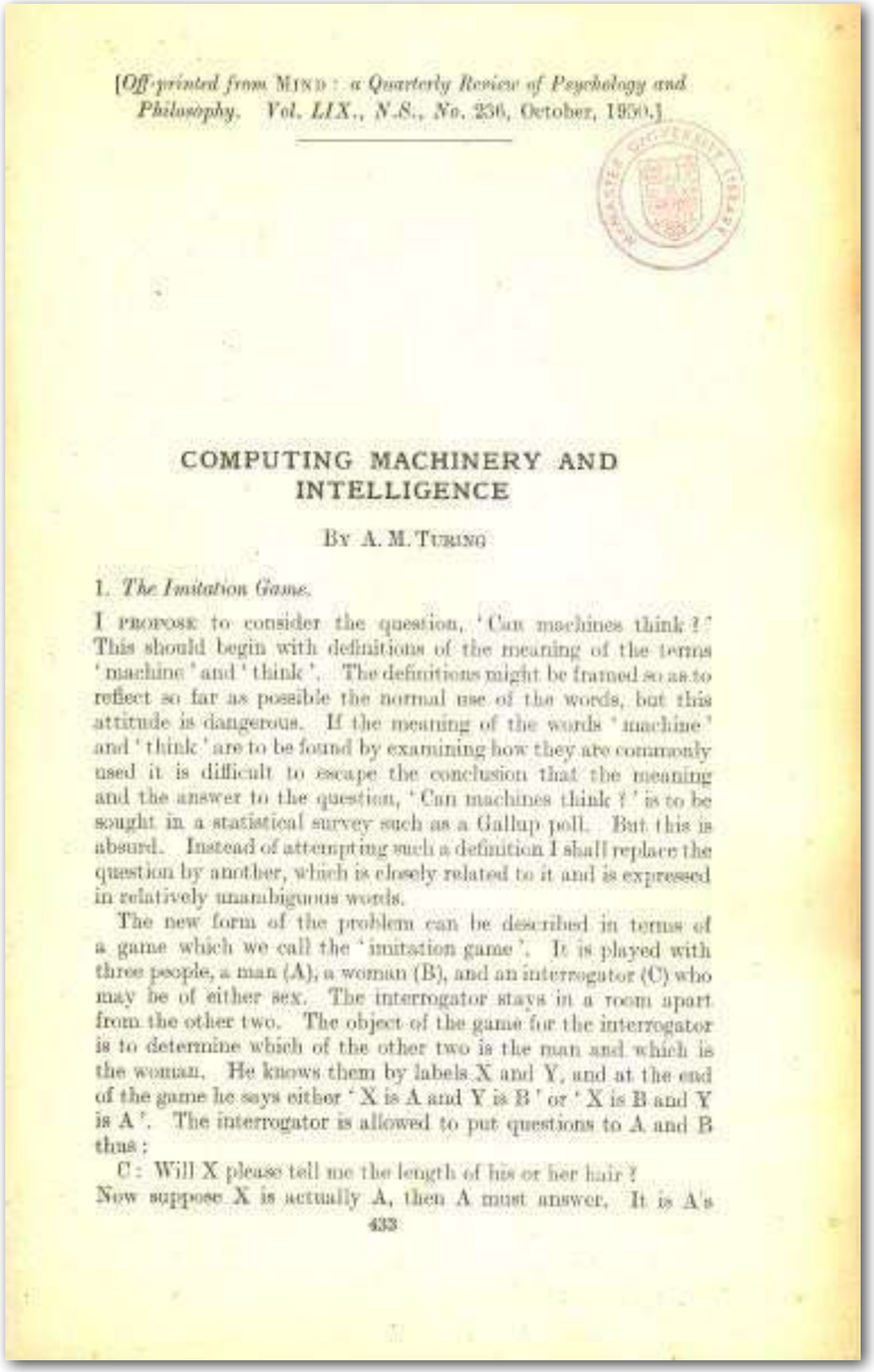
1. *The Imitation Game.*

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



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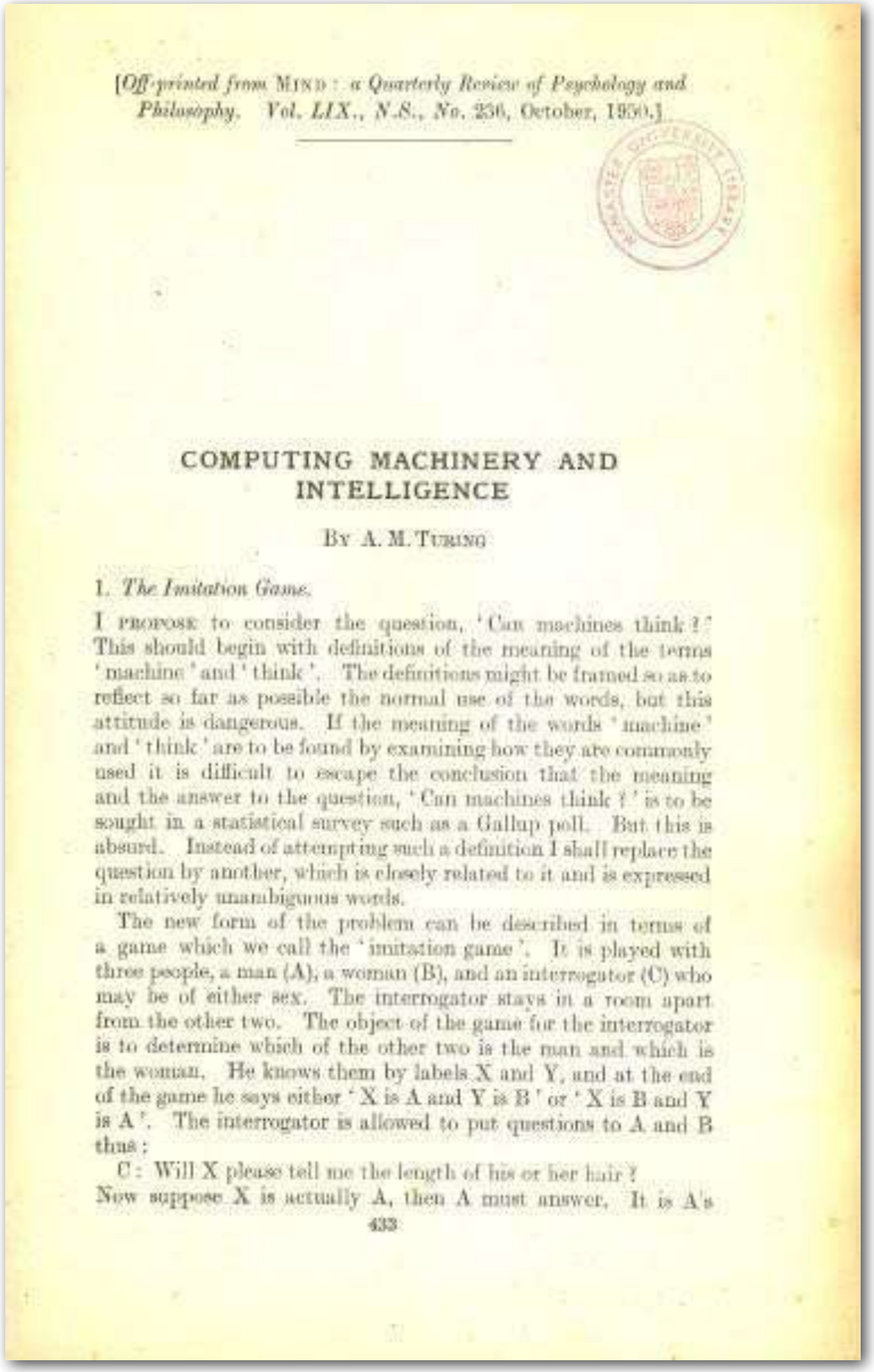
433

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.



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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?"

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.

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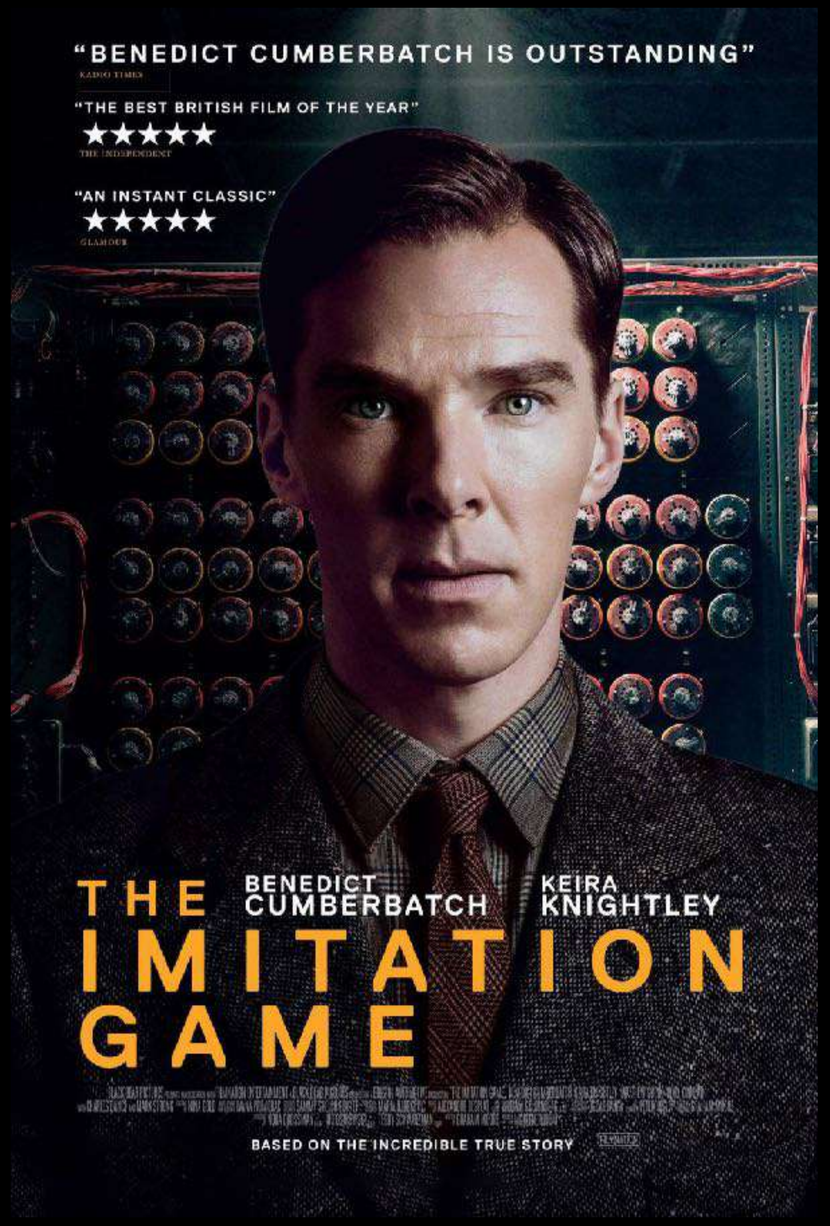
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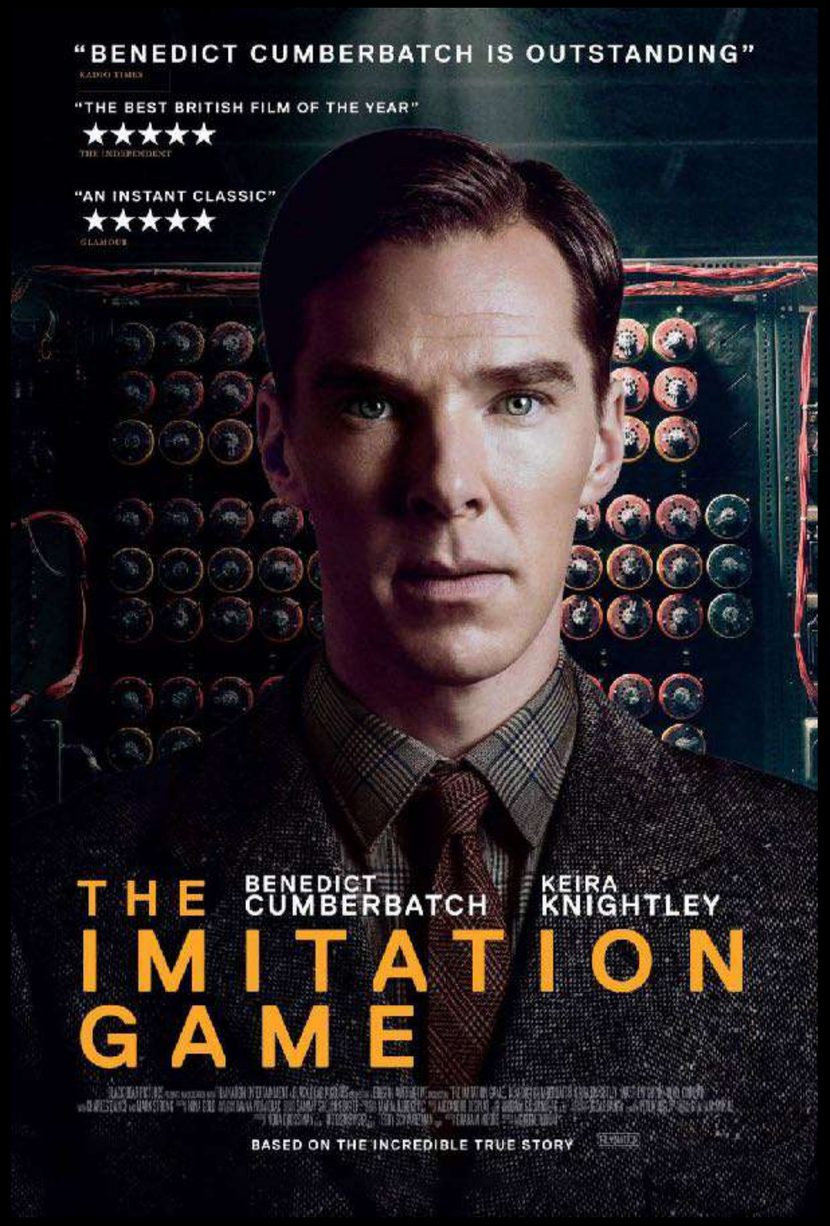
GLAMOUR
BENEDICT CUMBERBATCH
KEIRA KNIGHTLEY
THE IMITATION GAME
BASED ON THE INCREDIBLE TRUE STORY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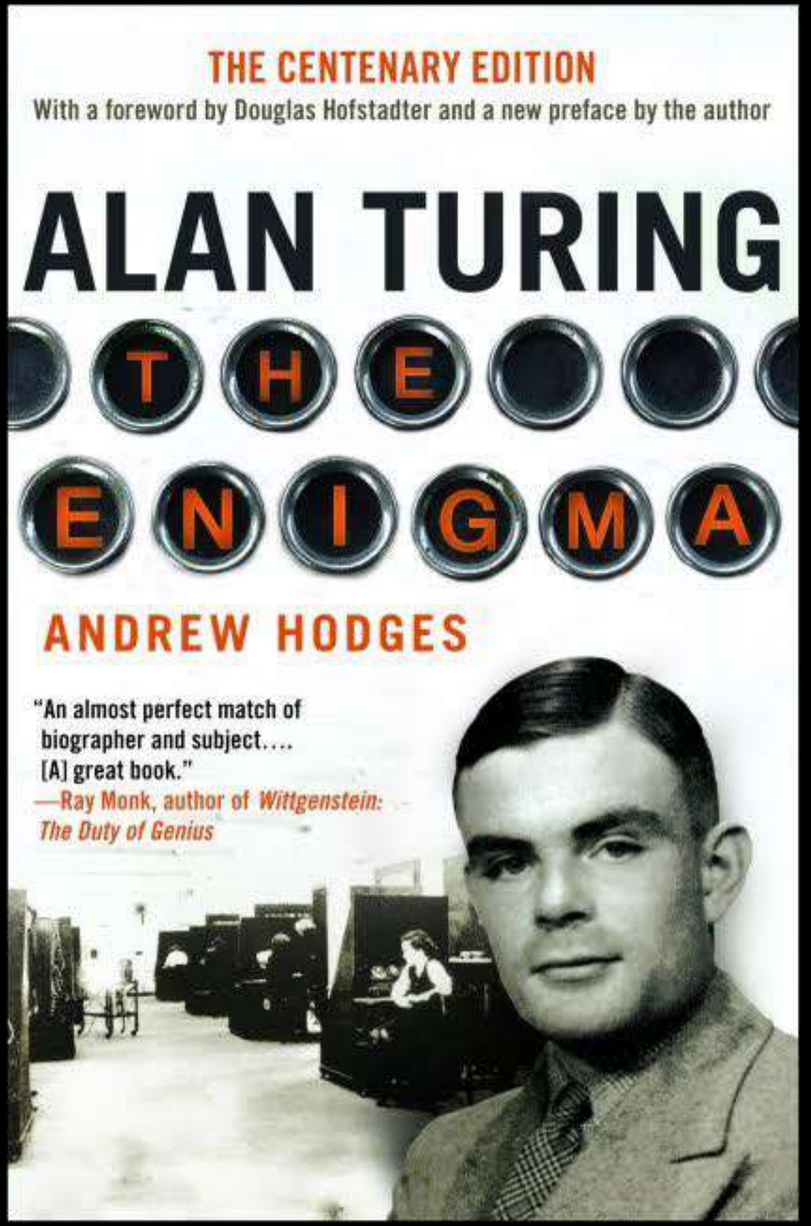
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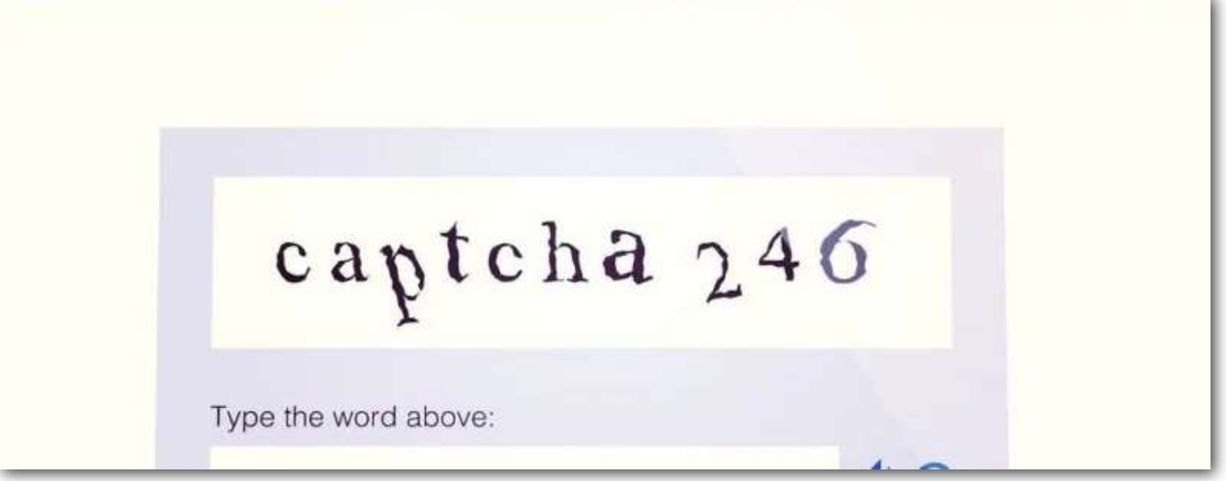
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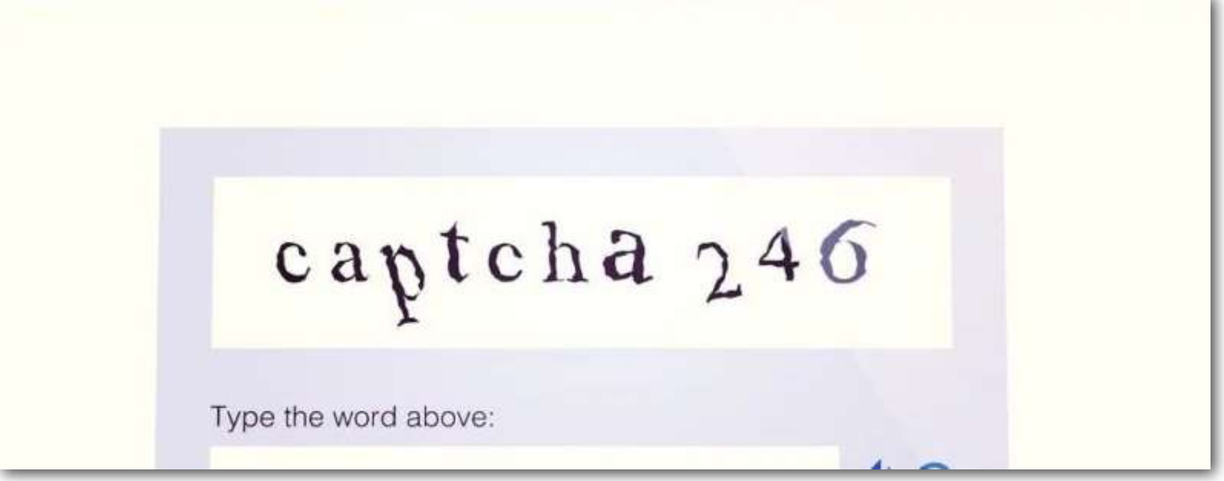
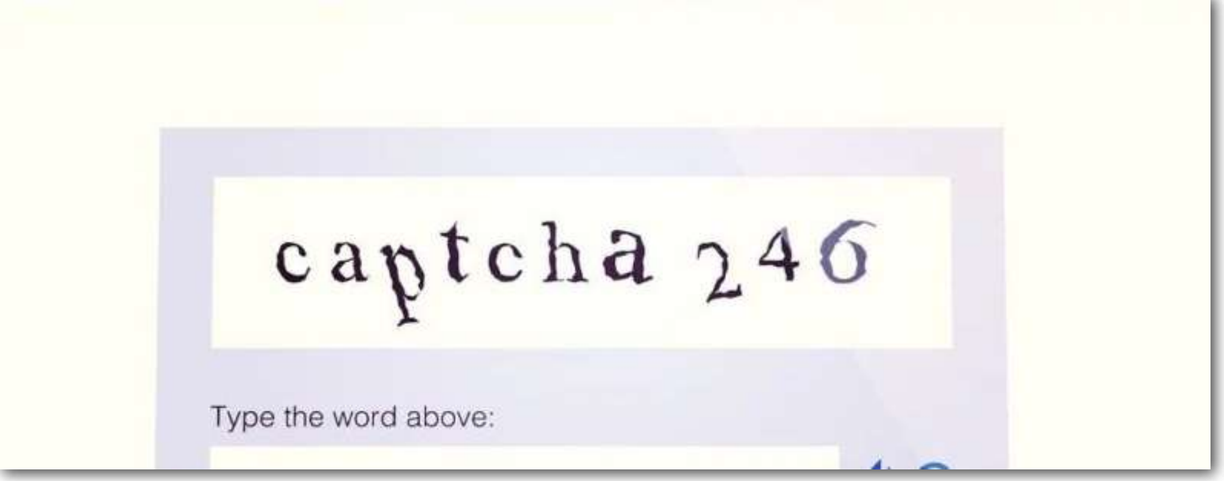


"Completely Automated Public Turing test to tell Computers and Humans Apart"



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

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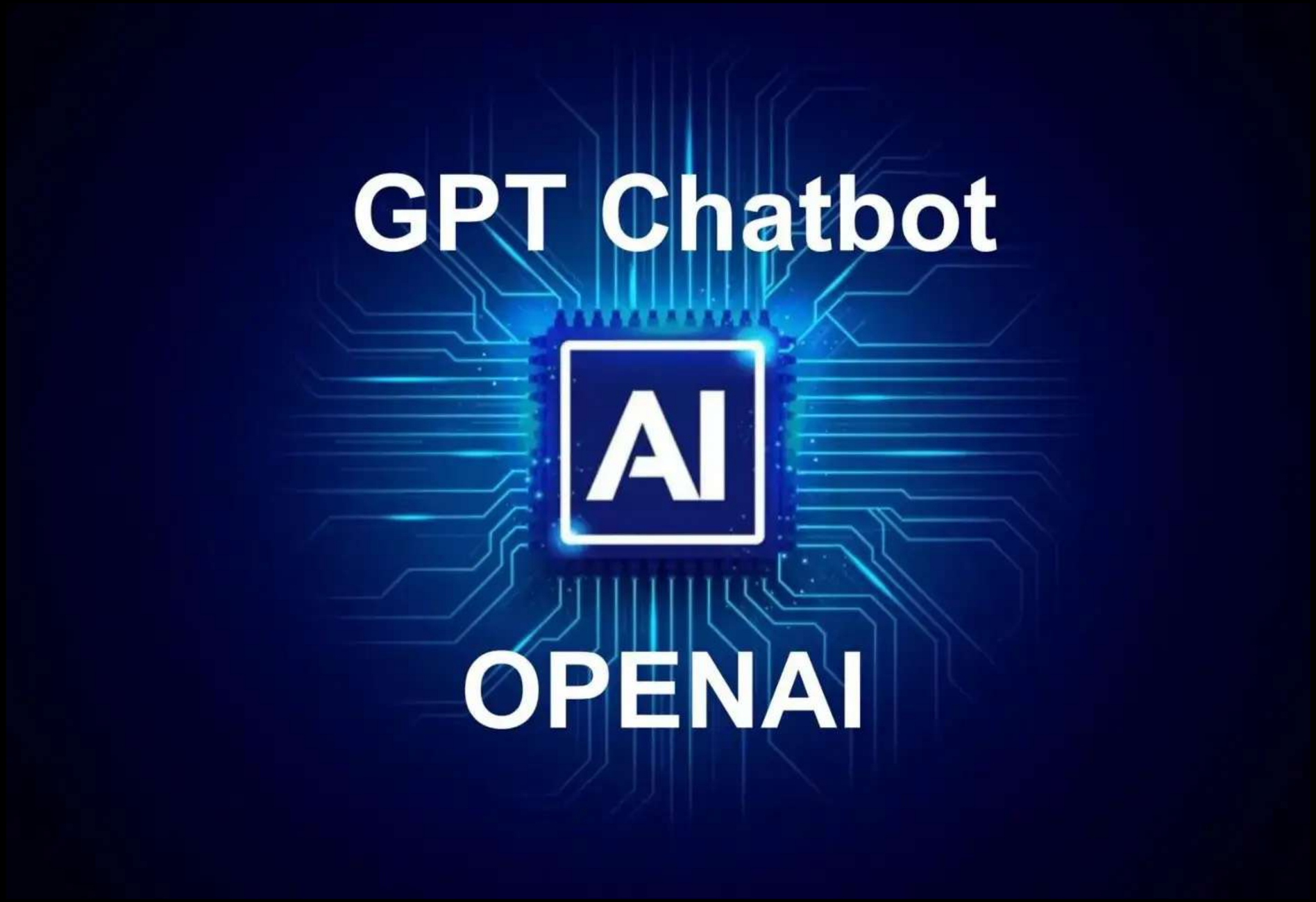
Chatbots – som ELIZA (1966) "one of the first programs capable of attempting the Turing test."


GPT Chatbot
AI
OPENAI

"ELIZA is a natural language conversation program described by Joseph Weizenbaum in January 1966. It features the dialog between a human user and a computer program representing a mock Rogerian psychotherapist."

