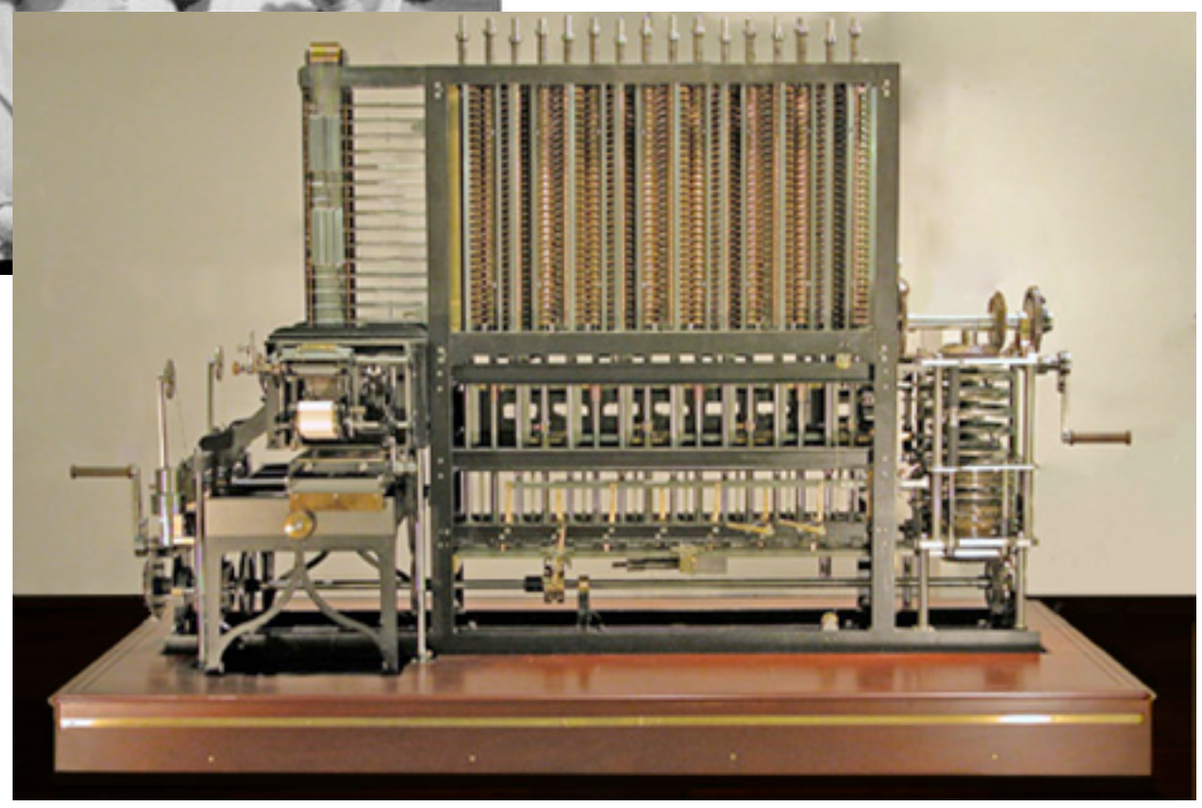
advent of the computer

History of Information

April 5, 2012



course correction

3 Apr: Computer Revolution
Paul's Slides

Required reading:

- Babbage, Charles. 1832. "Registering Operations" and "On the Division of Mental Labour," chapters 8 & 19 in *On the Economy of Machinery and Manufactures*. [Google Books edition]
- Campbell-Kelly, Martin & William Aspray. 1996. "'Babbage's Dream Comes True," (pp. 53-104) in Martin Campbell-Kelly & William Aspray, *Computer: A History of the Information Machine*. New York: Basic Books.

Additional material:

- Watch: Englebart, Douglas. 1968. "Doug Englebart 1968 Demo." On MouseSite.

5 Apr: Broadcast

Required reading:

- Czitrom, Daniel J. 1982. "The Ethereal Hearth: American Radio from Wireless through Broadcasting, 1892-1940." in *Media and the American Mind*. University of North Carolina Press. Pp. 60-88.