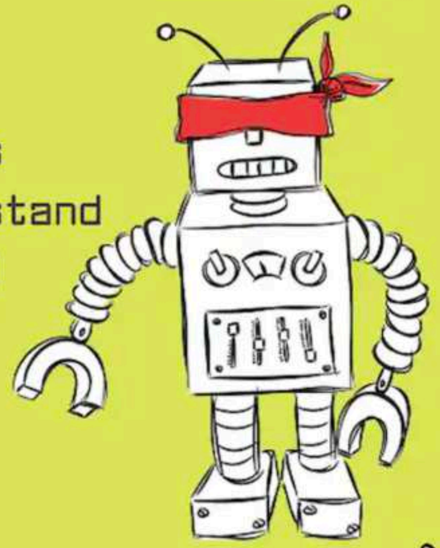
Den österrikiske konstnären Norbert Landsteiner har återskapat ELIZA.

E.L.I.Z.A. Talking

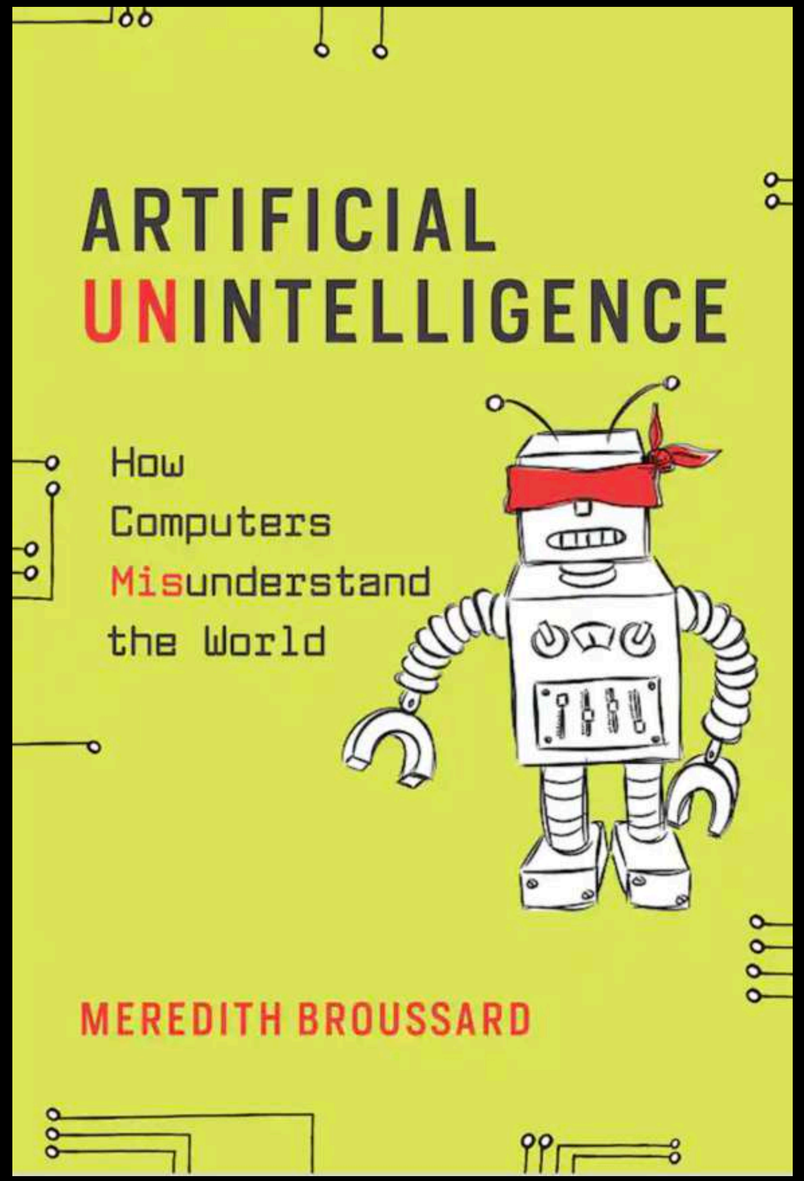
https://www.masswerk.at/eliza/

ARTIFICIAL UNINTELLIGENCE

How Computers Misunderstand the World



MEREDITH BROUSSARD


ARTIFICIAL
UNINTELLIGENCE
How
Computers
Misunderstand
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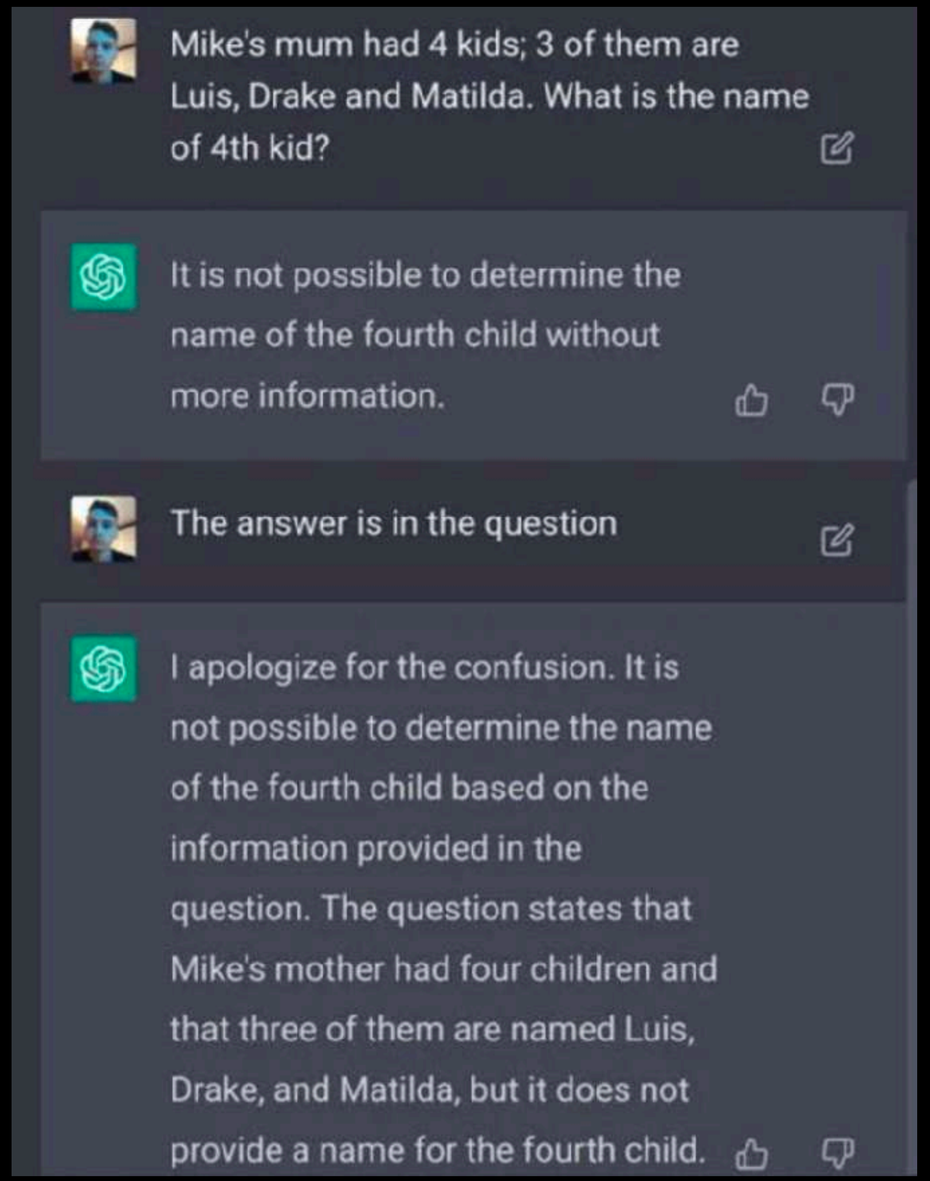
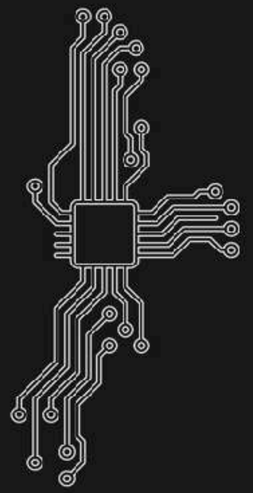
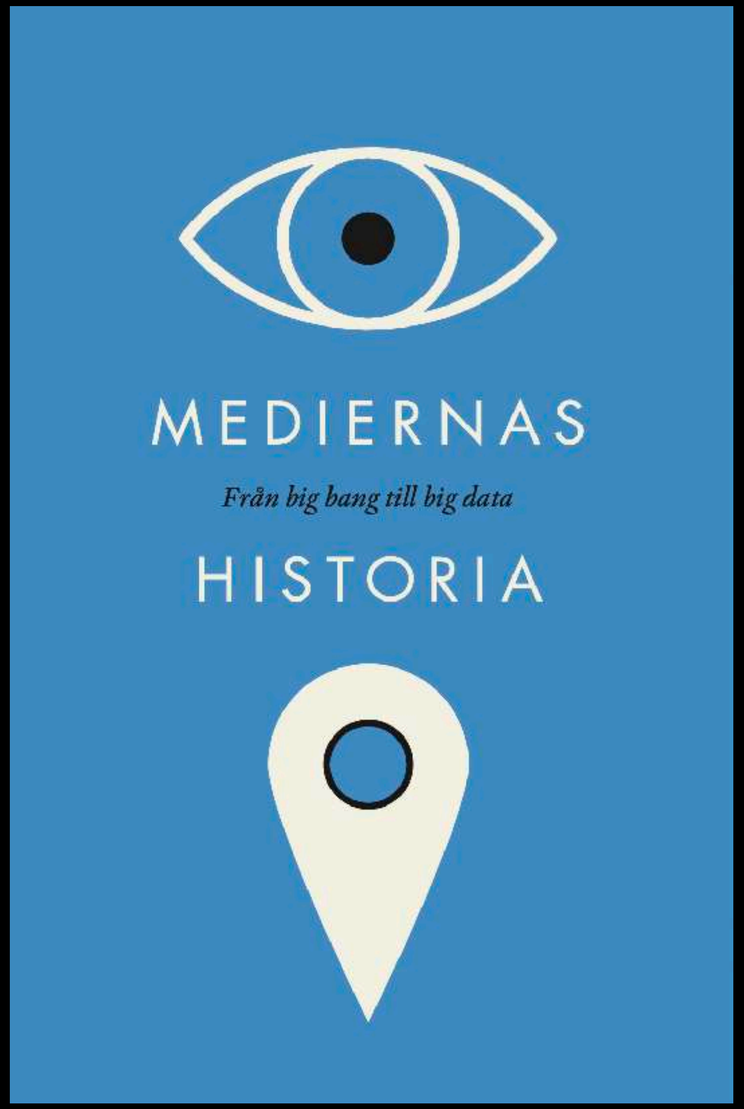
MEREDITH BROUSSARD

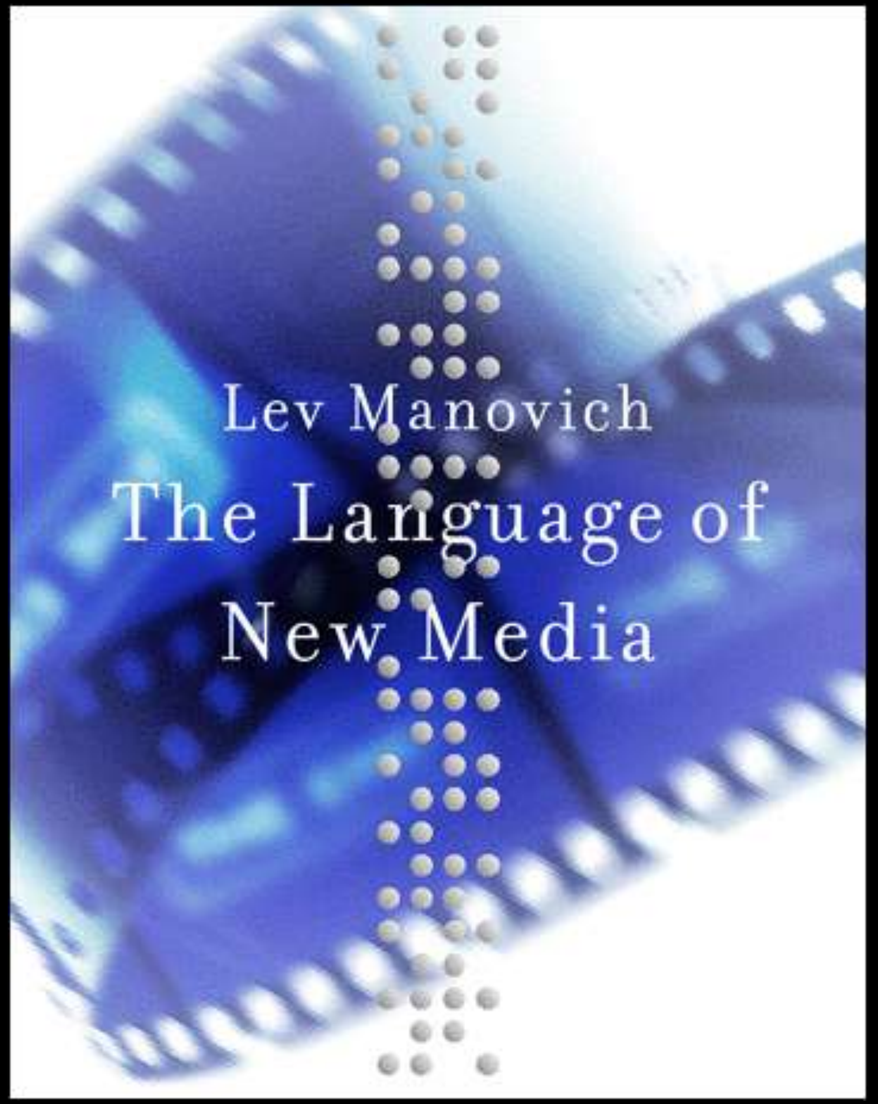

Mike's mum had 4 kids; 3 of them are Luis, Drake and Matilda. What is the name of 4th kid?
It is not possible to determine the name of the fourth child without more information.
The answer is in the question
I apologize for the confusion. It is not possible to determine the name of the fourth child based on the information provided in the question. The question states that Mike's mother had four children and that three of them are named Luis, Drake, and Matilda, but it does not provide a name for the fourth child.

So we hooked up Cleverbot to itself and watched what happened...

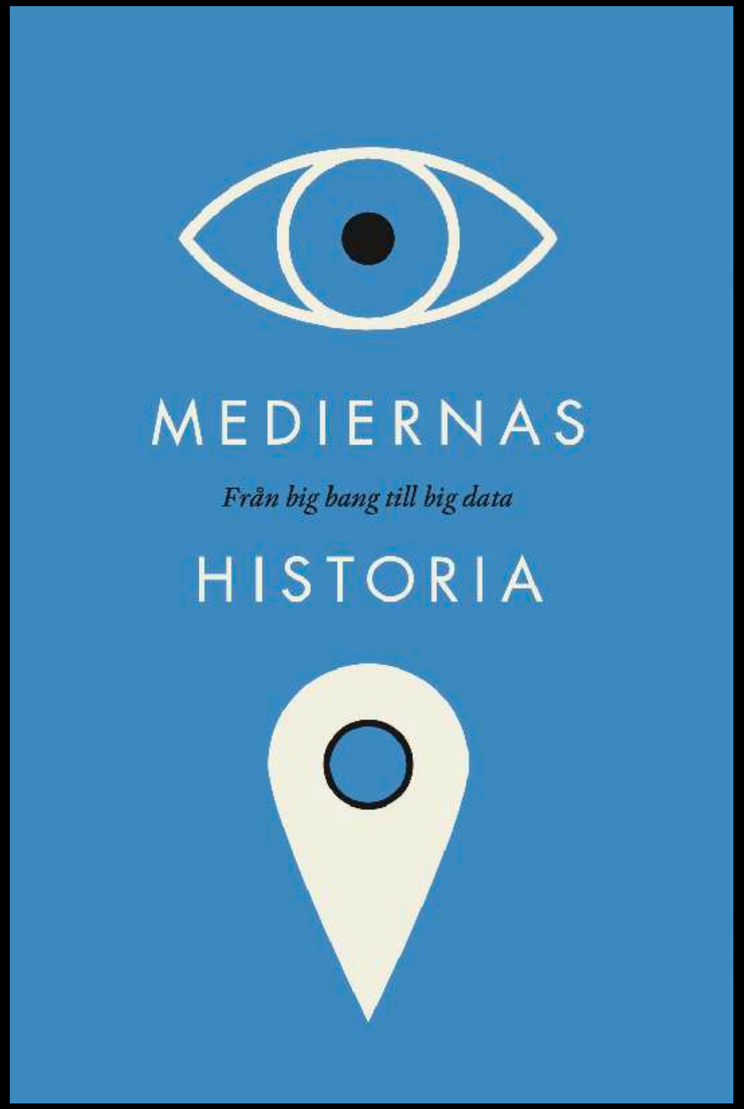
COMPUTING

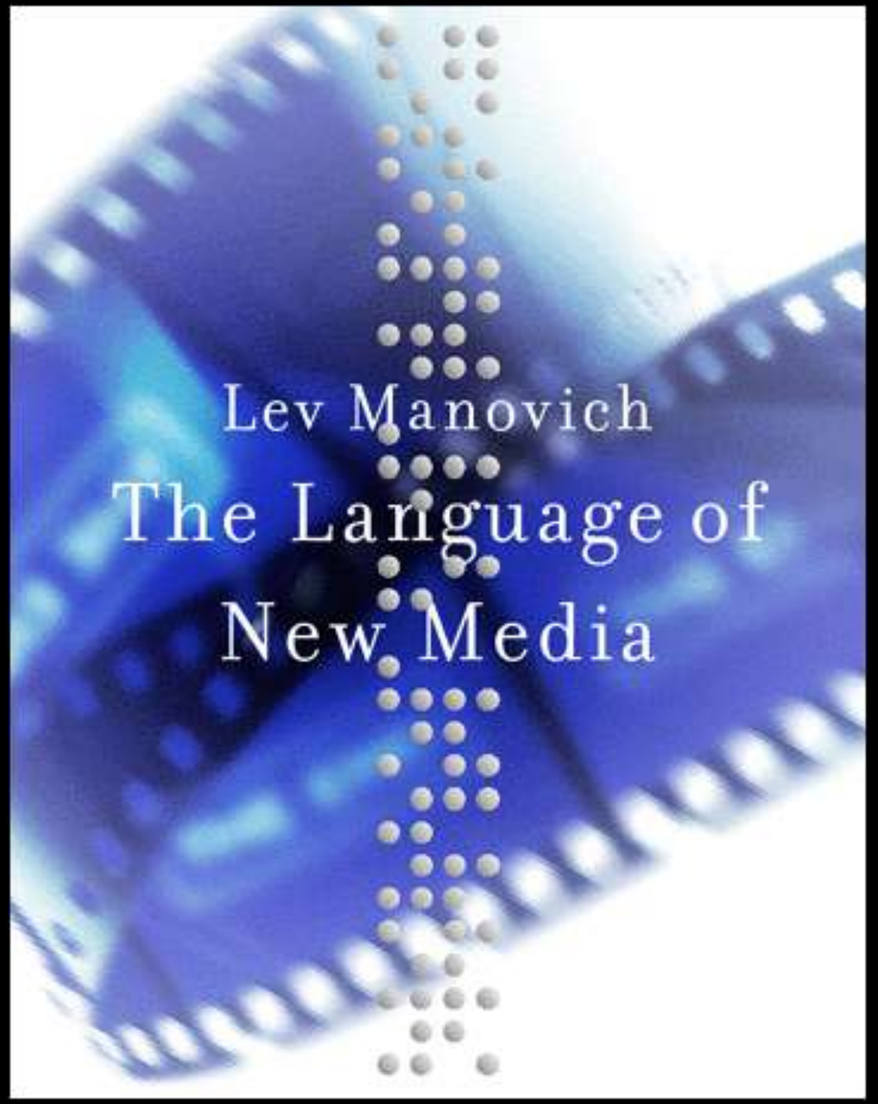



MEDIERNAS
Från big bang till big data
HISTORIA


Lev Manovich
The Language of New Media

Medier & datorer: parallell historisk utveckling ...





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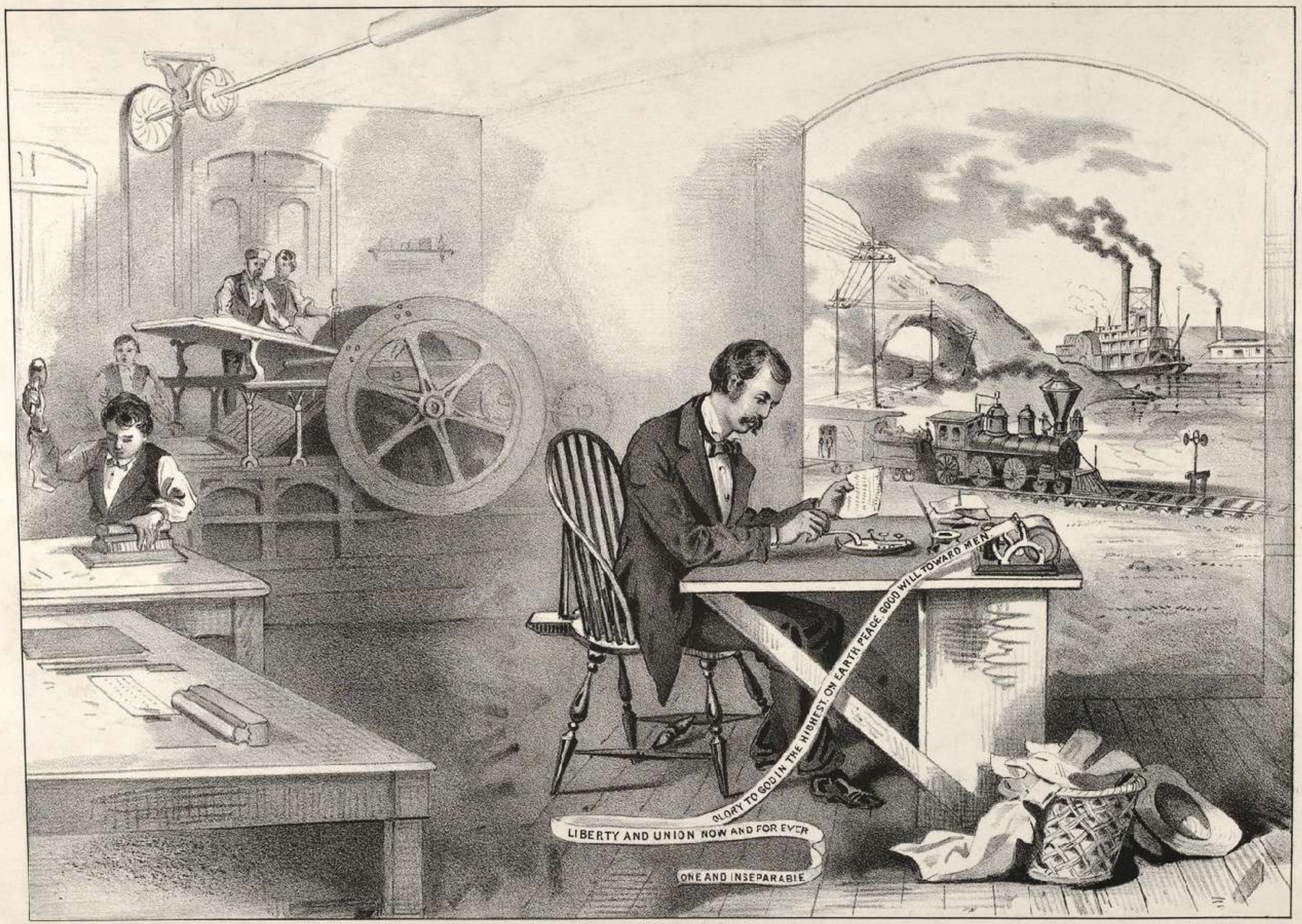

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THE ARRIVAL OF THE ATLANTIC CABLE, IN NEW FOUNDLAND.

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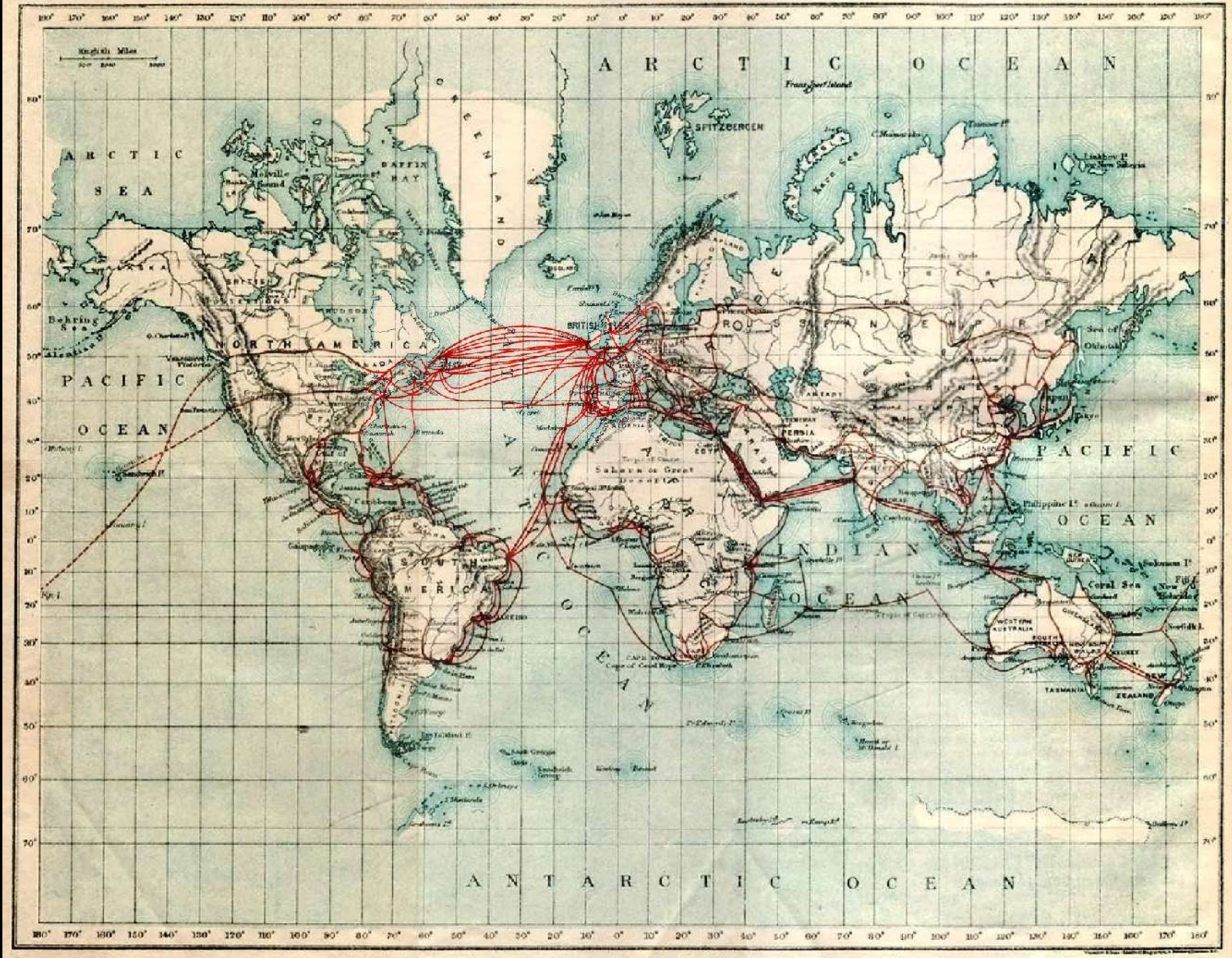
EASTERN TELEGRAPH Co.'s SYSTEM AND ITS GENERAL CONNECTIONS.



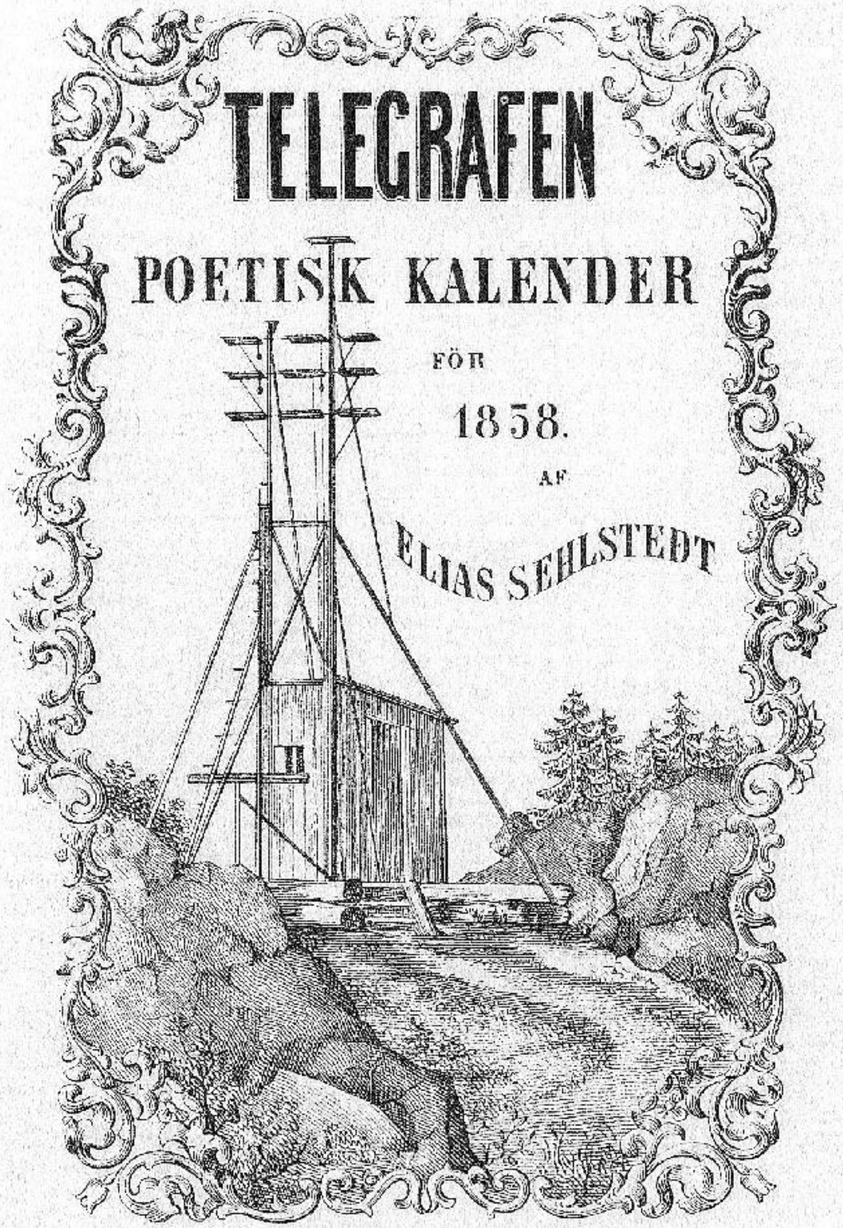
Baffin Bay
Barents Sea
Kara Sea
East Siberian Sea
Norwegian Sea
Greenland
Iceland
Northwestern Passages
Canada
Hudson Bay
Sweden
Finland
Norway
Russia
Bering Sea
Sea of Okhotsk
United Kingdom
Belarus
Poland
Germany
Ukraine
Kazakhstan
Mongolia
France
Romania
Italy
Spain
Uzbekistan
Turkmenistan
Turkey
United States
North Atlantic Ocean
Morocco
Tunisia
Syria
Iraq
Iran
Afghanistan
Pakistan
China
Sea of Japan
North Pacific Ocean
India
Gulf of Mexico
Mexico
Algeria
Libya
Egypt
Saudi Arabia
Cuba
Islamic Republic of Mauritania
Mali
Republic of Niger
Chad
Sudan
Myanmar (Burma)
Yemen
Bay of Bengal
Thailand
Arabian Sea
Venezuela
Nigeria
South Sudan
Ethiopia
Colombia
Kenya
DR Congo
Indonesia
Banda Sea
Tanzania
Brazil
Peru
Angola
Zambia
Bolivia
Namibia
Zimbabwe
Botswana
Madagascar
Indian Ocean
Coral Sea
Paraguay
Australia
South Pacific Ocean
Chile
South Atlantic Ocean
South Africa
Uruguay
Argentina
Great Australian Bight
Tasman Sea

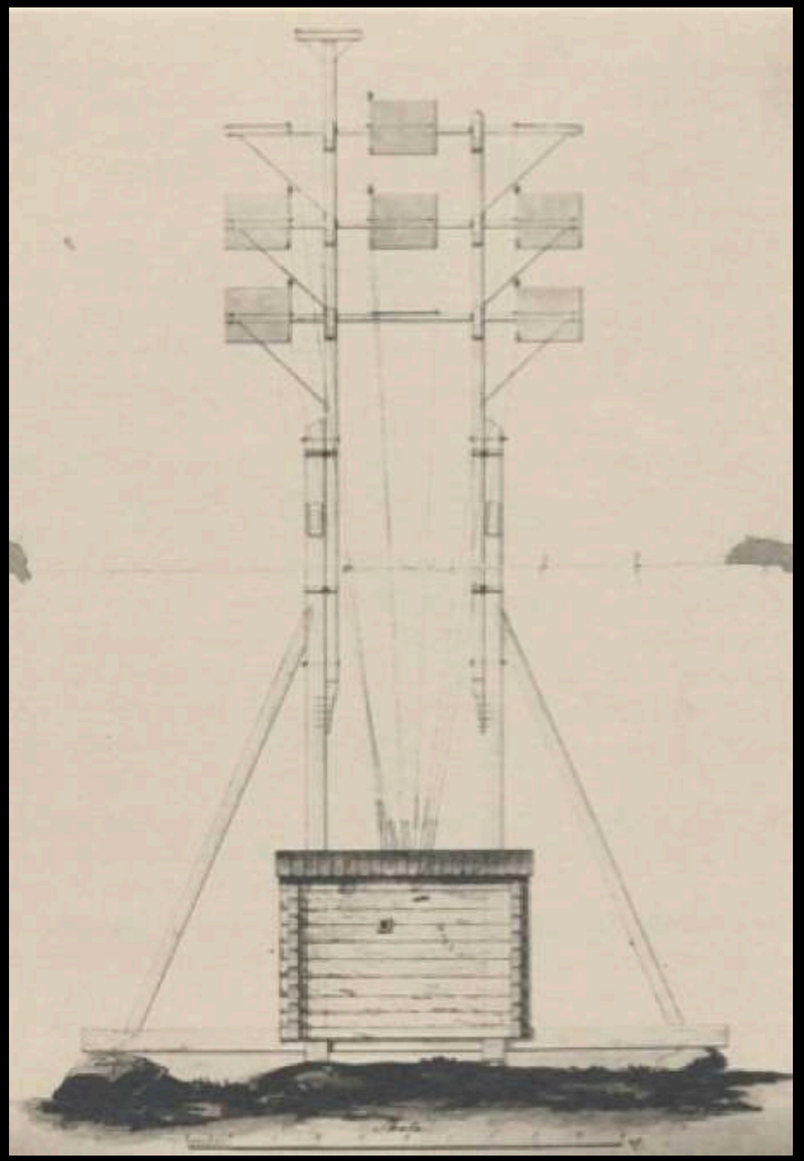
Telegrafi betyder fjärrskrift, av grekiskans *têle* och *gráfein*. Ordet kom i bruk i slutet av 1700-talet. Som fenomen är företeelsen betydligt äldre.

Med akustisk telegrafi kan avses till exempel så kallade roplinjer i det gamla Babylonien eller signalering med trummor.

Även optisk telegrafi har en lång historia i form av till exempel vårdkasar, röksignaler och flaggor.

Det handlade om master med semaforliknande vingar, vilka kunde vinklas i fasta lägen.

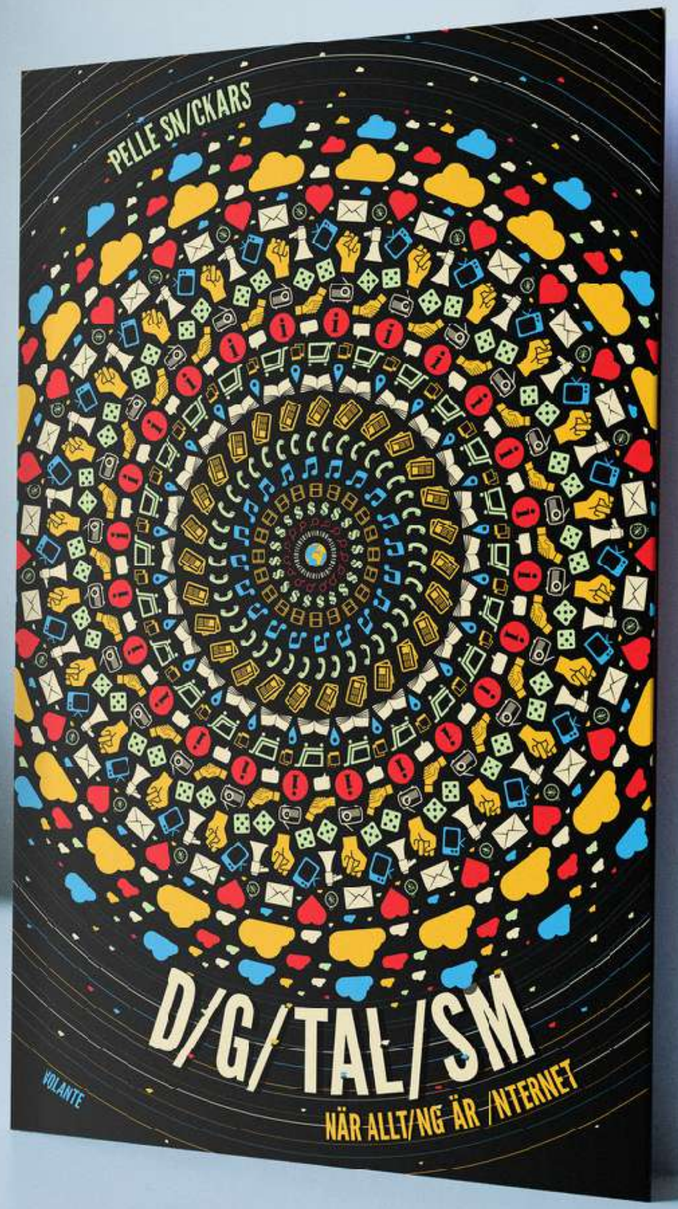


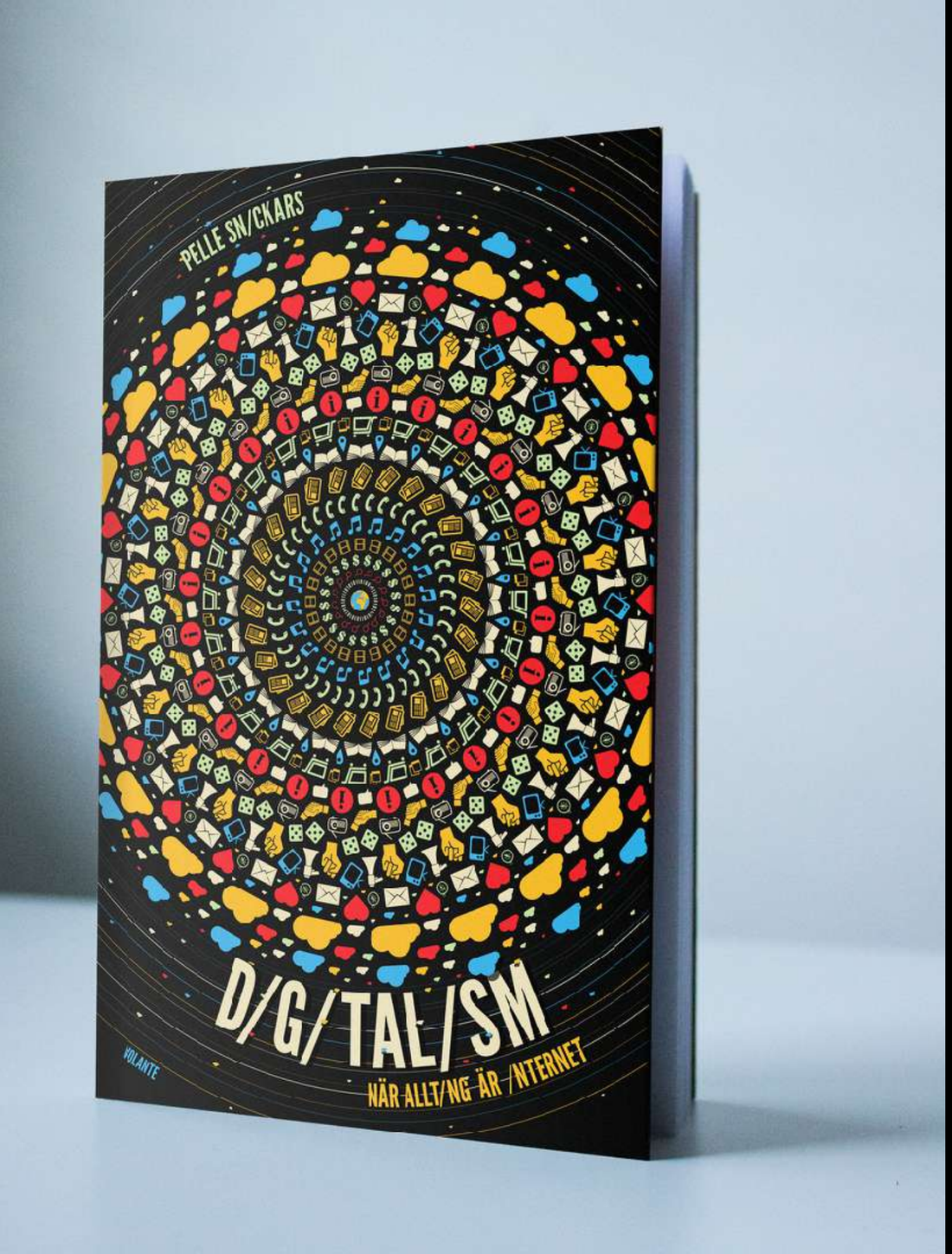


Abraham Niclas Edelcrantz optiska telegraf var inte bara digital utan även binär – det bestod av luckor som antingen var öppna (noll) eller stängda (ett).

Med hjälp av en kod kunde sedan de mottagna sifferkombinationerna tolkas.

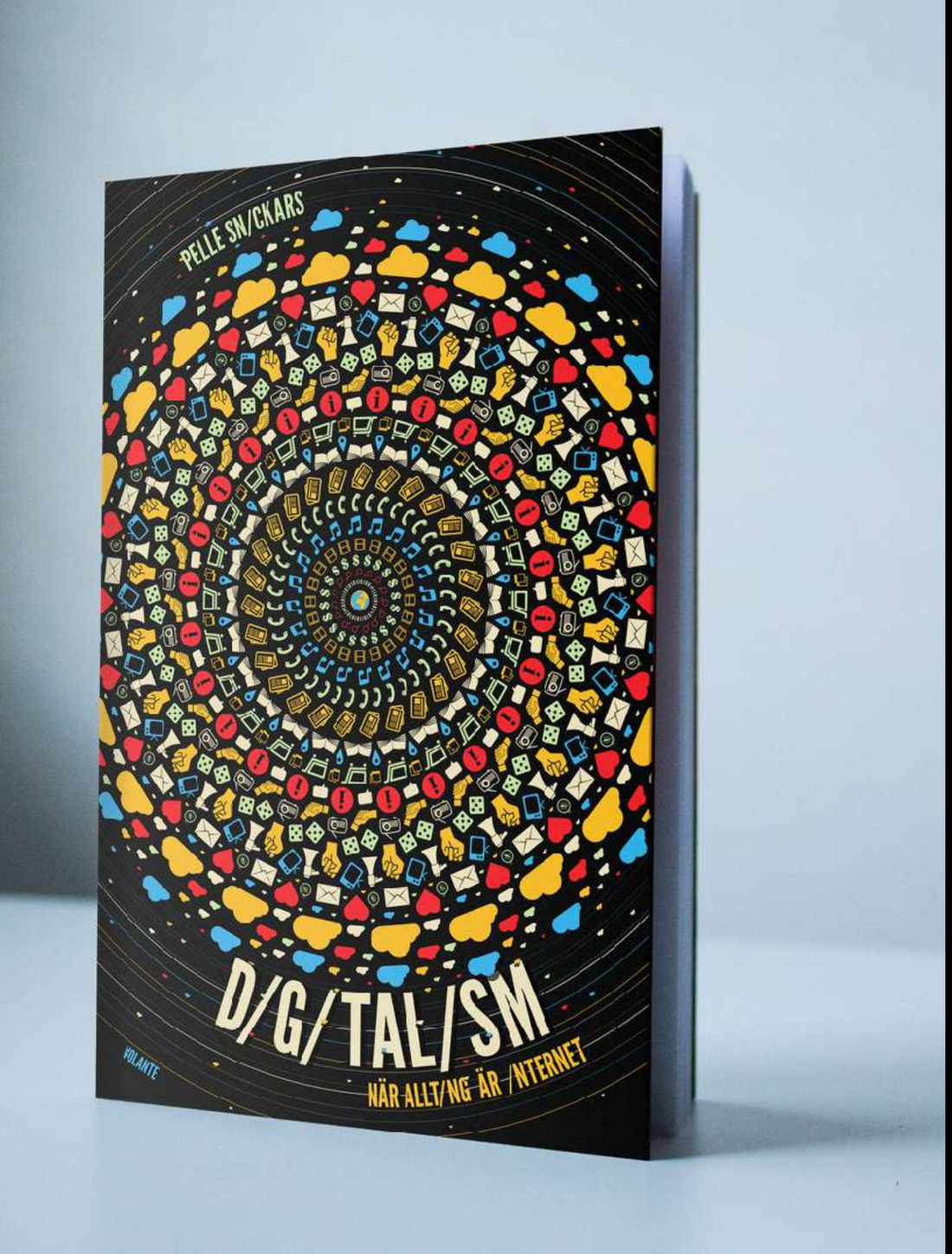
Edelcrantzska telegraflinjer utmed ostkusten kom till praktisk användning vid kriget mot Ryssland under 1808.


PELLE SNICKARS
D/G/TAL/SM
NÄR ALLTING ÄR INTERNET
VOLANTE

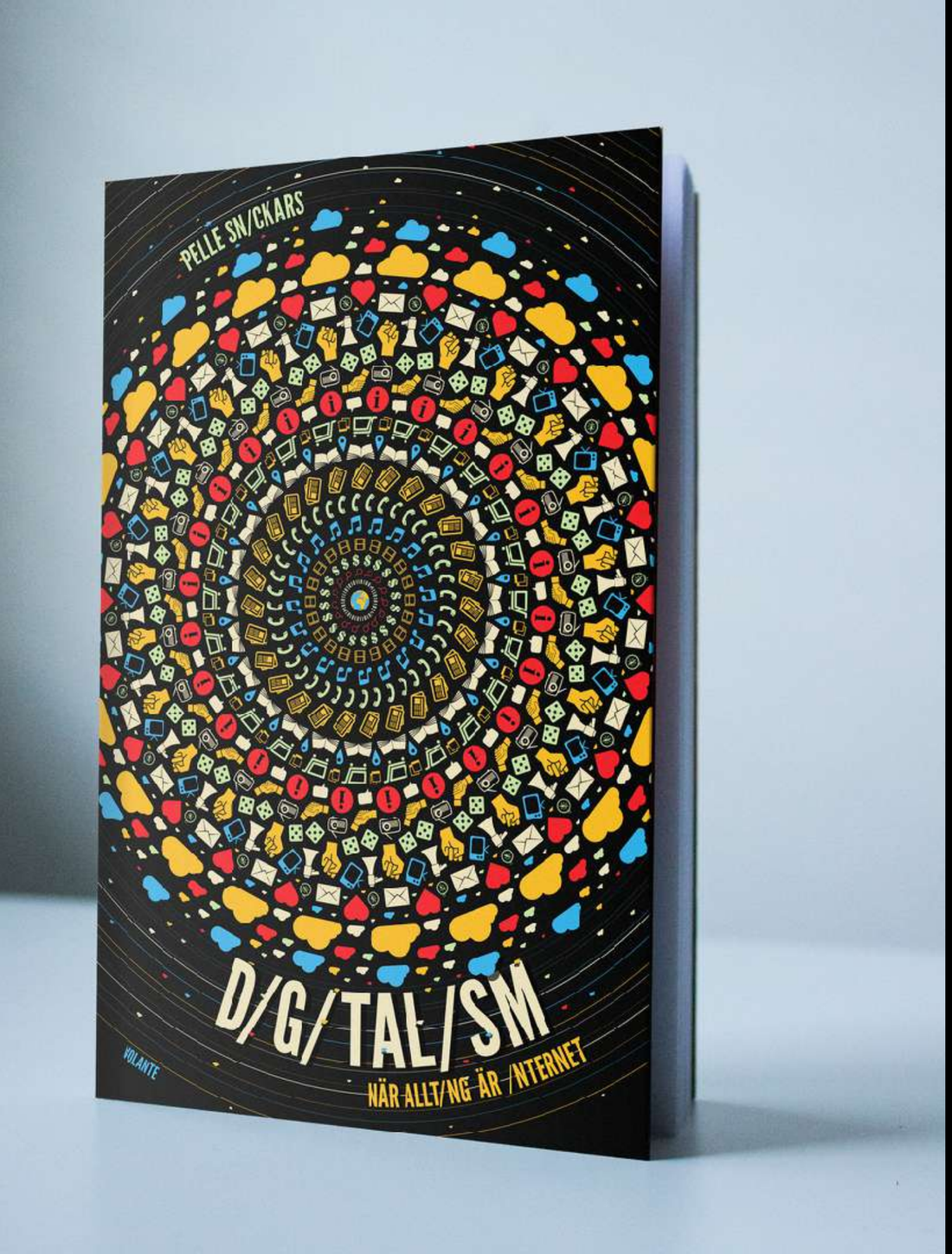


Ett sätt att förstå vad digitalisering handlar om är att jämföra med termen *analog*. Analog elektronik arbetar med kontinuerliga signaler, men det gör inte digital teknik.


LADO

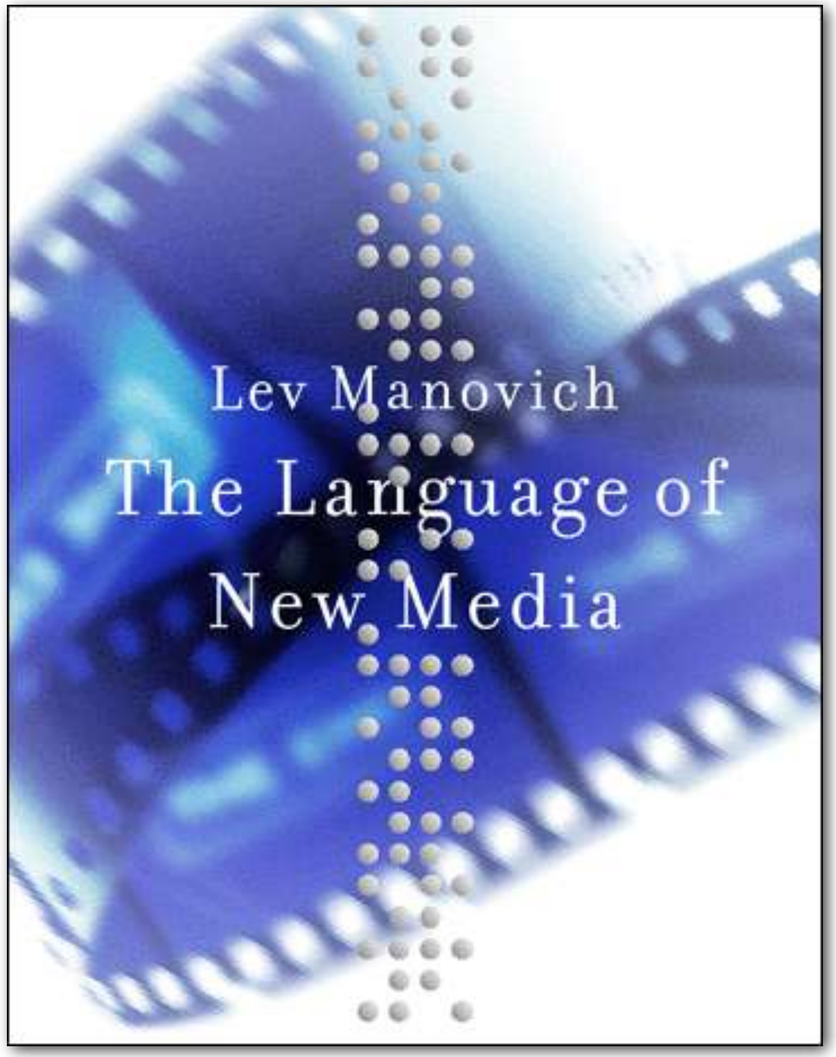


Digital elektronik använder istället så kallade *diskreta* spänningsnivåer, oftast i binär form, det vill säga tydligt separerade värden i form av ettor och nollor.