Additional material:

- Gitlin, Todd. 2001. "Supersaturation, Or, The Media Torrent And Disposable Feeling," Ch. 1 of *Media Unlimited*, Metropolitan Books. Pp. 12-70.

Week 13

10 Apr: Storage and Search

10 Apr: Storage and Search

Required reading:

- Viktor Mayer-Schönberger, "Useful Void: The Art of Forgetting in the Age of Ubiquitous Computing," KSG Faculty Research Wroking Paper Series RWP07-022.
- Bush, Vannevar. 1945. As We May Think, Atlantic Monthly; 176 (1): 101-108.

Additional material:

- NPR, Intelligence Squared Debate, 2008. Did Google Violate Its 'Don't Be Evil' Motto?
- Berners-Lee, Tim. 2000. Chapters 1-3, pp. 1-34 in Weaving the Web. New York City: HarperCollins.
- Nunberg, Geoffrey. 2010. "Google Book Search: A Disaster for Scholars." Chronicle Review, August 31.

coming up

Assignment - April 10:

How much does Google know about you?

-choose a search that you think will help answer this question

-work in 2s or 3s (send group names by April 6)

-use your ingenuity(inventiveness will be rewarded) to play with Google's assumptions

-send in conclusions (with images of results) by Sunday, April 8

- be prepared to discuss in class

overview

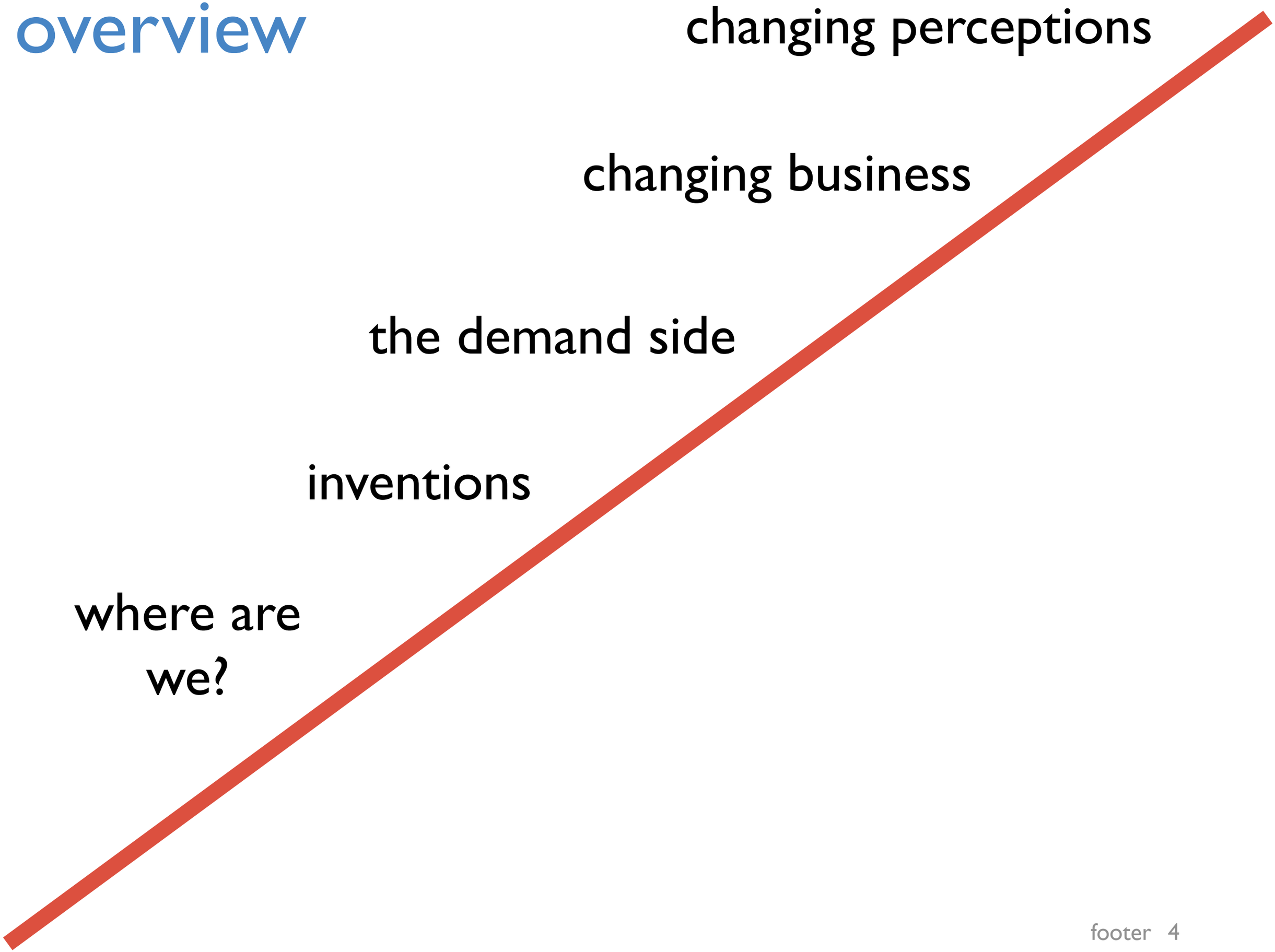
changing perceptions

changing business

the demand side

inventions

where are we?



overview

changing perceptions

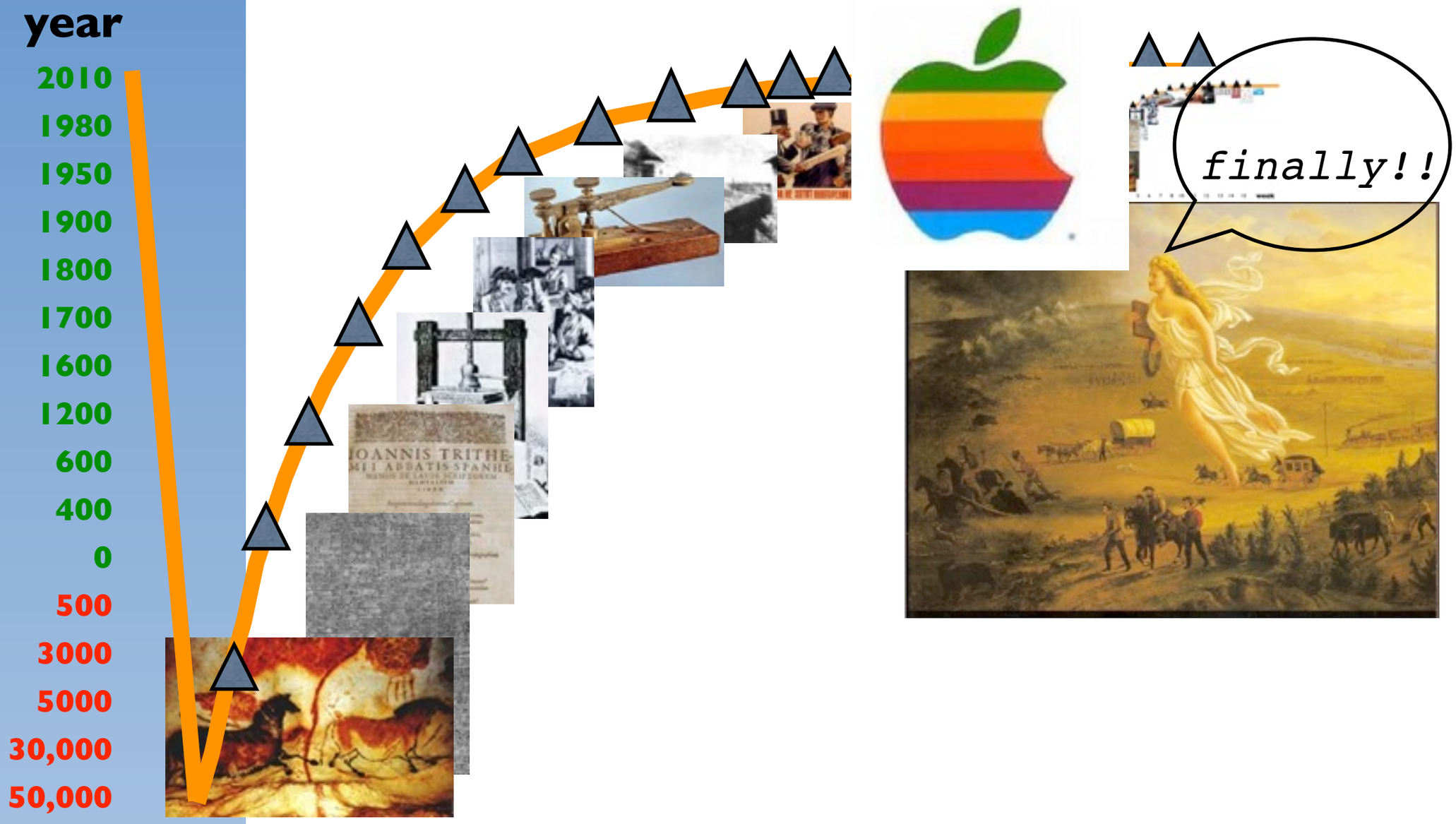
changing business

the demand side

inventions

where are we?

familiar territory?



familiar territory?

year

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50,000