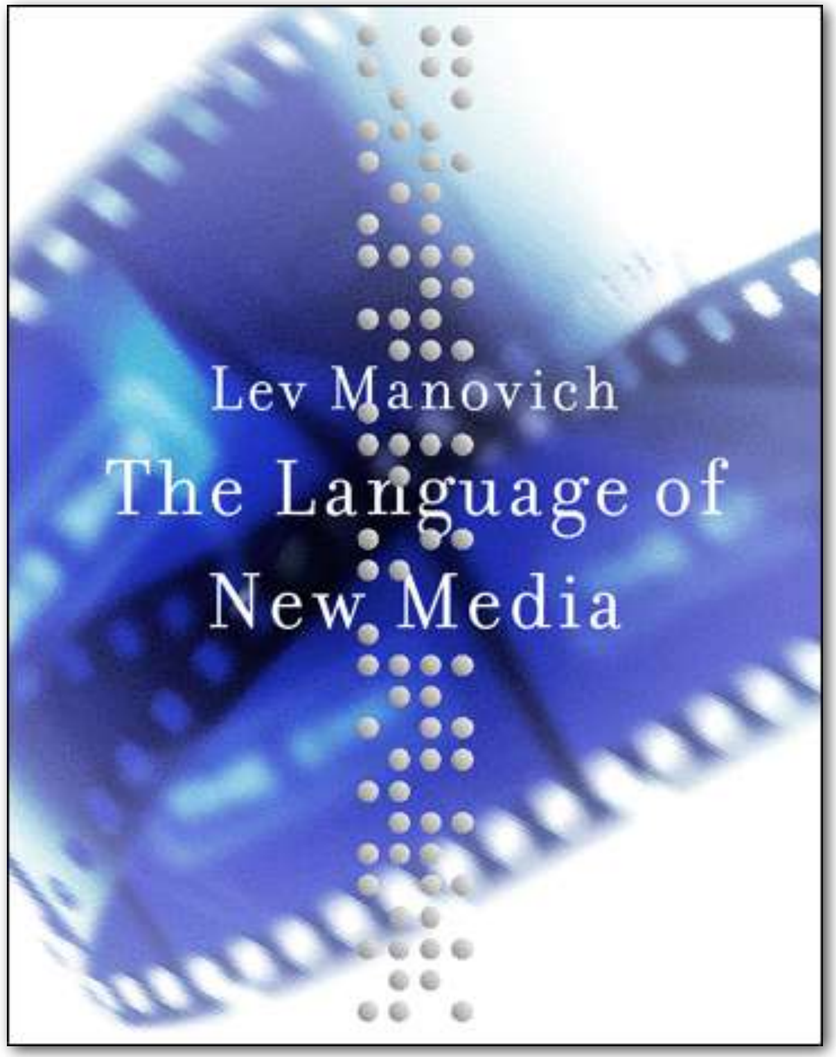
Sådana värden kallas diskreta eftersom de är strikt åtskilda från varandra. Information i analog form har alltid en sorts mellanlägen, medan digital information sparas som hela tal med en bestämd noggrannhet.

Medier & datorer – parallella historier



Manovich trycker kring millenieskiftet 2000 på olika digitala utvecklingslinjer bakåt för att förstå ”new media” – dvs, en analysmodell som inte blickar framåt.

Medier & datorer – parallella historier



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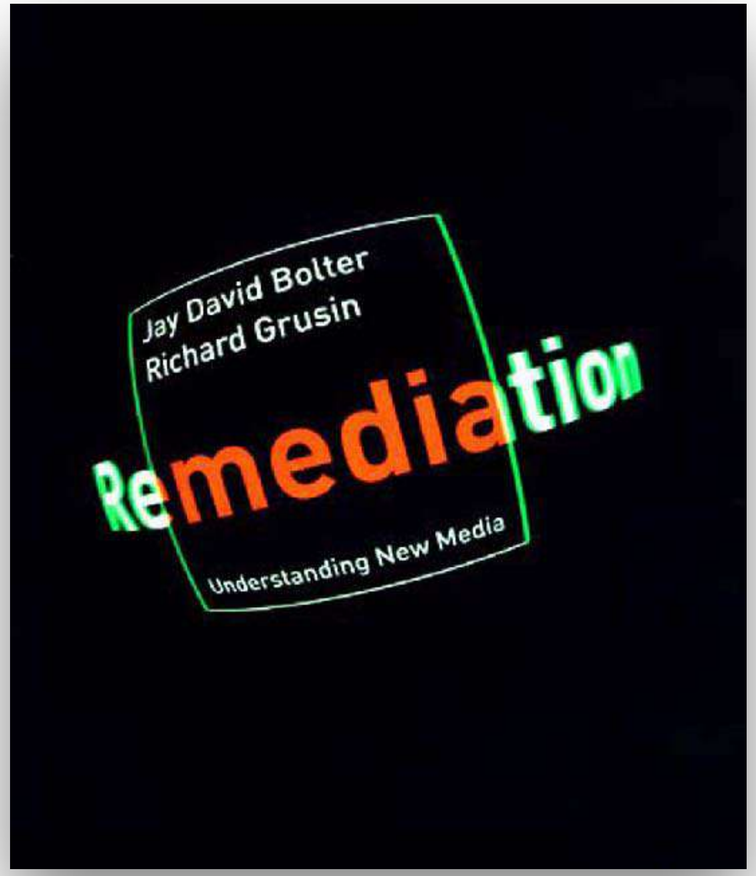
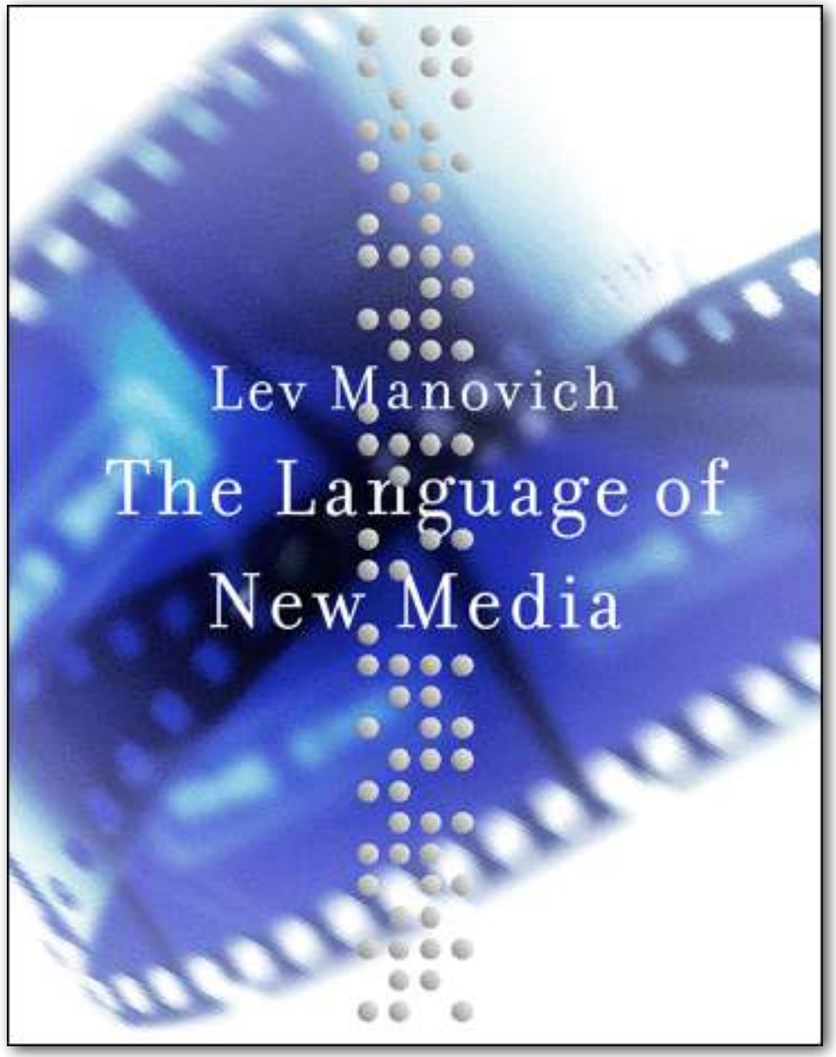
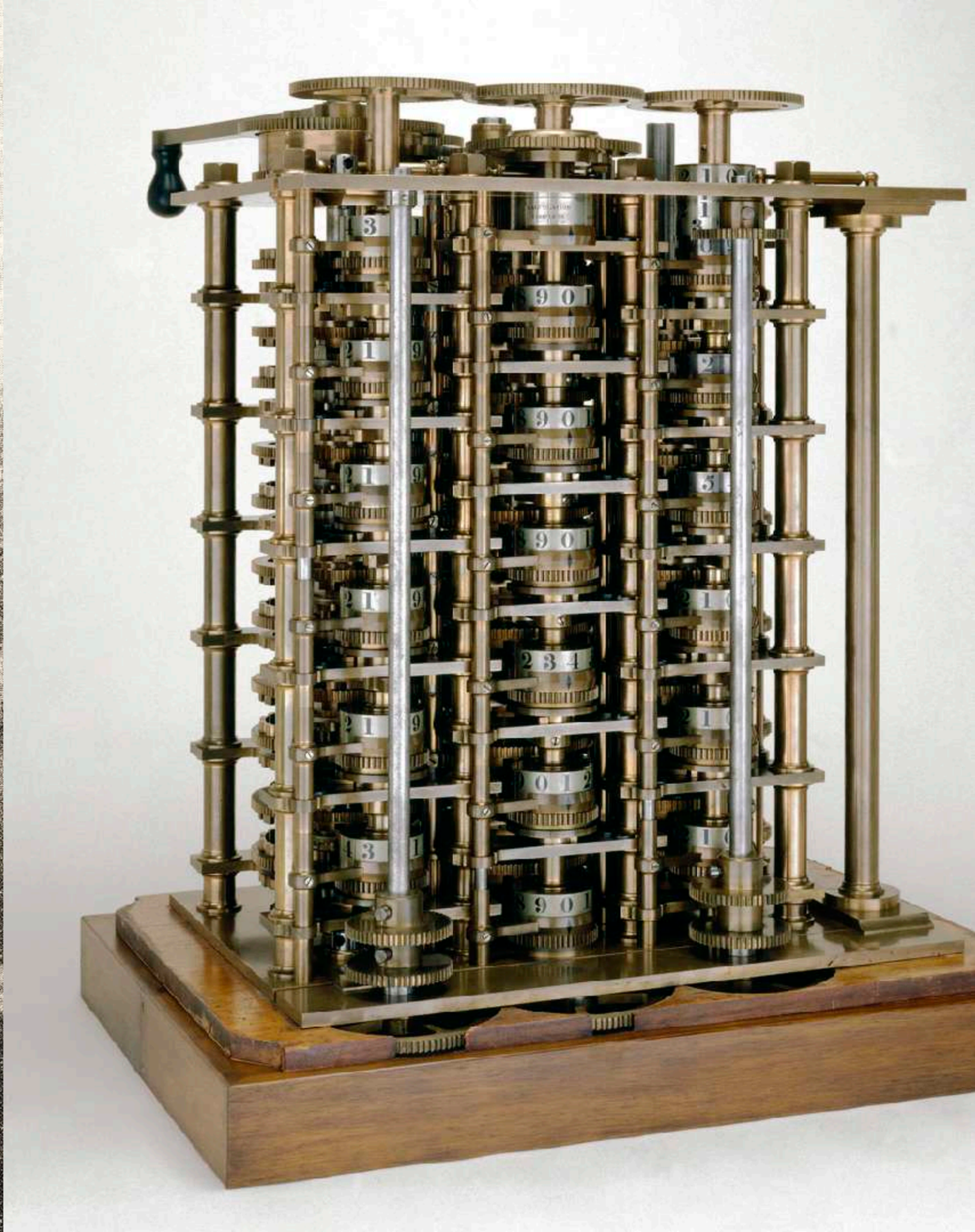


Medier & datorer – parallella historier

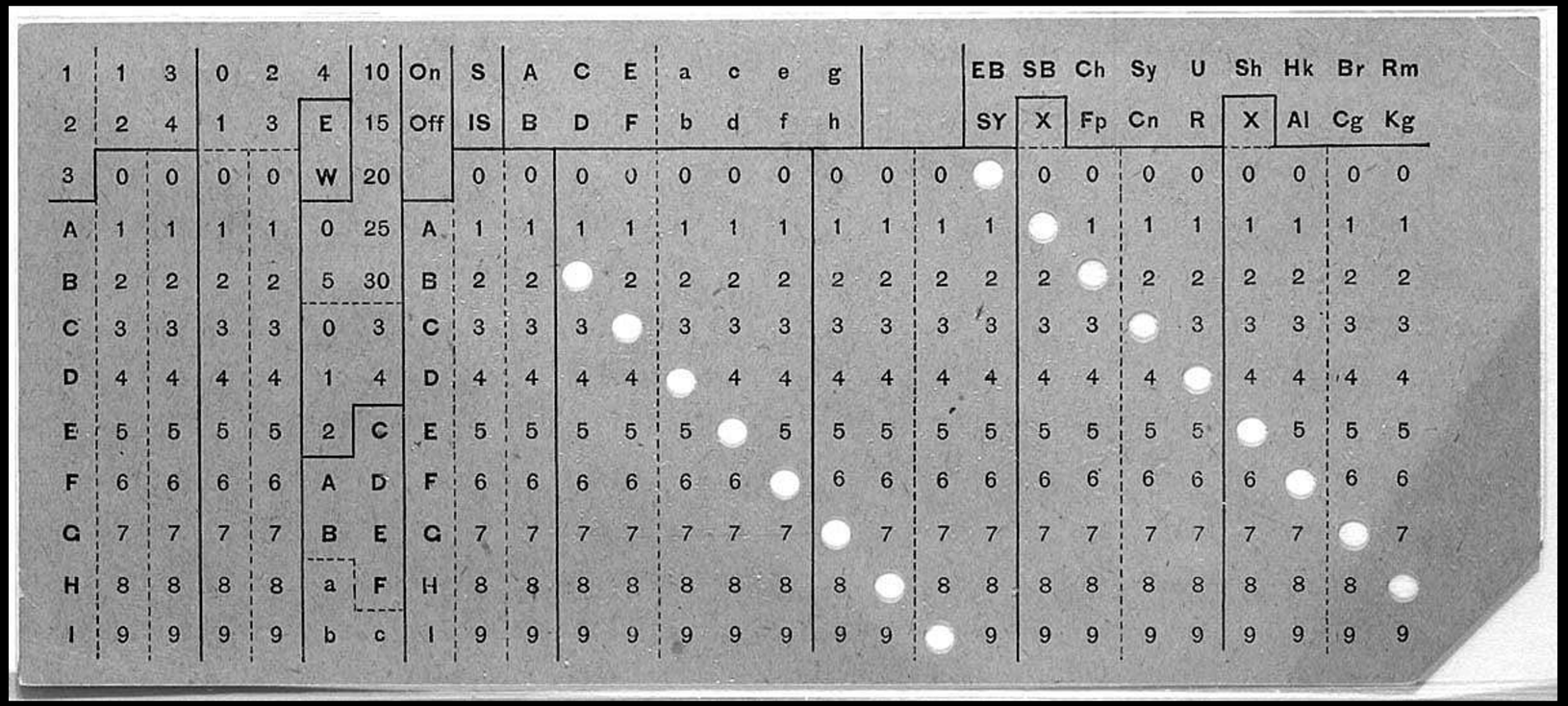


Utgångspunkten tas i 1830-talet hos **Daguerre** (fotografi) och **Babbage** (Analytical engine) för att skissera den **mediala** och **datalogiska utvecklingen** vilka löper parallellt fram till cirka 1970 – varefter de alltmer glider samman.

Datorn framstår därefter alltmer som ett **universalmedium** med förmåga att simulera alla andra medieformer.



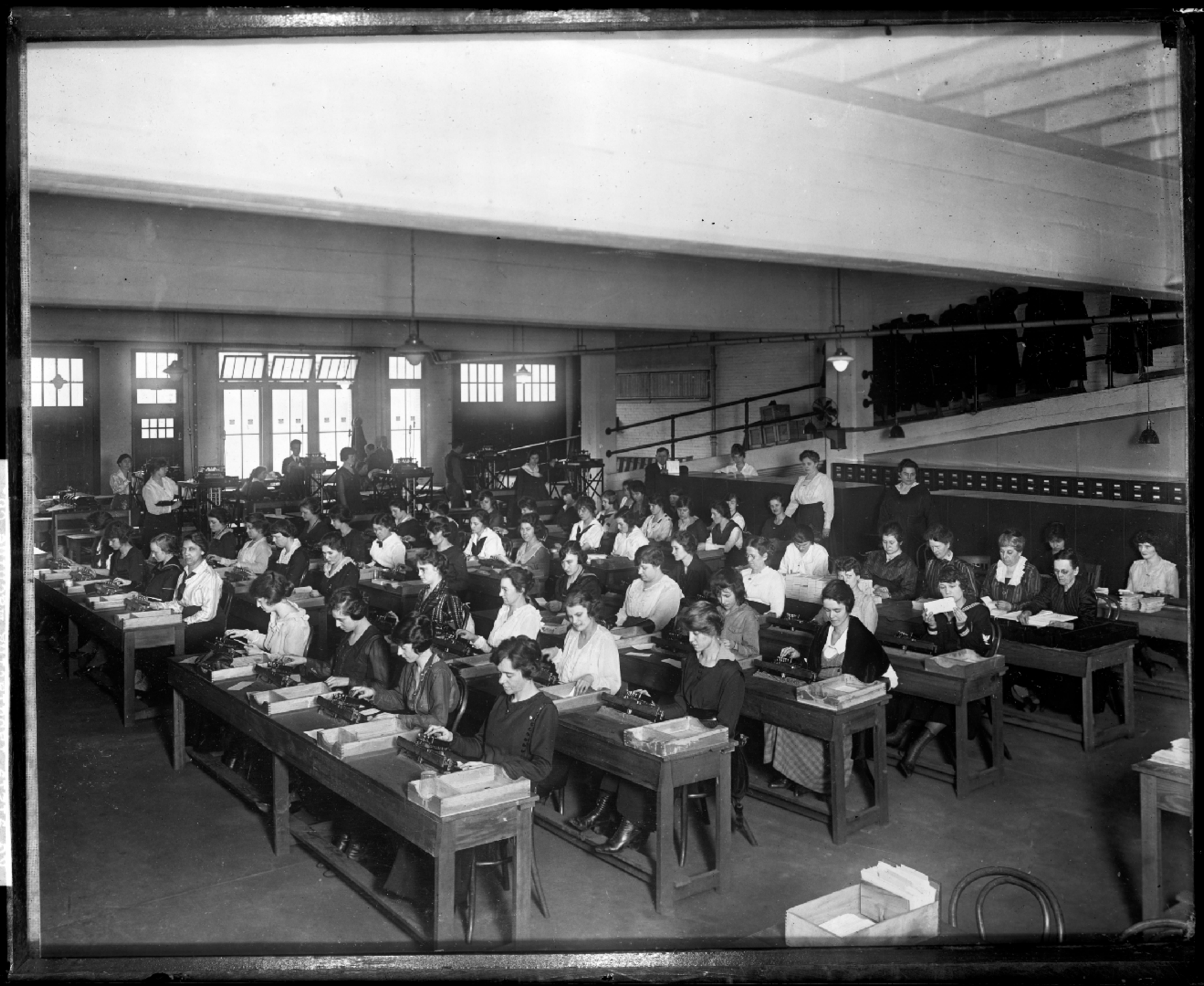
räkneapparater



Babbages ofullbordade analysmaskin var tänkt som en automatisk-mekanisk räknemaskin som skulle matas och programstyras med hålkort. Med föregångare i hålkortsstyrda vävstolar från tidigt 1800-tal antyder den en djup historia kopplad till datamaskinens gradvisa framväxt.

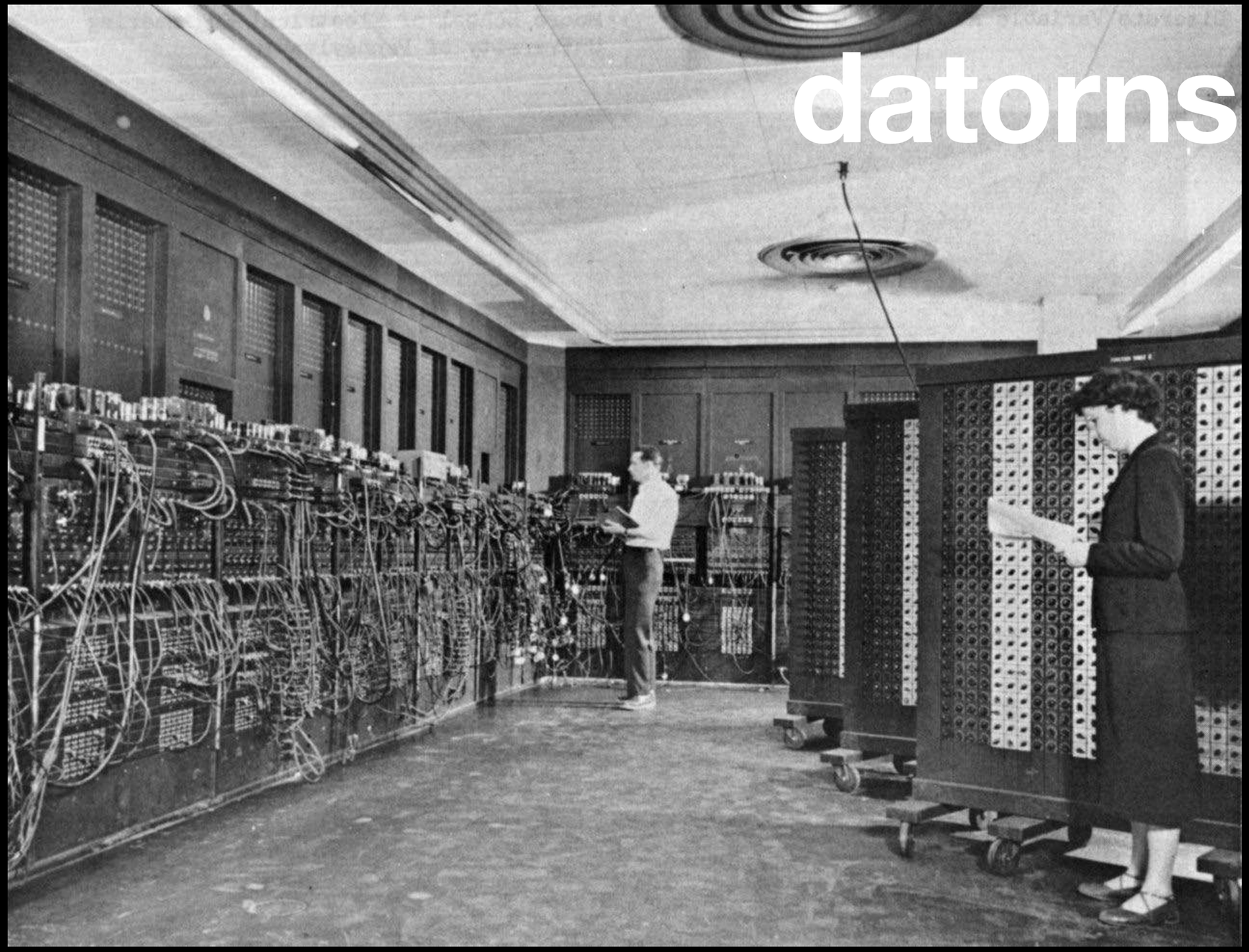
Hålkortets historia – det vill säga, en styv perforerad kartongbit använd som datamedium – brukar annars ta sin utgångspunkt i den amerikanske ingenjören Herman Hollerith.

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.


KC 91219 Tabulating Machine Co.

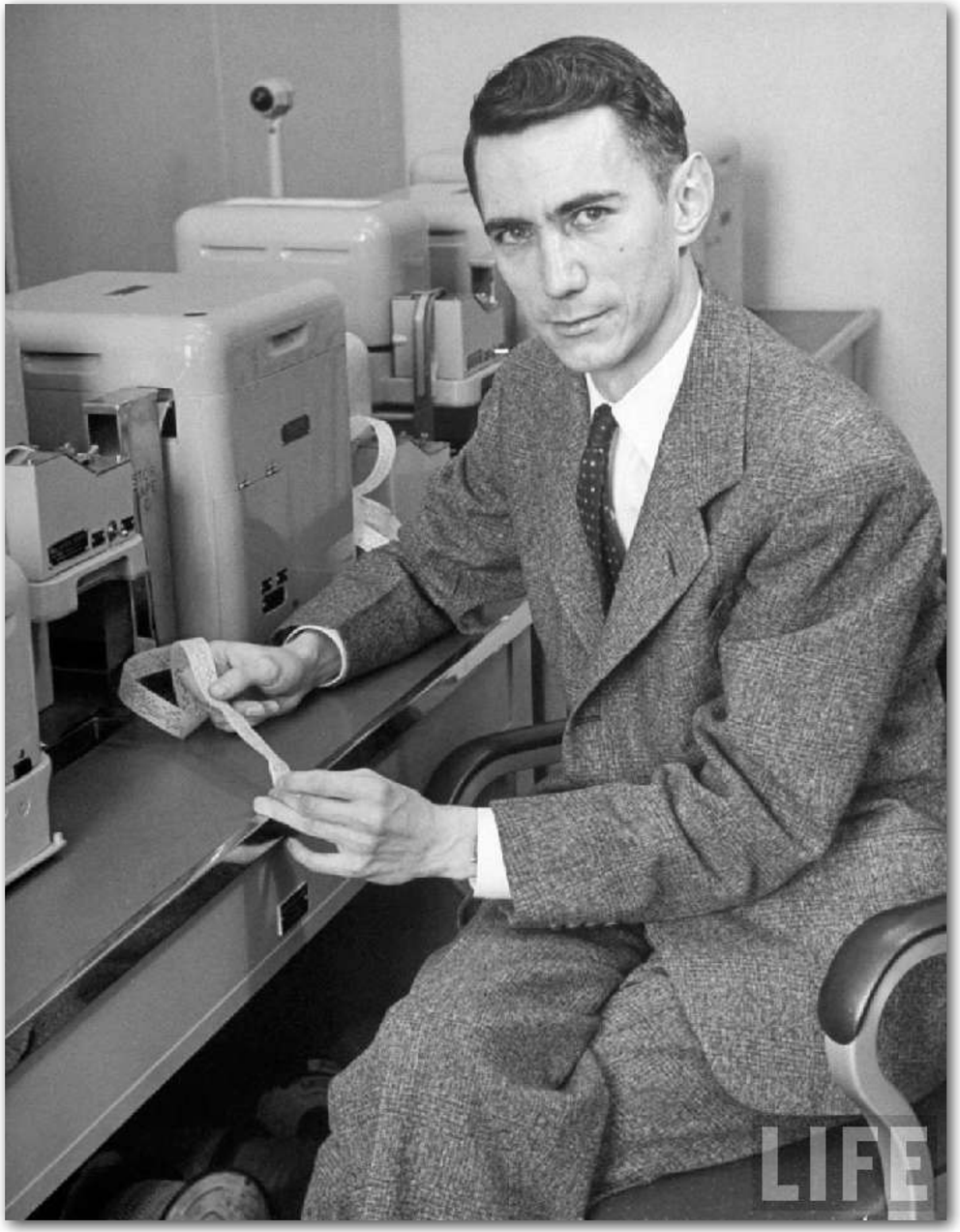

Computer History
Archives Project

datorns födelse



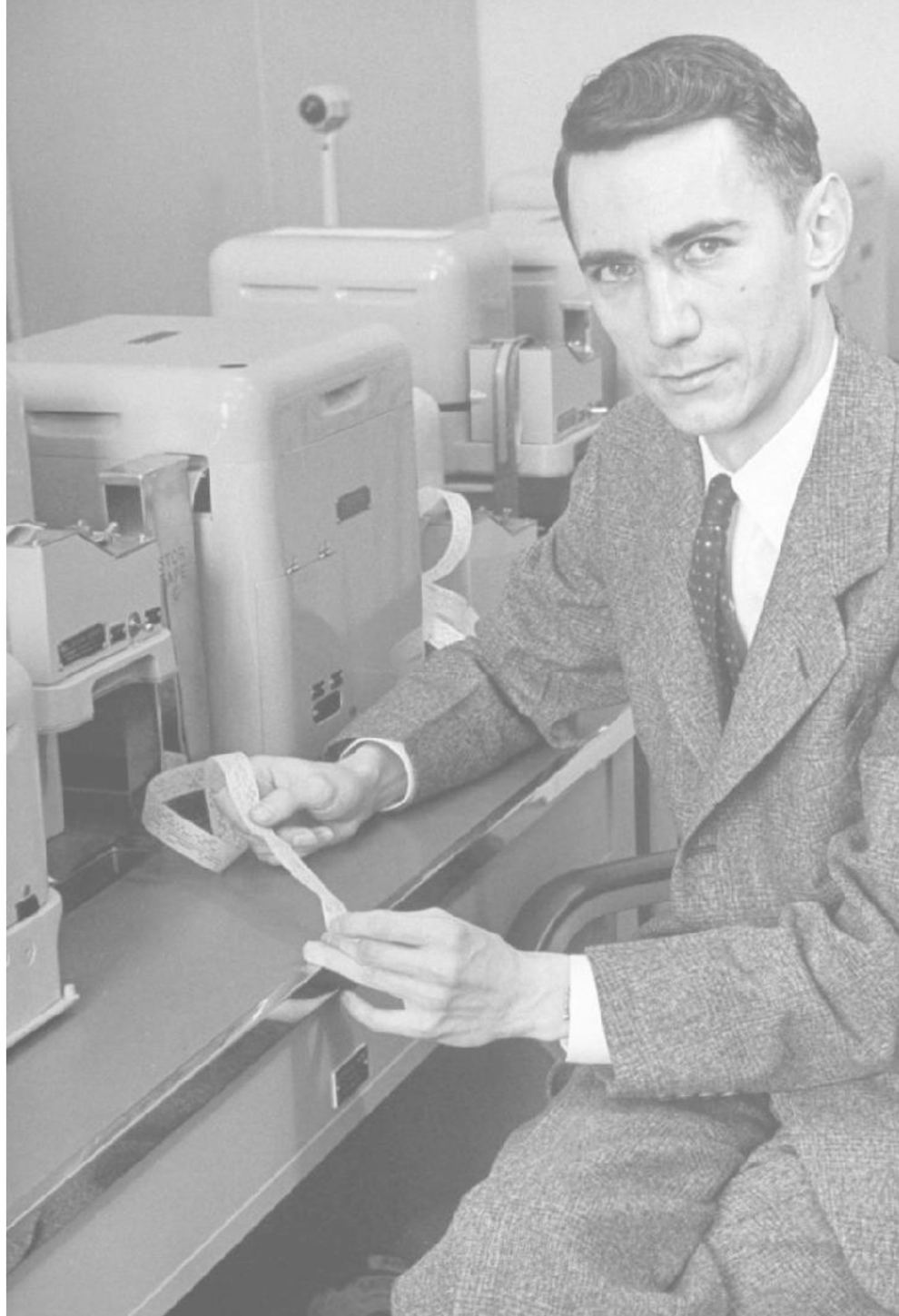

THE
ALAN TURING MEM


THE
ALAN TURING MEM


LIFE

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:

$+$	0	1
0	0	1
1	1	1

;

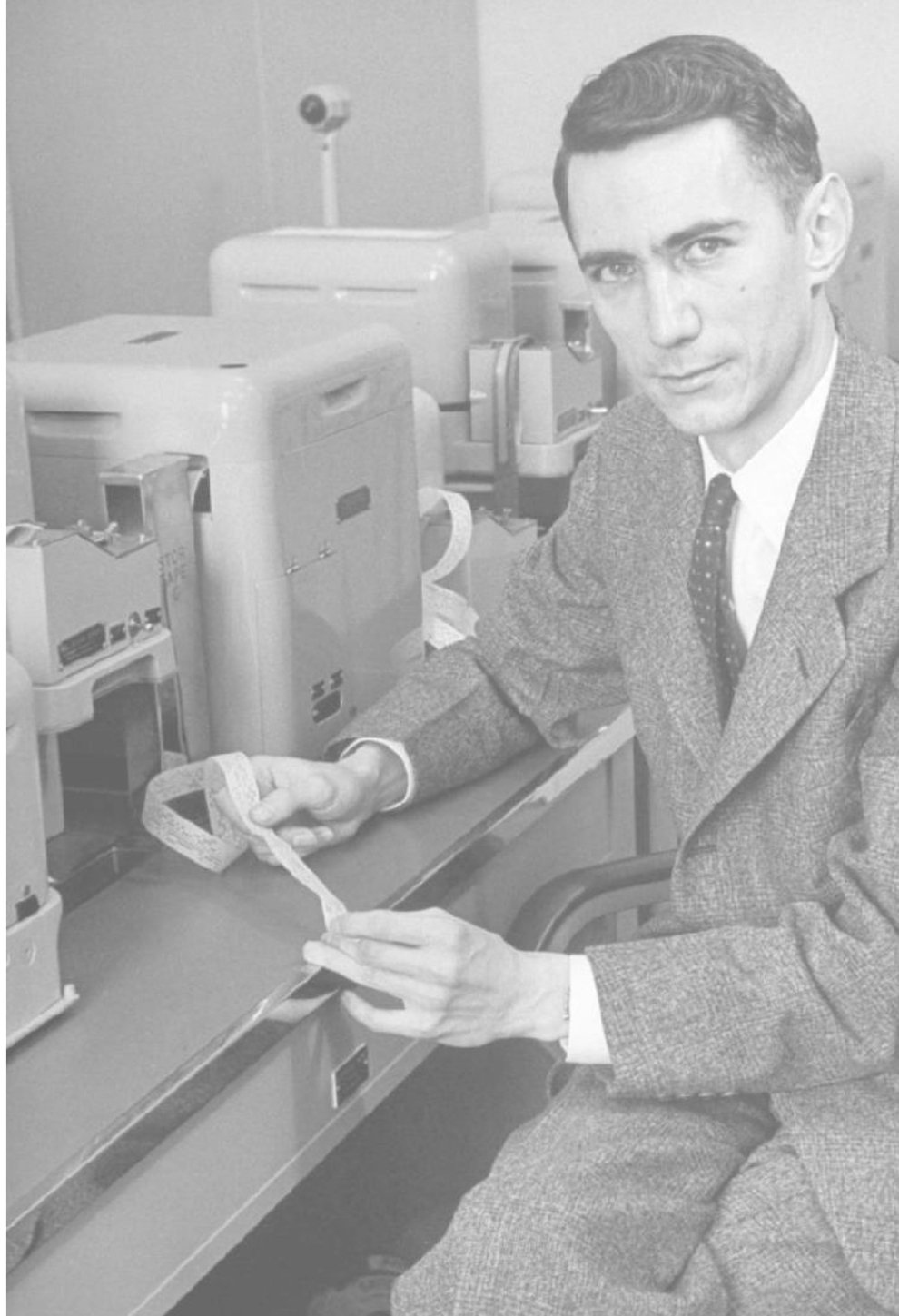
$\cdot$	0	1
0	0	0
1	0	1

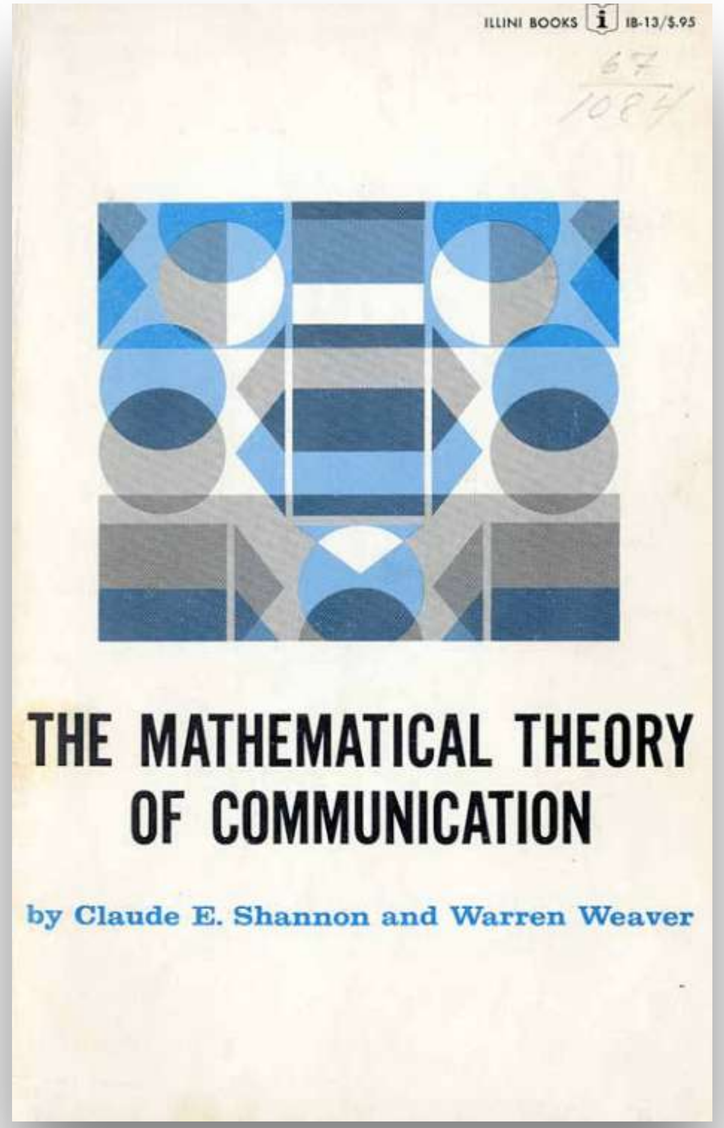
; samt $\begin{cases} \bar{1} = 1 - 1 = 0 \\ \bar{0} = 1 - 0 = 1 \end{cases}$

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**”.





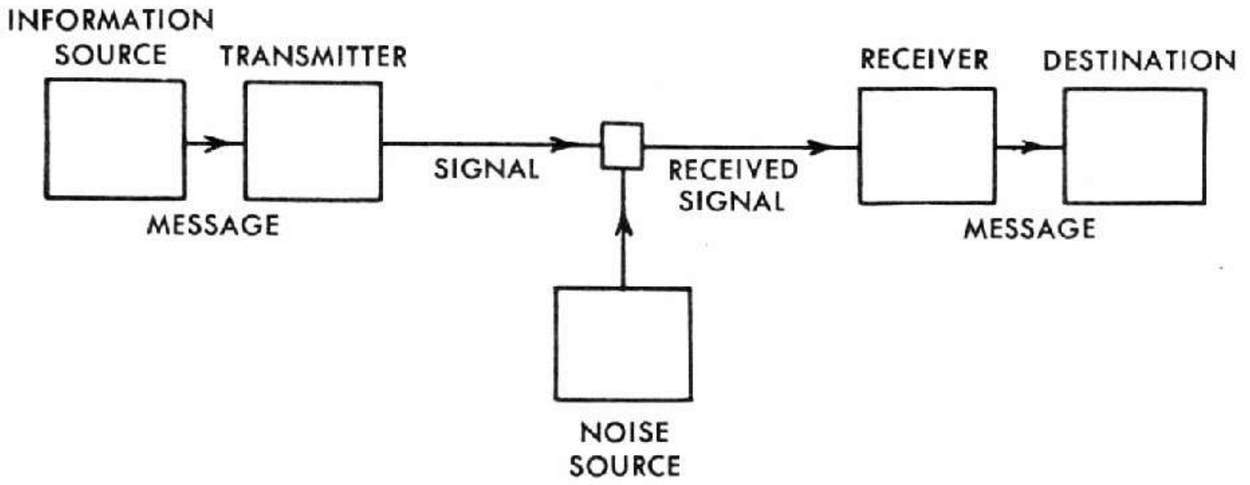
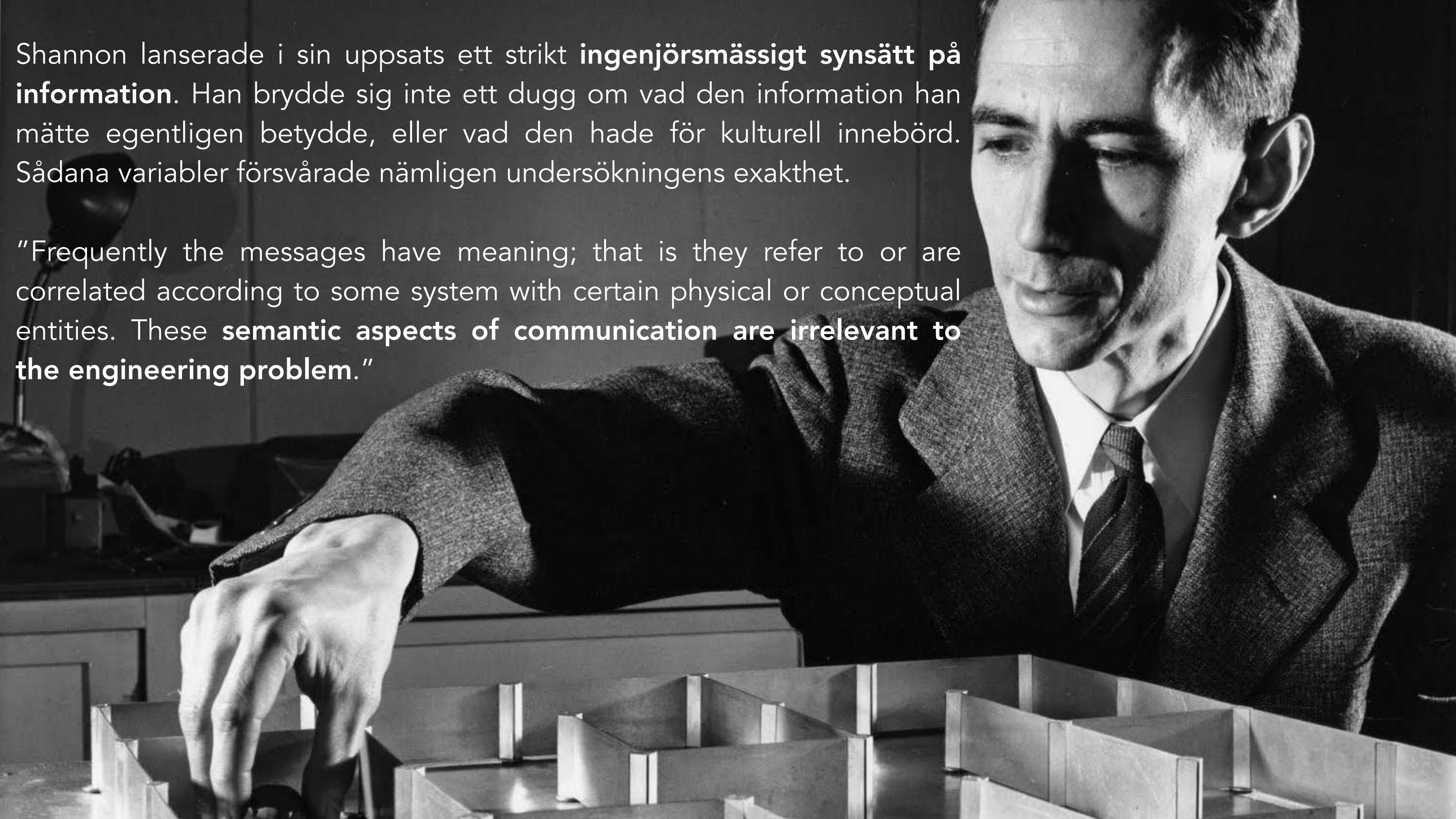
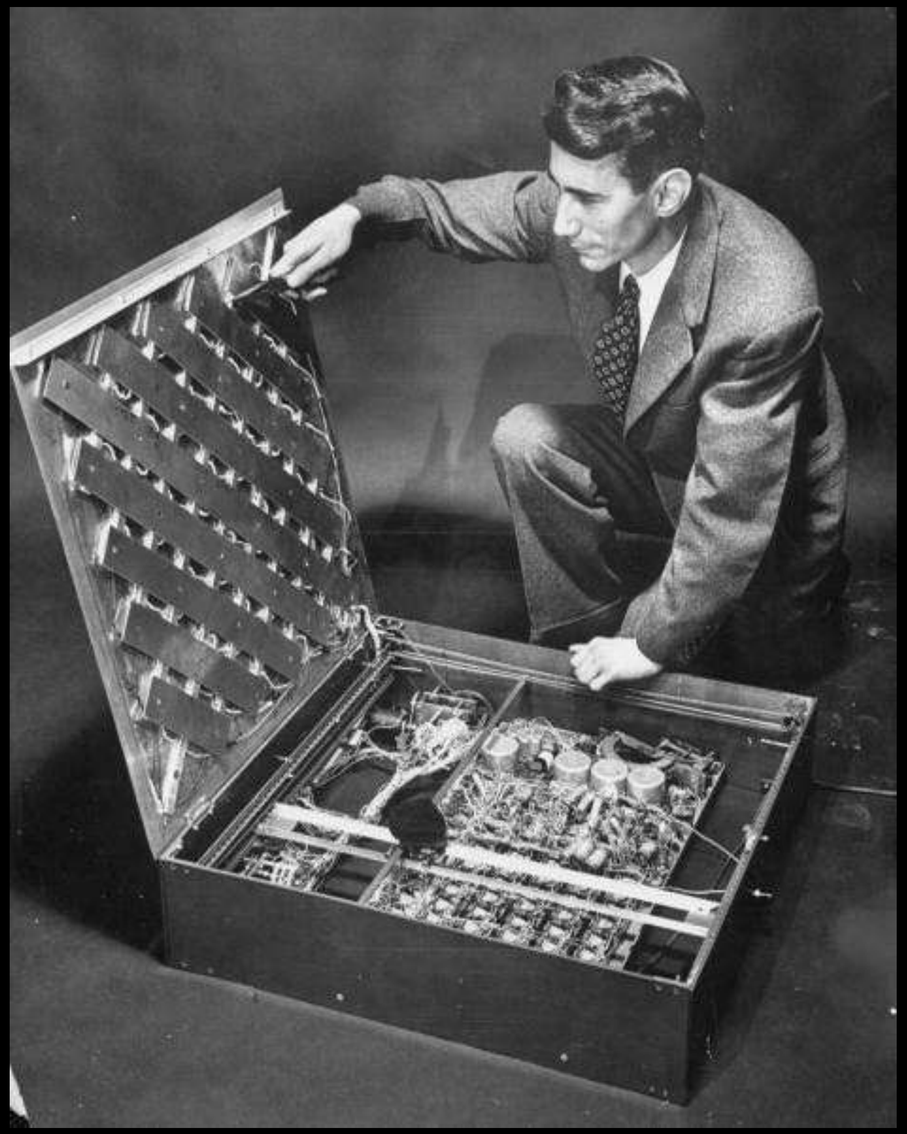


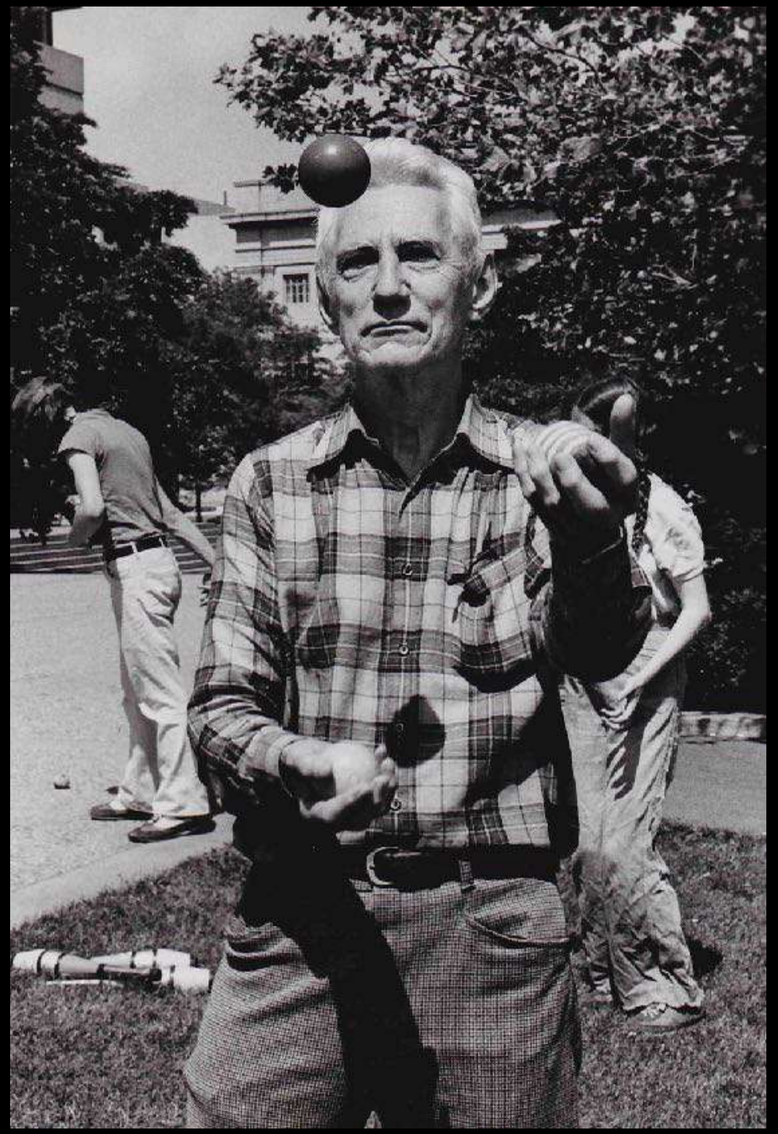
Fig. 1. — Schematic diagram of a general communication system.

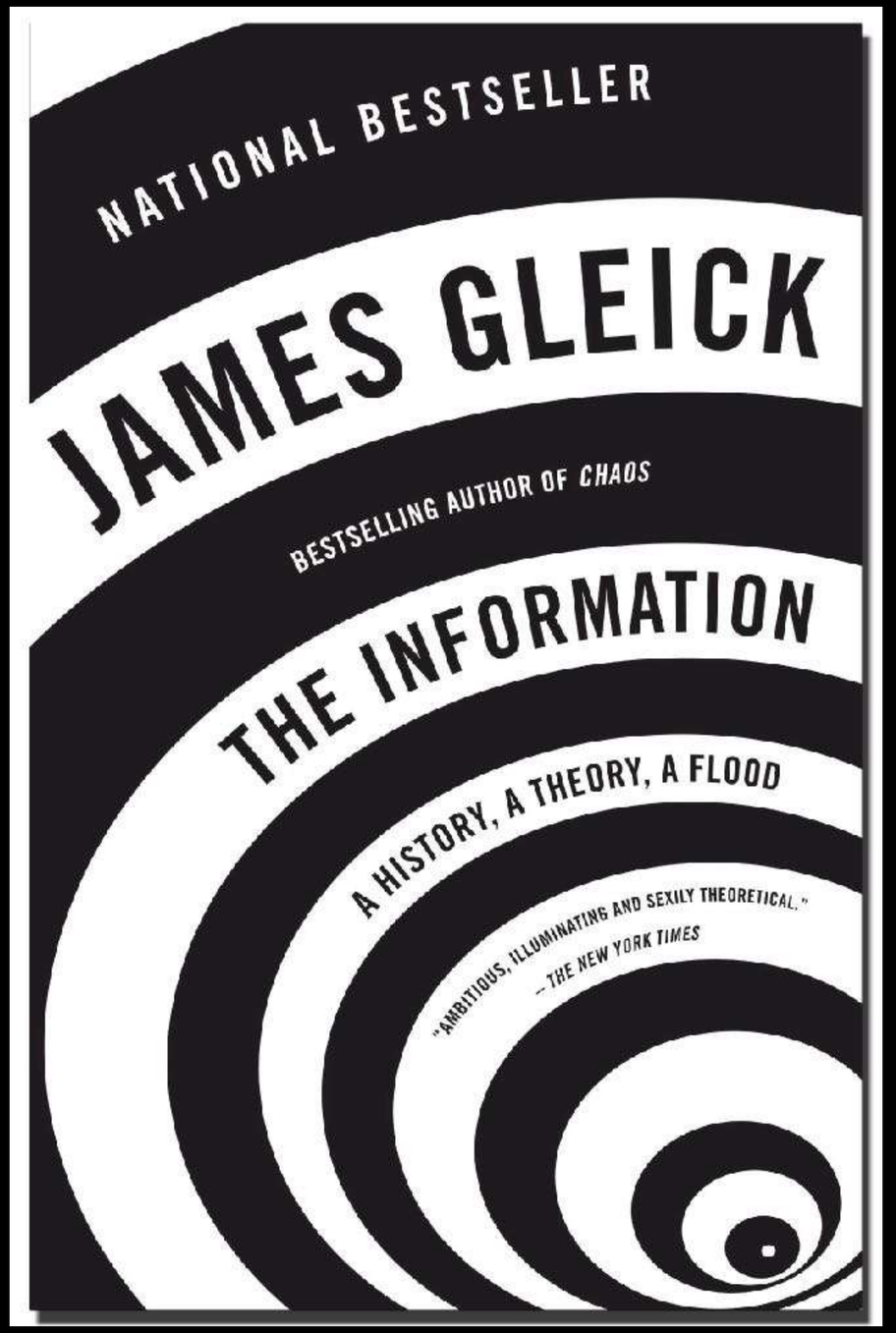
Shannon lanserade i sin uppsats ett strikt **ingenjörsmässigt synsätt på information**. Han brydde sig inte ett dugg om vad den information han mätte egentligen betydde, eller vad den hade för kulturell innebörd. Sådana variabler försvårade nämligen undersökningens exakthet.