week 1 2 3 4 5 6 7 8 10 11 12 13 14 15 week

not so fast?

year

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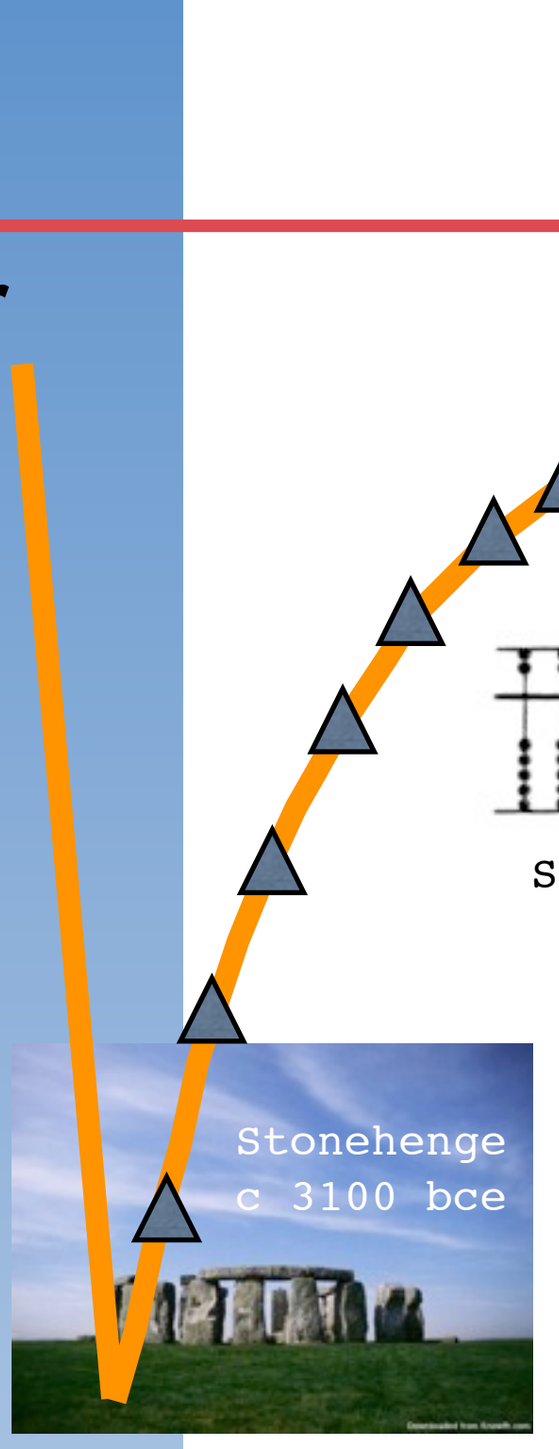
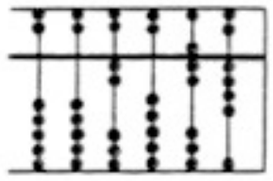
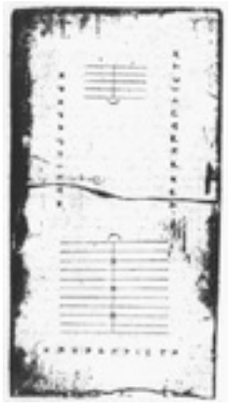