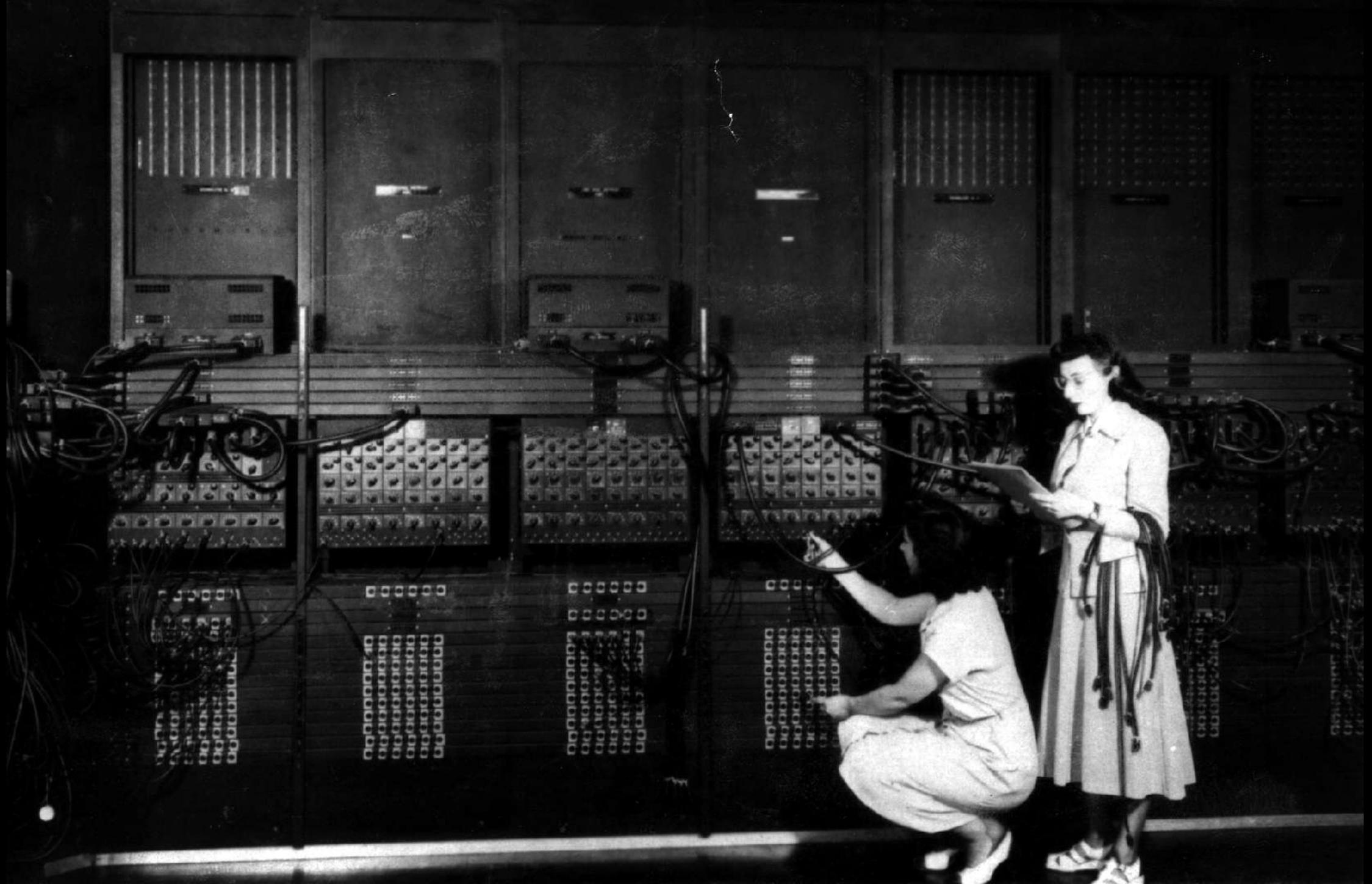
”Frequently the messages have meaning; that is they refer to or are correlated according to some system with certain physical or conceptual entities. These **semantic aspects of communication are irrelevant to the engineering problem**.”

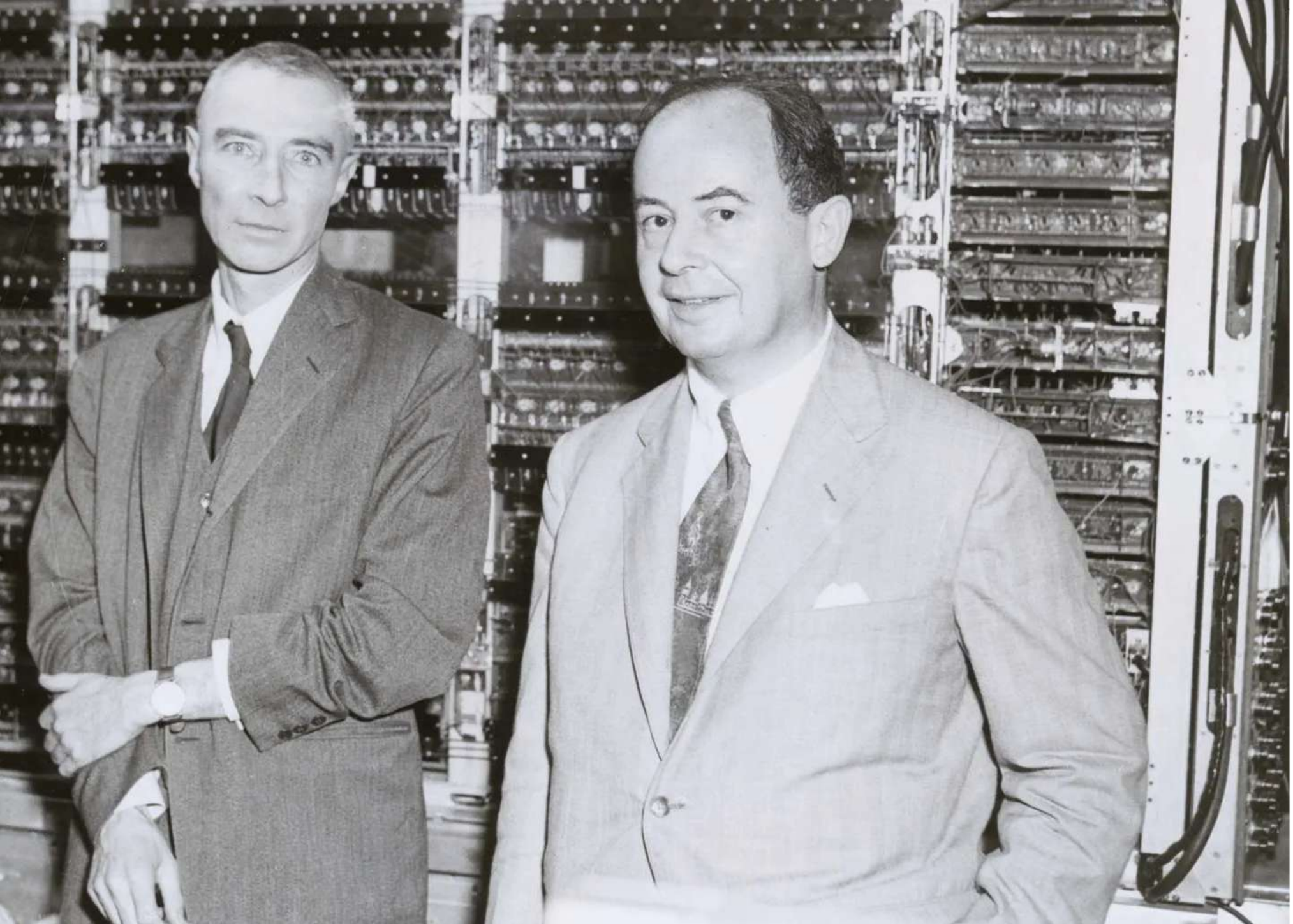


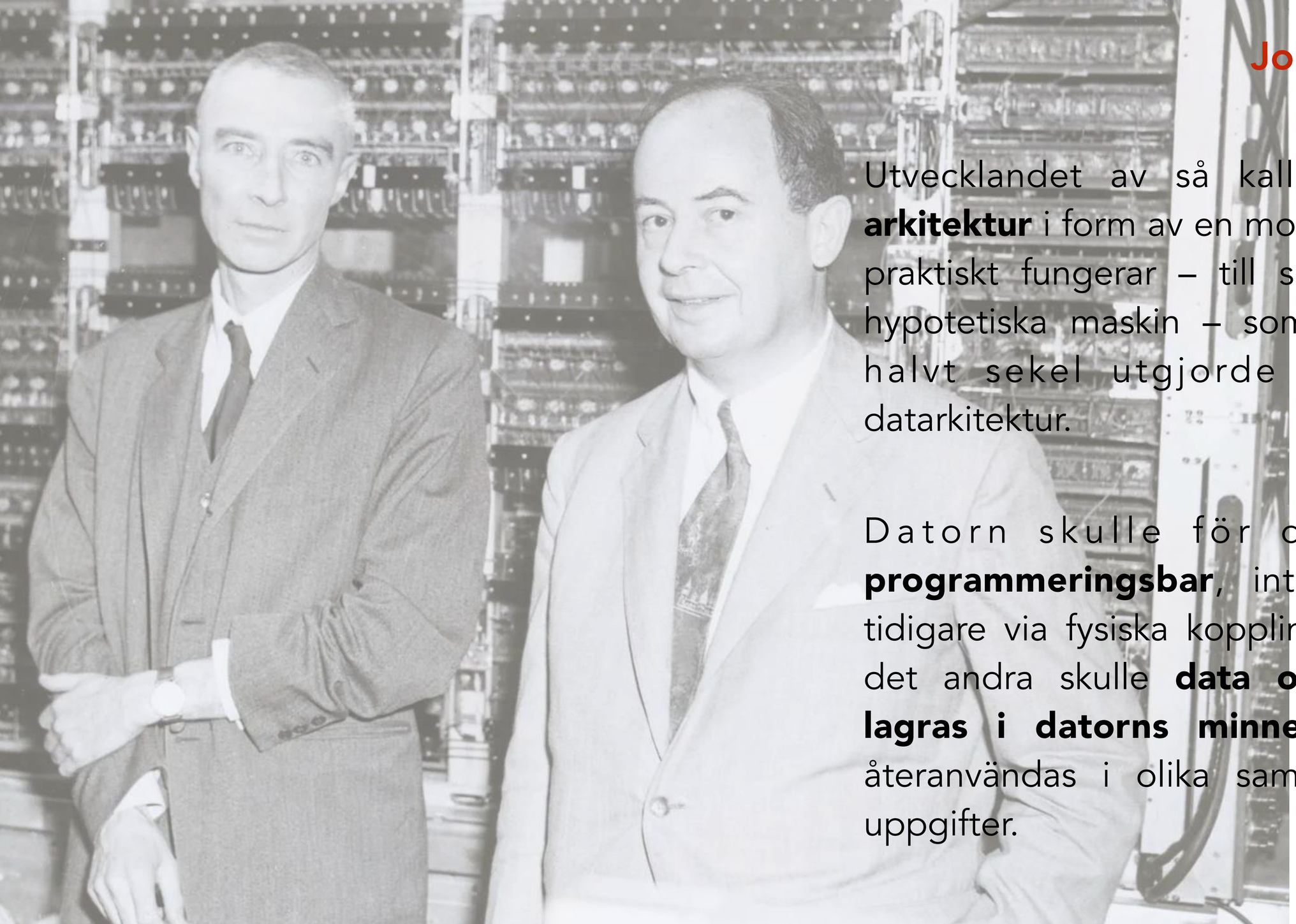





NATIONAL BESTSELLER
JAMES GLEICK
BESTSELLING AUTHOR OF CHAOS
THE INFORMATION
A HISTORY, A THEORY, A FLOOD
"AMBITIOUS, ILLUMINATING AND SEXILY THEORETICAL."
— THE NEW YORK TIMES







John von Neumann

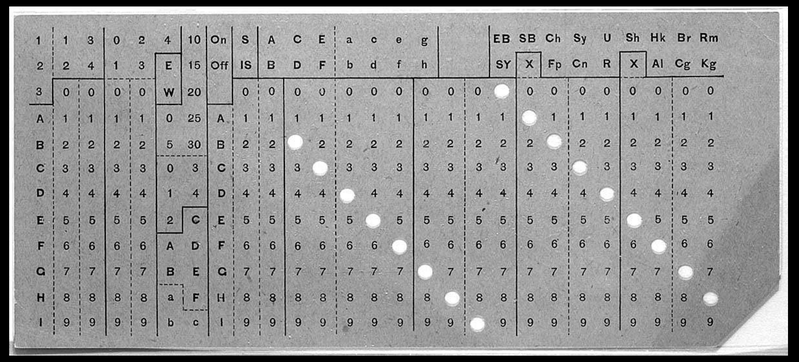
Utvecklandet av så kallad **von-Neumann-arkitektur** i form av en modell för hur en dator praktiskt fungerar – till skillnad från Turings hypotetiska maskin – som under nästan ett halvt sekel utgjorde grunden för all datarkitektur.

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.

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 vinns – och förloras – med försäljning och marknadsföring av datorn och dess programvara som ständig ledstjärna.

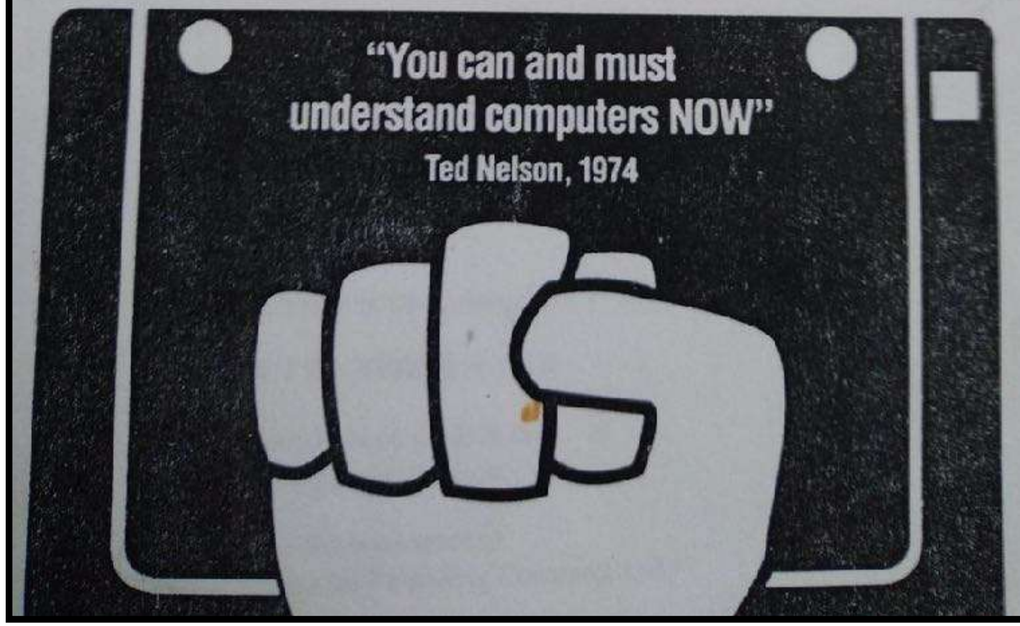

1 1 3 0 2 4 10 On S A C E a c e g EB SB Ch Sy U Sh Hk Br Rm
2 2 4 1 3 E 15 Off IS B D F b d f h SY X Fp Cn R X Al Cg Kg
3 0 0 0 0 W 20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
A 1 1 1 1 0 25 A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
B 2 2 2 2 5 30 B 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
C 3 3 3 3 0 3 C 3 3 3 3 3 3 3 3 3 3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

IBM

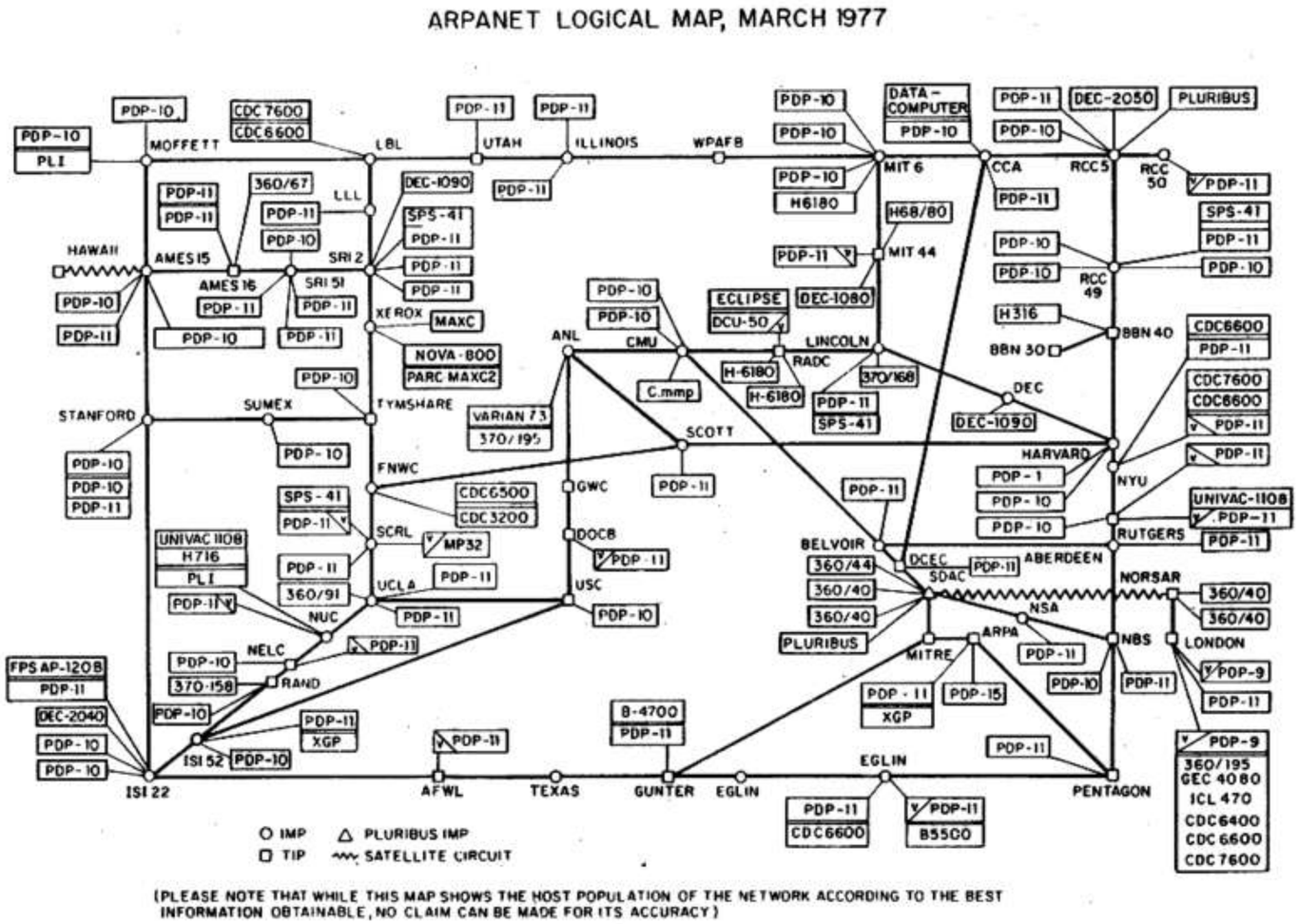
Slutligen finns det en mer visionär datorhistoria med fokus på innovationer och datalogiskt nytänk, ett slags datorns idéhistoria.

Ted Nelson

COMPUTER LIB



datorn & nätverket



1957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INTERNET HALL of FAME PIONEER
J.C.R. Licklider
Posthumous Recipient
In 1962, Dr. Joseph Carl Robnett Licklider formulated the earliest ideas of global networking in a series of memos discussing an "Intergalactic Computer Network." Both well-liked and well-respected, he demonstrated an amazing prescience many times over. His original and far-sighted ideas outlined many of the features the Internet offers today: graphical computing, user-friendly interfaces, digital libraries, e-commerce, online banking, and cloud computing.

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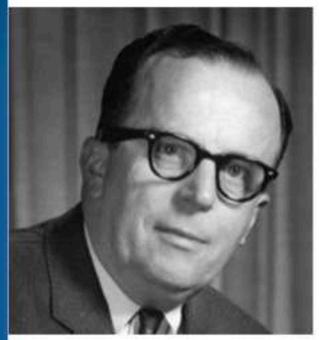

INTERNET HALL of FAME PIONEER

J.C.R. Licklider

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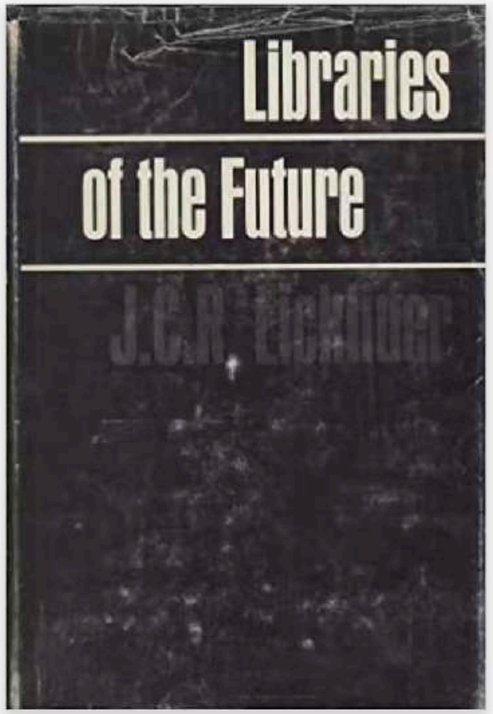
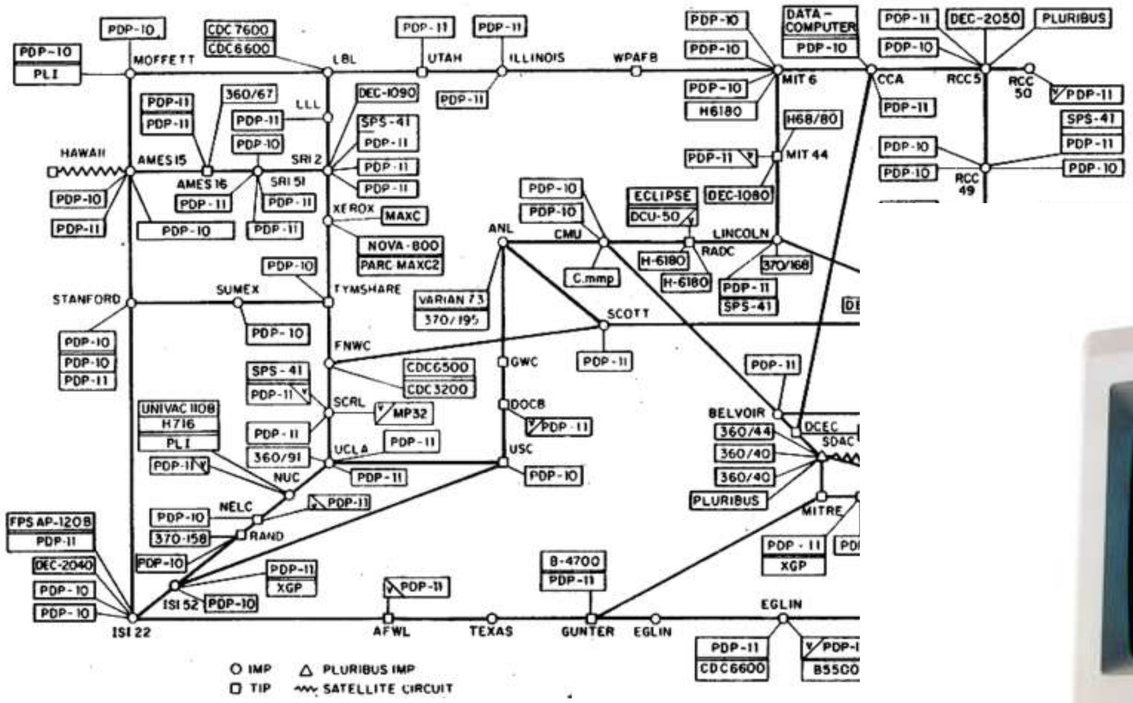


Libraries of the Future

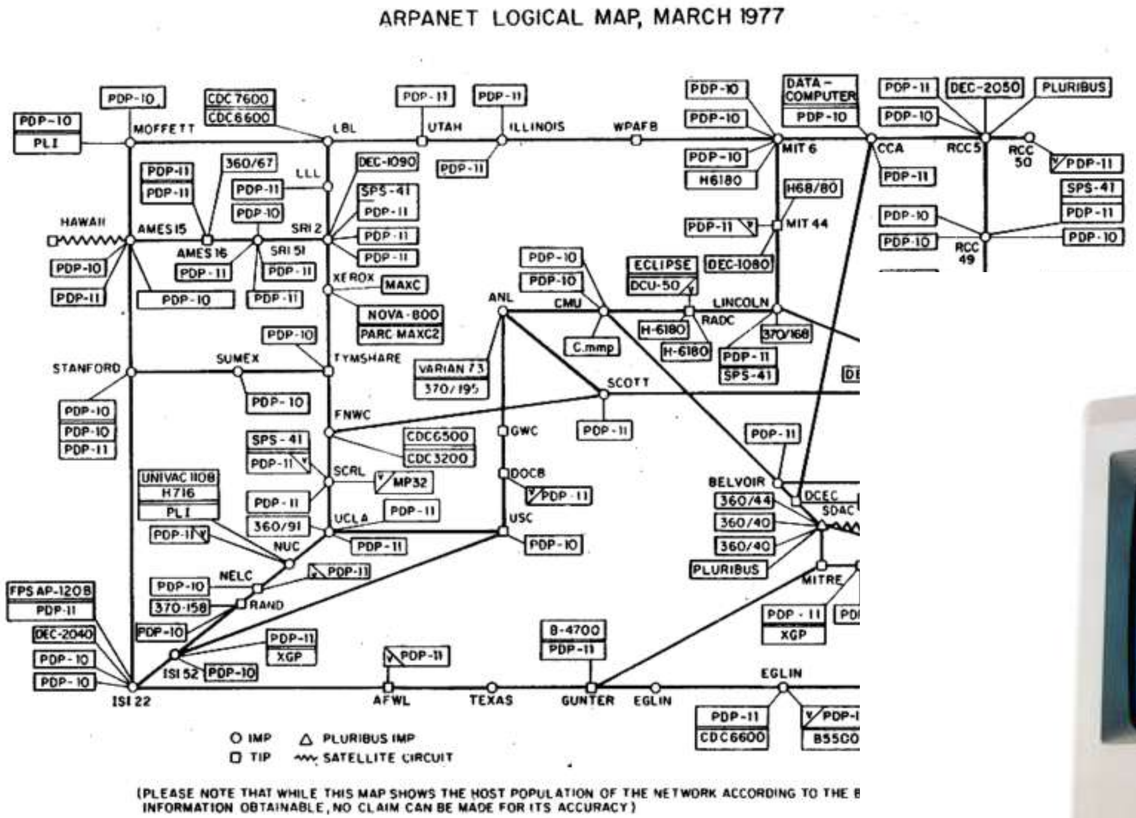
By J. C. R. Licklider

219 pp.,
Hardcover
ISBN: 9780262120166
Published: March 15, 1965

Out of print


ARPANET LOGICAL MAP, MARCH 1977
MOFFETT
LBL
UTAH
ILLINOIS
WPAFB
MIT 6
CCA
RCC 5
RCC 50
RCC 49
HAWAII
AMES 15
AMES 16
SRI 2
SRI 51
LLL
XEROX
MAXC
NOVA-800
PARC MAXC2
ANL
CMU
C.mmp
ECLIPSE
DCU-50
DEC-1080
LINCOLN
RADC
H-6180
370/168
STANFORD
SUMEX
TYMSHARE
VARIAN 73
370/195
SCOTT
FNWC
GWC
CDC6500
CDC3200
SCRL
MP32
DOCB
UCLA
USC
NUC
NELC
RAND
BELVOIR
360/44
360/40
PLURIBUS
MITRE
DCEC
SDAC
FPSAP-120B
DEC-2040
ISI 52
ISI 22
AFWL
TEXAS
GUNTER
EGLIN
B-4700
XGP
CDC6600
B5500
DATA-COMPUTER
DEC-2050
PLURIBUS
H6180
H68/80
MIT 44
SPS-41
DEC-1090
360/67
UNIVAC 1108
H716
360/91
370-158
IMP
TIP
PLURIBUS IMP
SATELLITE CIRCUIT
(PLEASE NOTE THAT WHILE THIS MAP SHOWS THE HOST POPULATION OF THE NETWORK ACCORDING TO THE
INFORMATION OBTAINABLE, NO CLAIM CAN BE MADE FOR ITS ACCURACY)

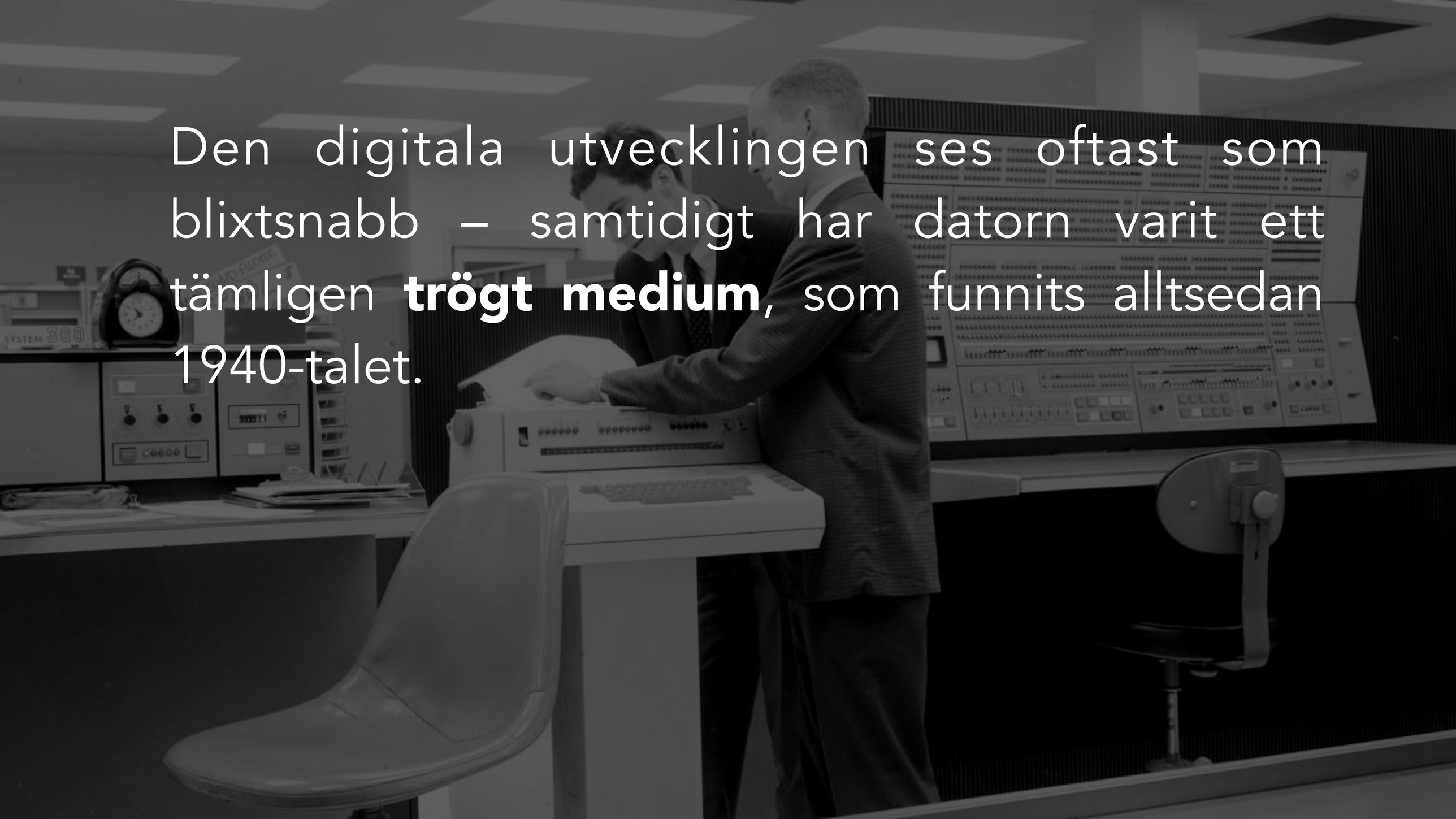

hello.


ARPANET LOGICAL MAP, MARCH 1977
PDP-10
PLI
MOFFETT
CDC 7600
CDC 6600
LBL
PDP-11
UTAH
ILLINOIS
WPAFB
DATA-COMPUTER
PDP-10
MIT 6
H6180
H68/80
MIT 44
CCA
DEC-2050
PLURIBUS
RCC 5
RCC 50
RCC 49
SPS-41
HAWAII
AMES 15
AMES 16
SRI 2
SRI 51
LLL
360/67
DEC-1090
XEROX
MAXC
NOVA-800
PARC MAXC2
ECLIPSE
DCU-50
DEC-1080
ANL
CMU
C.mmp
LINCOLN
RADC
H-6180
370/168
STANFORD
SUMEX
TYMSHARE
VARIAN 73
370/195
SCOTT
FNWC
CDC6500
CDC3200
GWC
DOCB
MP32
SCRL
UCLA
USC
BELVOIR
360/44
360/40
PLURIBUS
DCEC
SDAC
MITRE
UNIVAC 1108
H716
360/91
NUC
NELC
RAND
FPS AP-120B
DEC-2040
370/158
ISI 22
ISI 52
XGP
AFWL
TEXAS
B-4700
GUNTER
EGLIN
CDC6600
B5500
IMP
TIP
PLURIBUS IMP
SATELLITE CIRCUIT
(PLEASE NOTE THAT WHILE THIS MAP SHOWS THE HOST POPULATION OF THE NETWORK ACCORDING TO THE
INFORMATION OBTAINABLE, NO CLAIM CAN BE MADE FOR ITS ACCURACY)

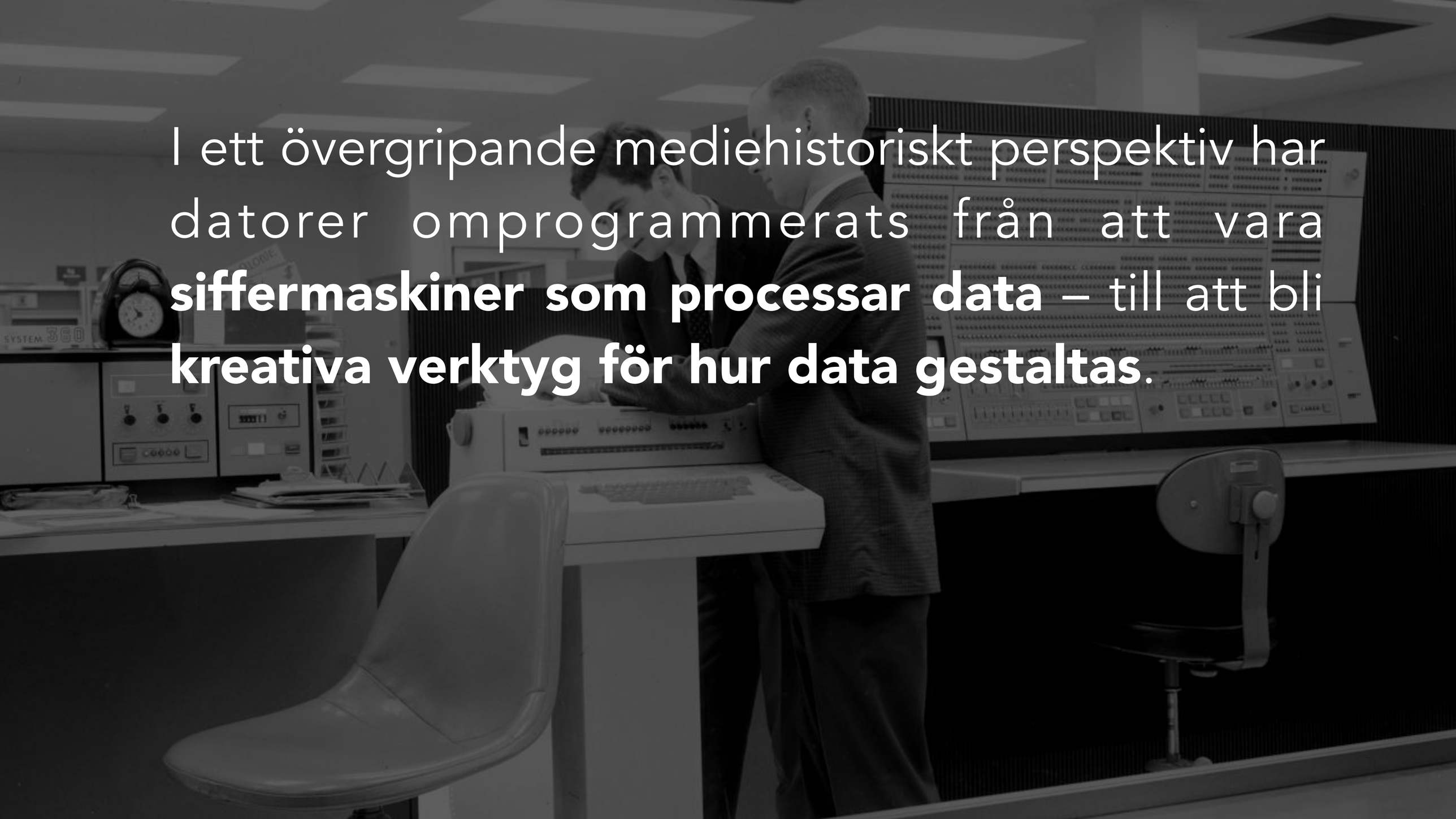

hello.

MICROSOFT

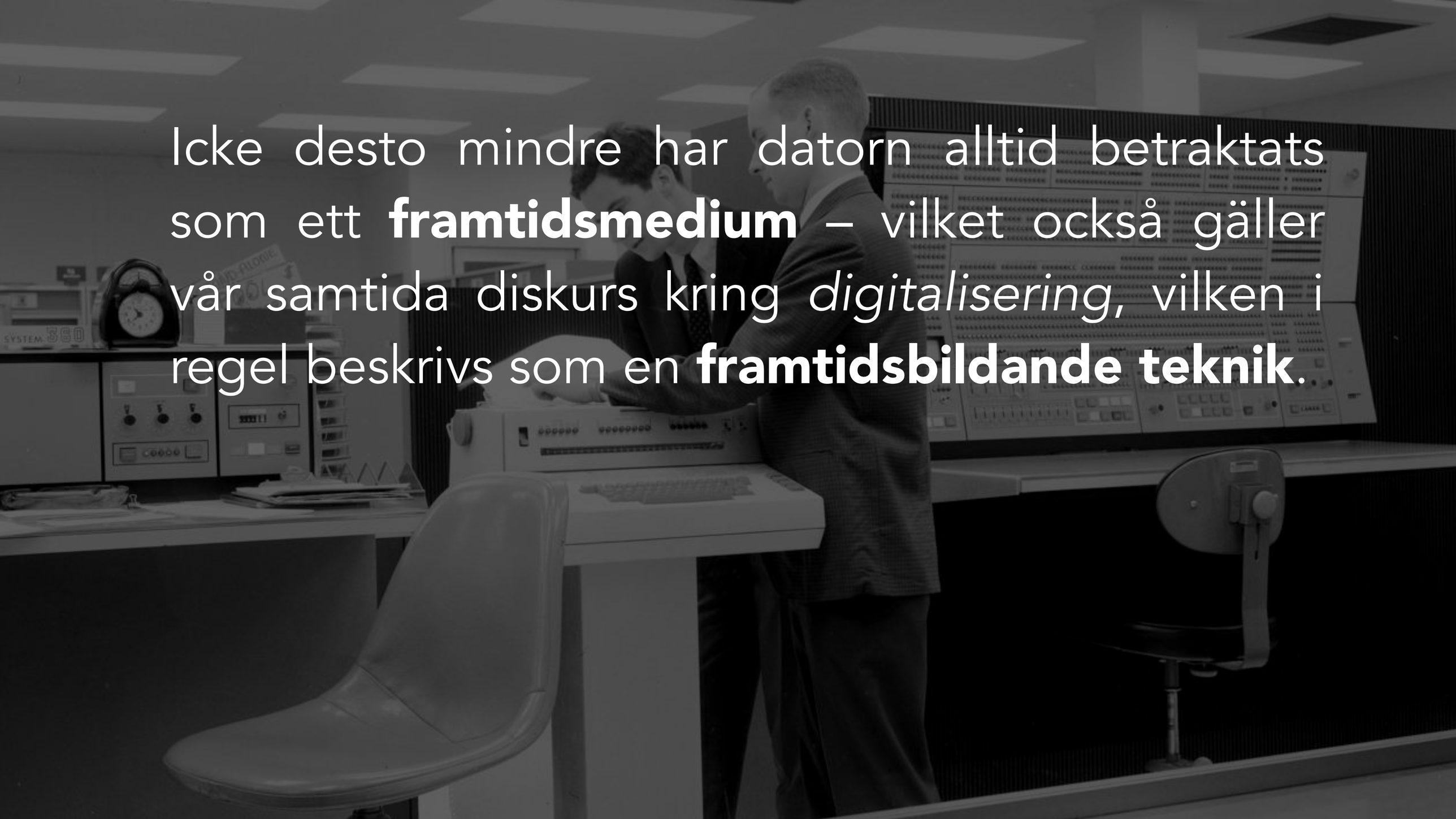

SYSTEM 360



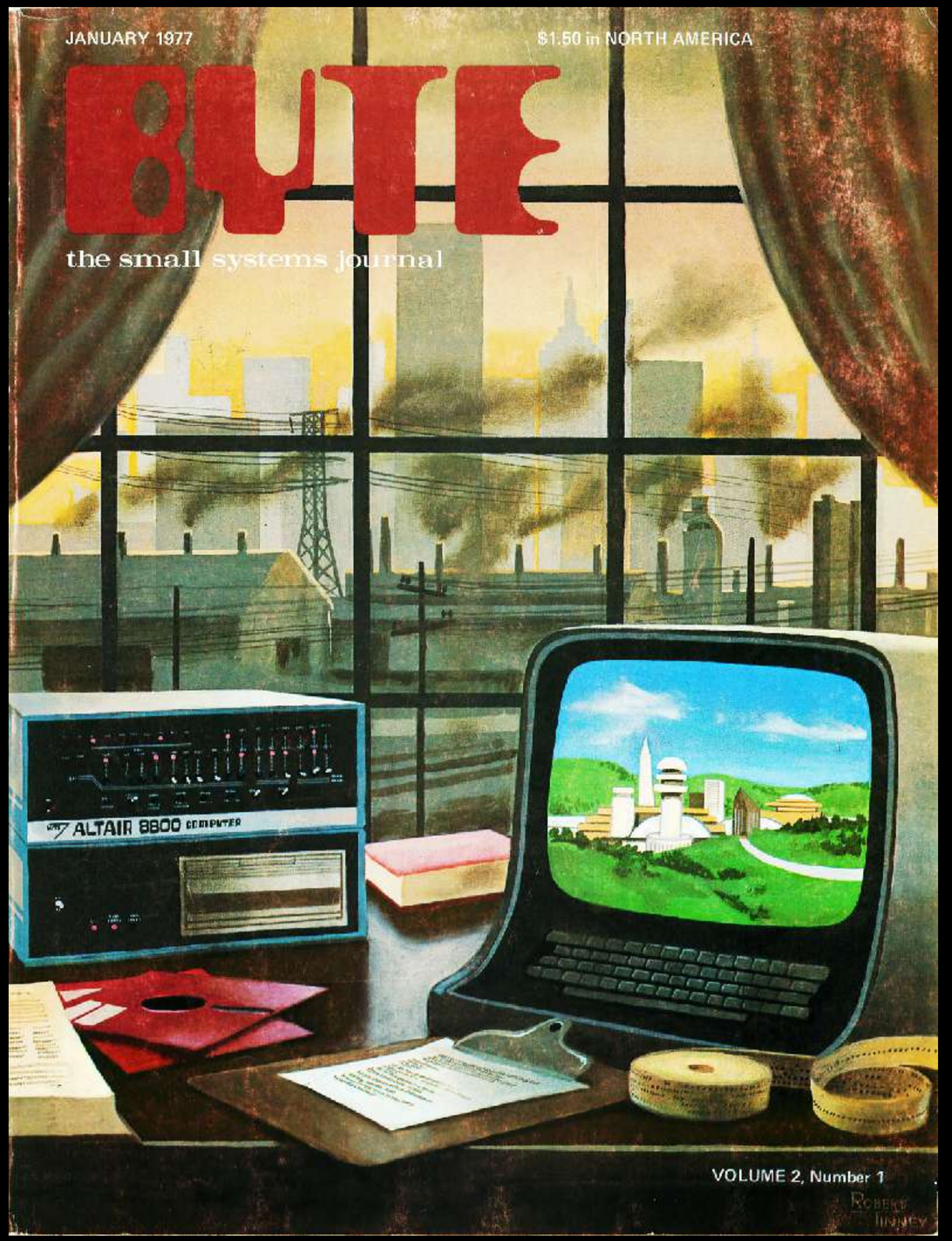
Den digitala utvecklingen ses oftast som blixtsnabb – samtidigt har datorn varit ett tämligen **trögt medium**, som funnits alltsedan 1940-talet.



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

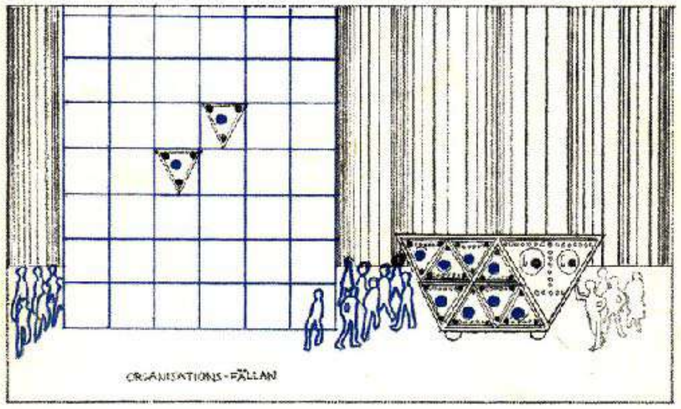


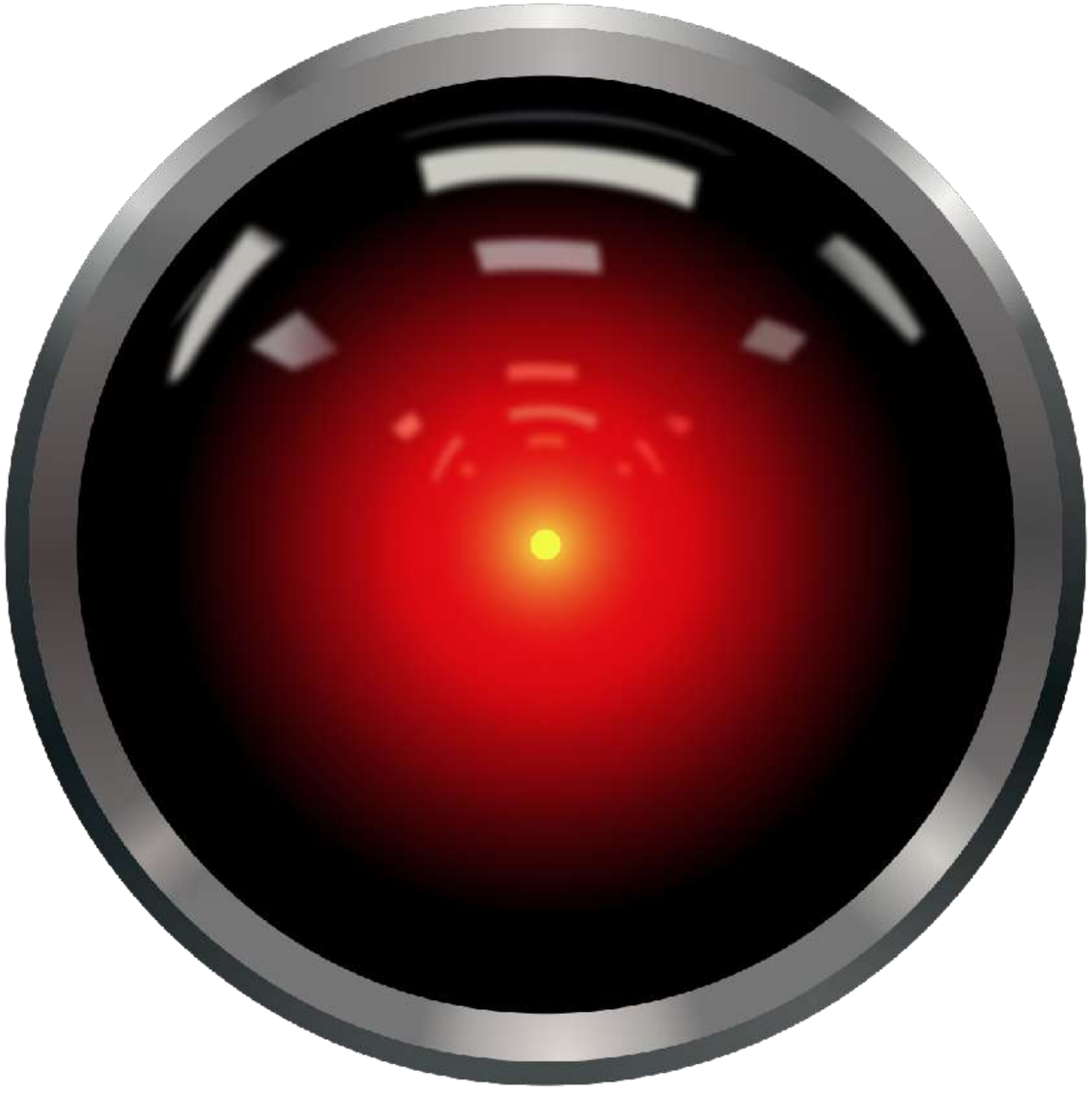
Icke desto mindre har datorn alltid betraktats som ett **framtidsmedium** – vilket också gäller vår samtida diskurs kring *digitalisering*, vilken i regel beskrivs som en **framtidsbildande teknik**.


JANUARY 1977
$1.50 in NORTH AMERICA
BYTE
the small systems journal
ALTAIR 8800 COMPUTER
VOLUME 2, Number 1
ROBERT TINNEY

Olof Johannesson
Sagan om den stora datamaskinen

Delfinserien

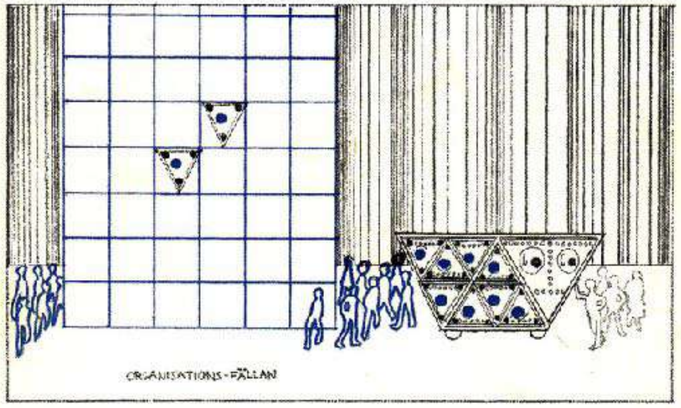


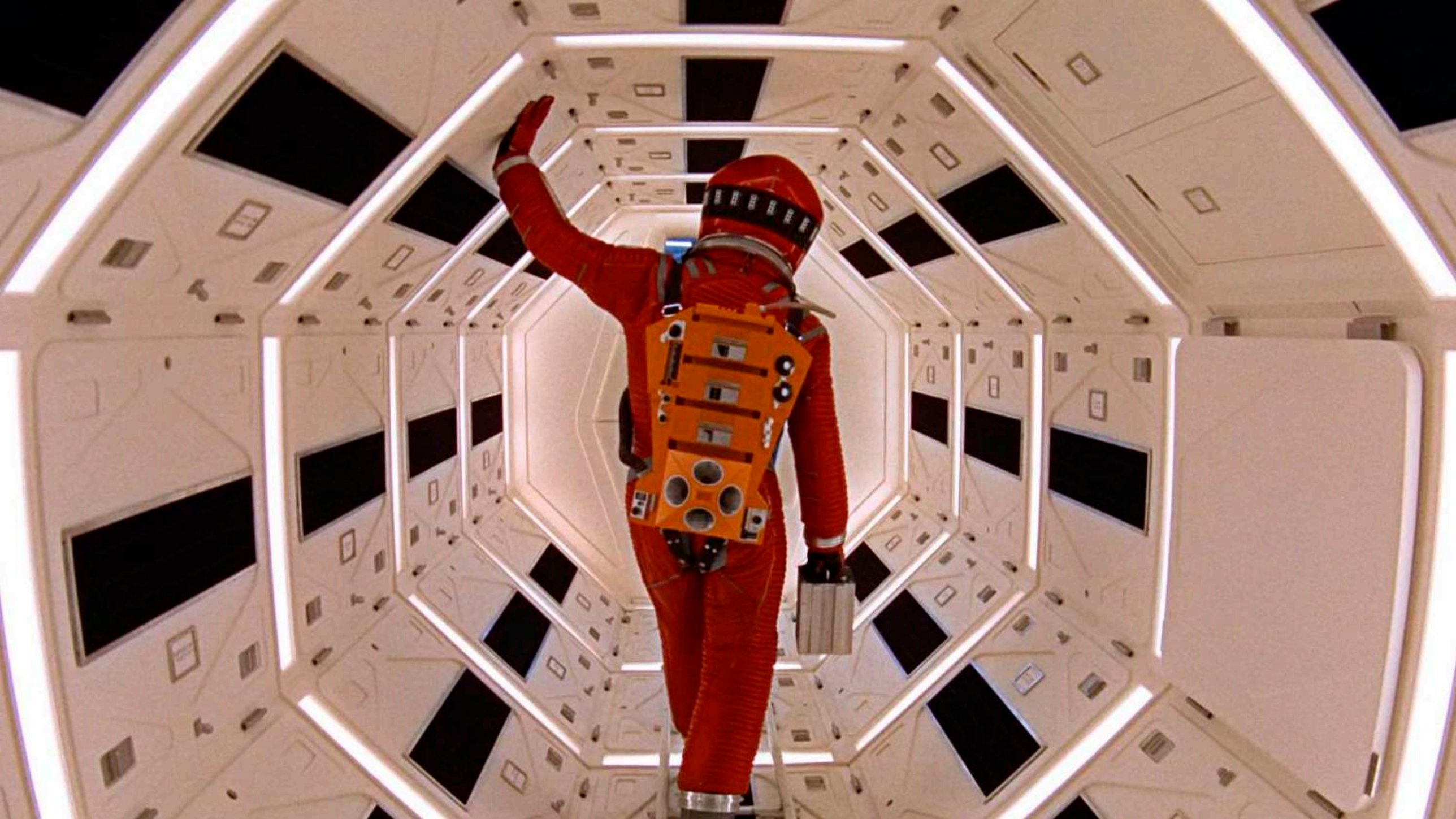


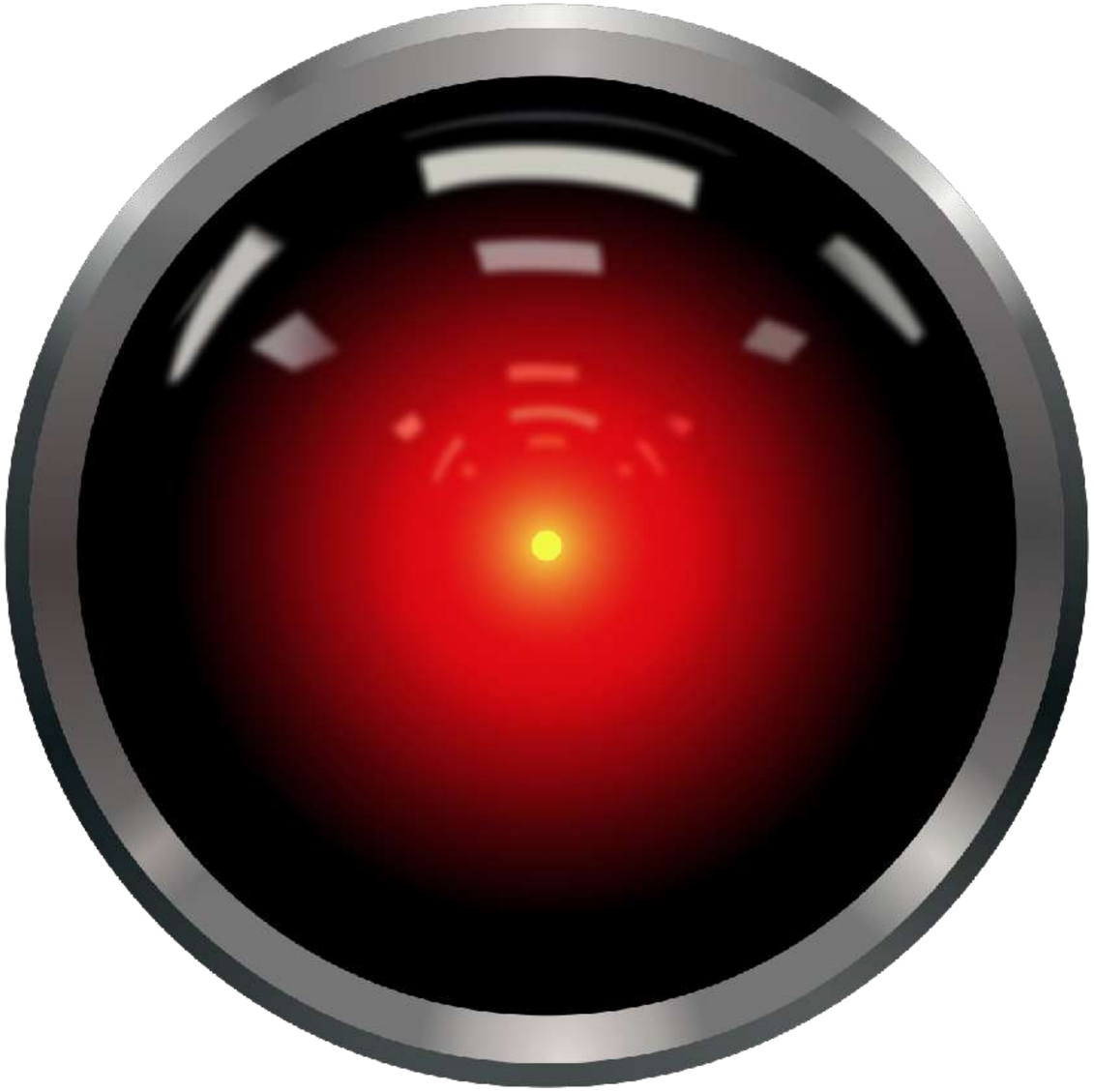
Olof Johannesson

Sagan om den stora datamaskinen

Delfinserien

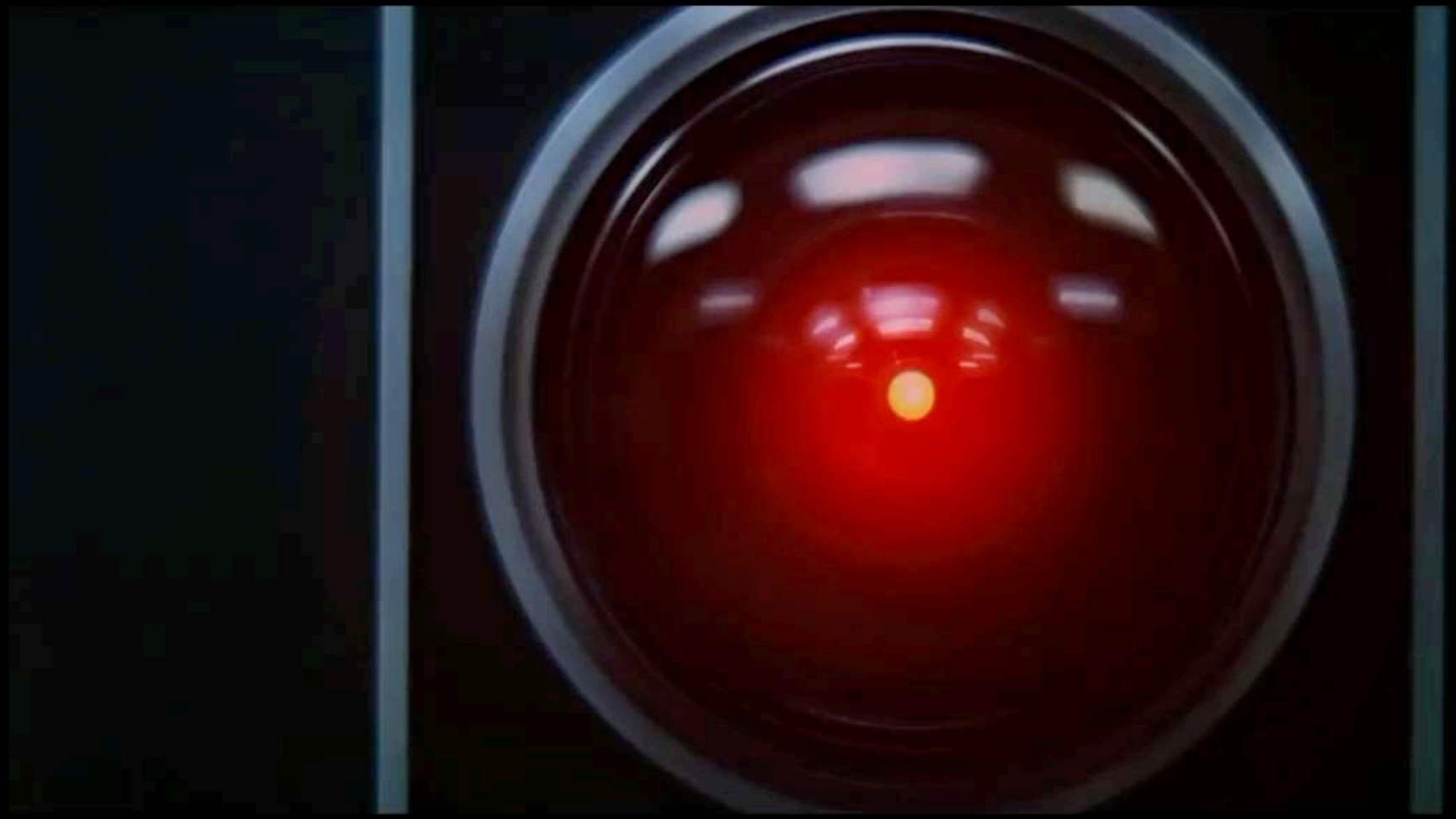




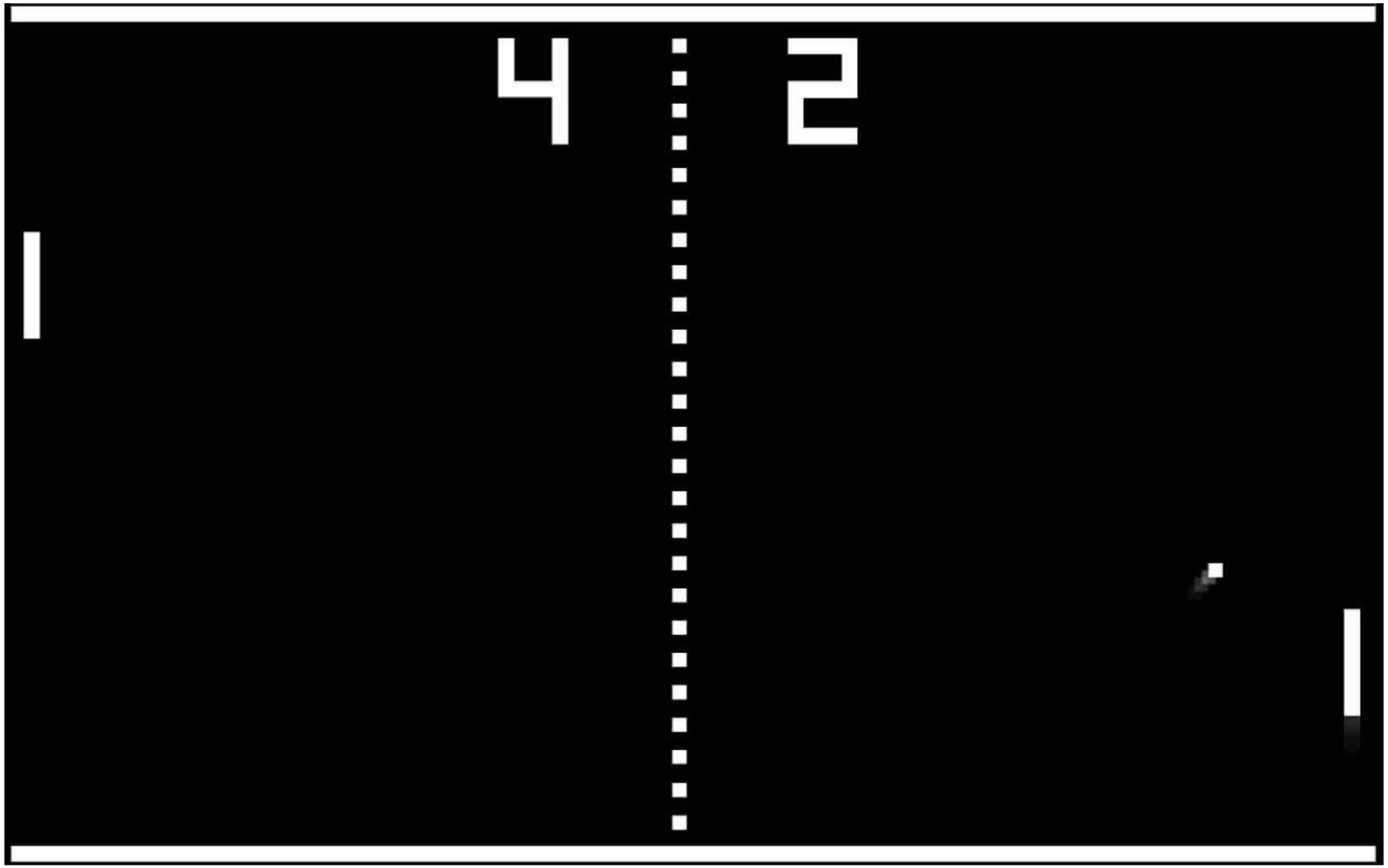


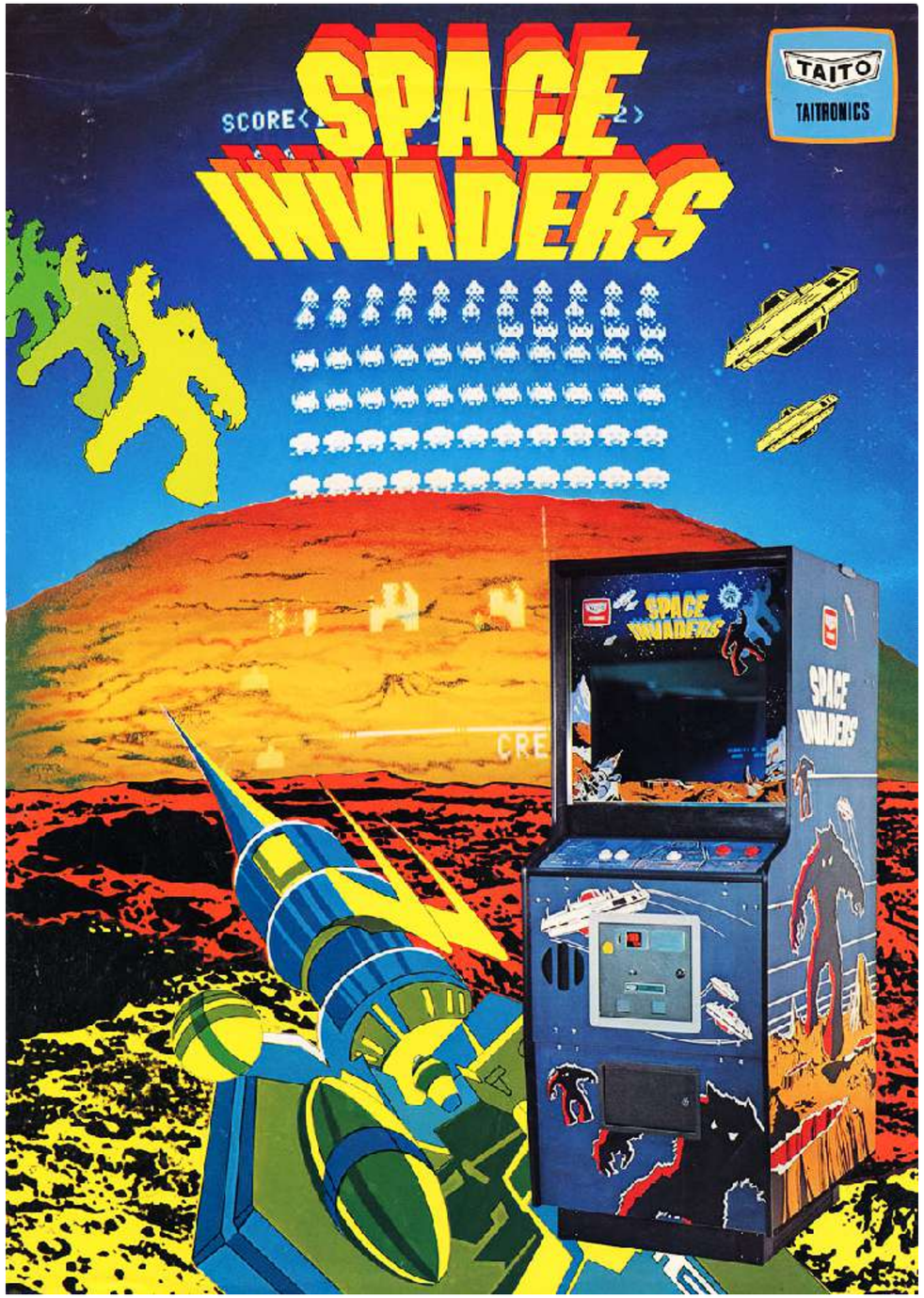
HAL

IBM

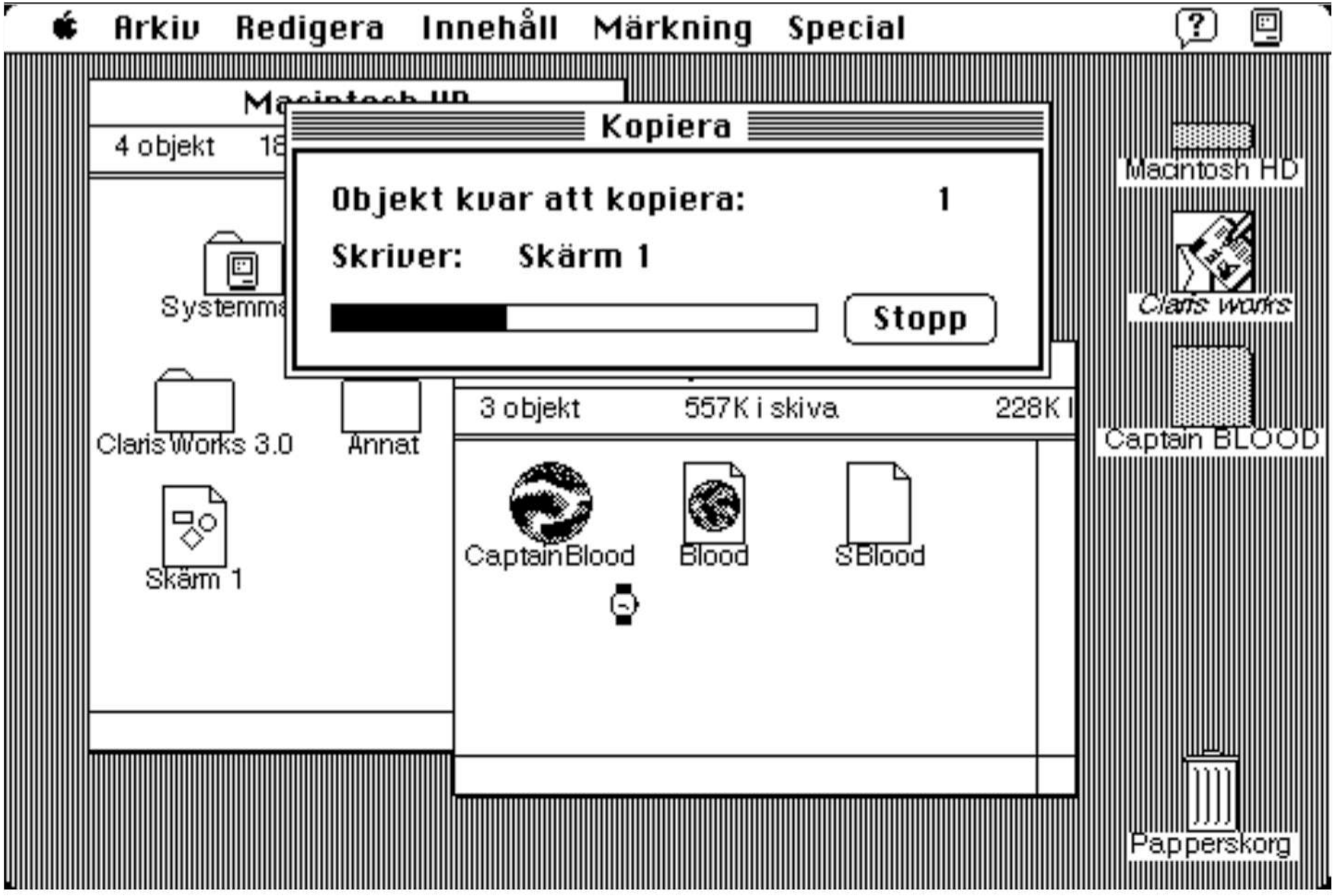


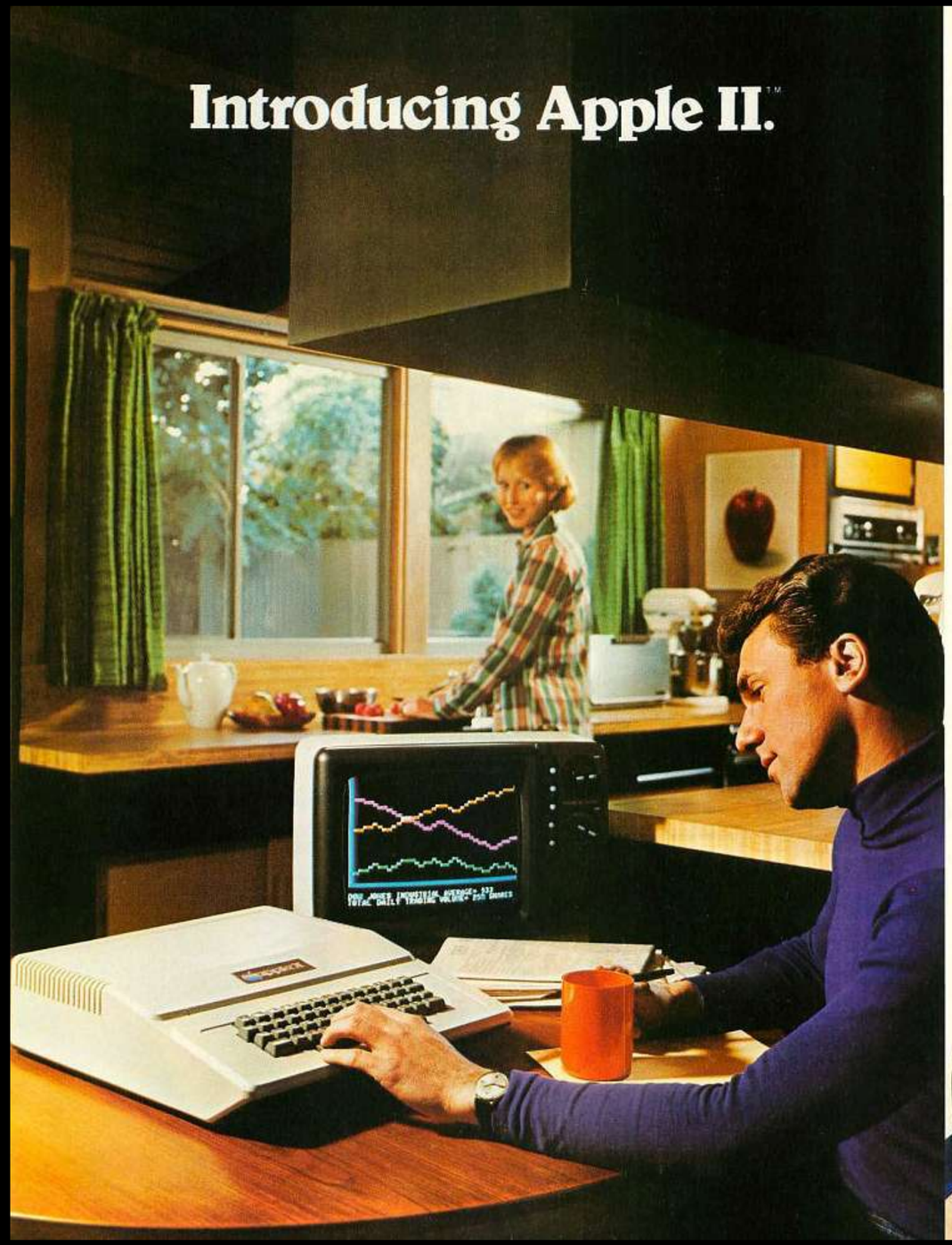

IBM
SYSTEM/360


4
2


SCORE
SPACE INVADERS
TAITO
TAITRONICS
SPACE INVADERS
SPACE INVADERS


GAME & WATCH
Nintendo
PARACHUTE
027
MISS
GAME A
WIDE SCREEN
GAME A
ALARM
GAME B
ACL
TIME
◄LEFT
RIGHT►


Arkiv Redigera Innehåll Märkning Special
4 objekt
Kopiera
Objekt kvar att kopiera: 1
Skriver: Skärm 1
Stopp
Macintosh HD
Claris works
Captain BLOOD
Claris Works 3.0
Annat
Skärm 1
3 objekt
557K i skiva
228K i
CaptainBlood
Blood
SBlood
Papperskorg



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 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 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.

Apple II™ is a completely self-contained computer system with BASIC in ROM, color graphics, ASCII keyboard, lightweight, 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).

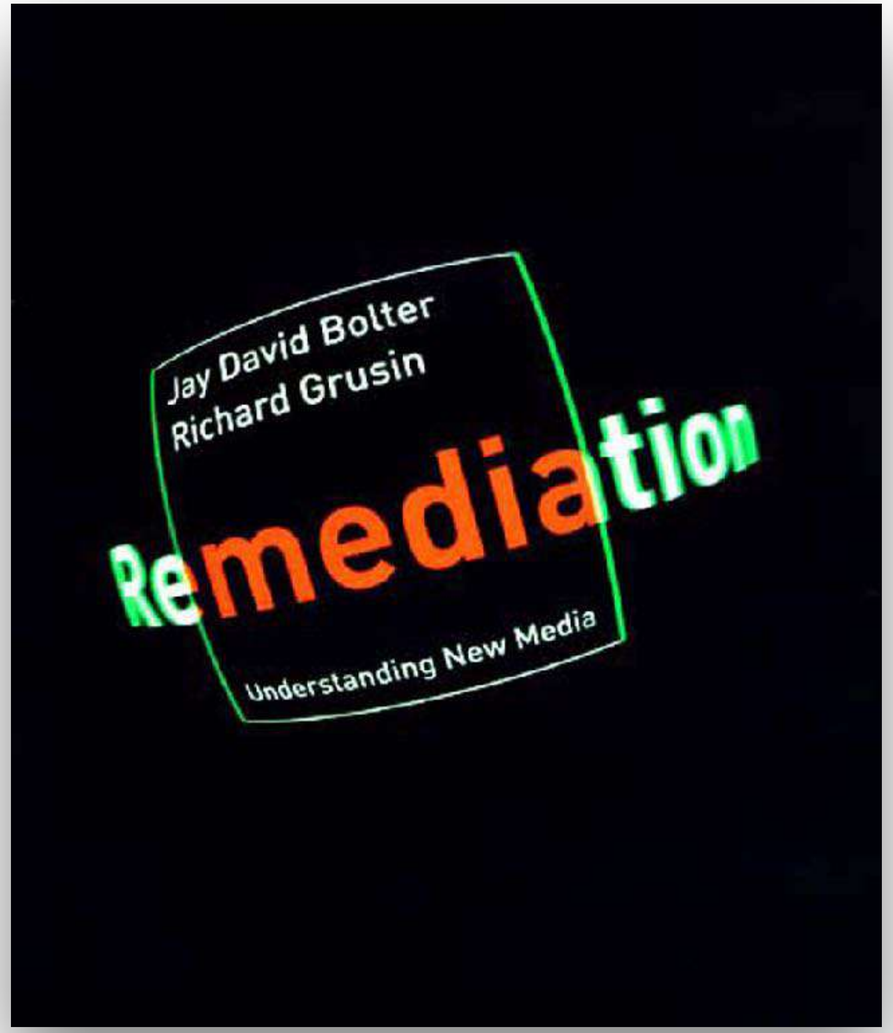
apple computer inc.™

Circle 272 on inquiry card.


apple computer inc.

Apple iMac G3 (1998)

Datorn som en digital mediemaskin ...



File Edit Find Channels User Tools Web Help Sat 6:47:13 PM Napster

9717 Users sharing 1743953 files (7384 Gigs)

Search results for turtles

Artist: turtles

Title: so happy together

100 Results

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 Gimmie Gimmies - 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	Tim
Andrew Lloyd Webber - Think of Me - The Phantom of the Opera - Disc 1 ...		4.9 MB	5.5 K/sec	10
John Williams - Duel Of The Fates.mp3		4.8 MB	14.2 K/sec	2
02_-_john_williams_-_duel_of_the_fates.mp3		4.8 MB	4.9 K/sec	5
Paul Simon - You Can Call Me Al.mp3		5.3 MB	2.8 K/sec	29
Paul Simon-You Can Call Me Al.mp3		5.3 MB	3.0 K/sec	26
Paul Simon-You Can Call Me Al.mp3		5.3 MB	1.6 K/sec	54
FF4- Main theme (Enya Remix).mp3		4.2 MB	12.4 K/sec	3

The Pirate Bay


– tack!
EPISCOP