Suan Pan
c 1200

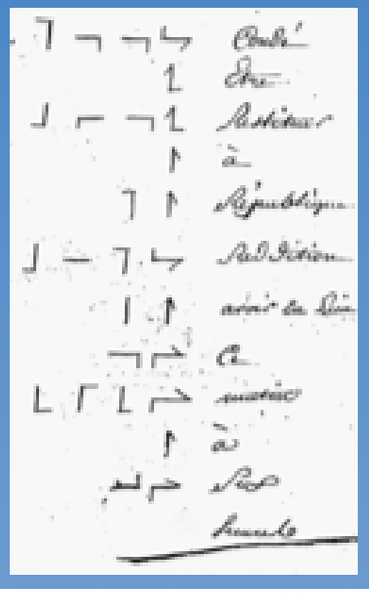
Salamis
tablet
c 300
bce

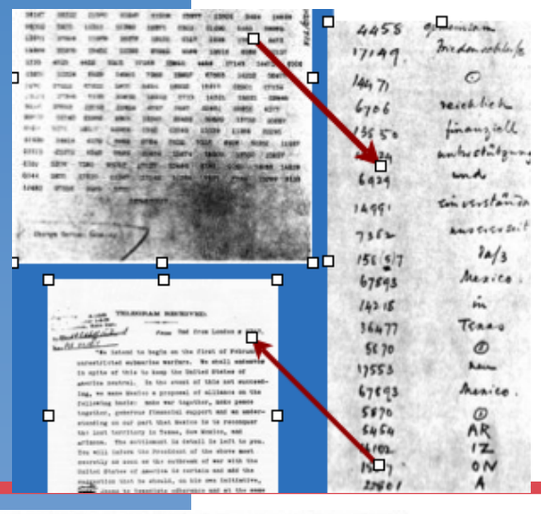


antikythera c 200 bce

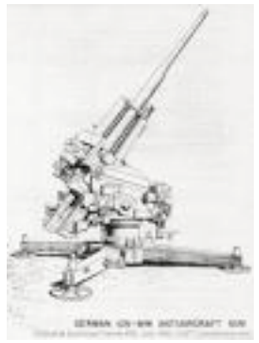
Olympic link to early 'computer'

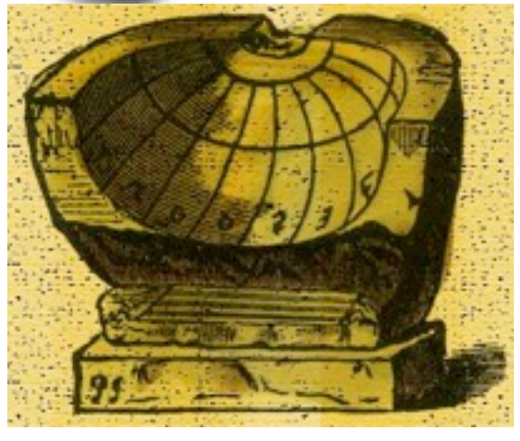
week 1 2 3 4 5 6 7 8 10 11 12 13 14 15 week

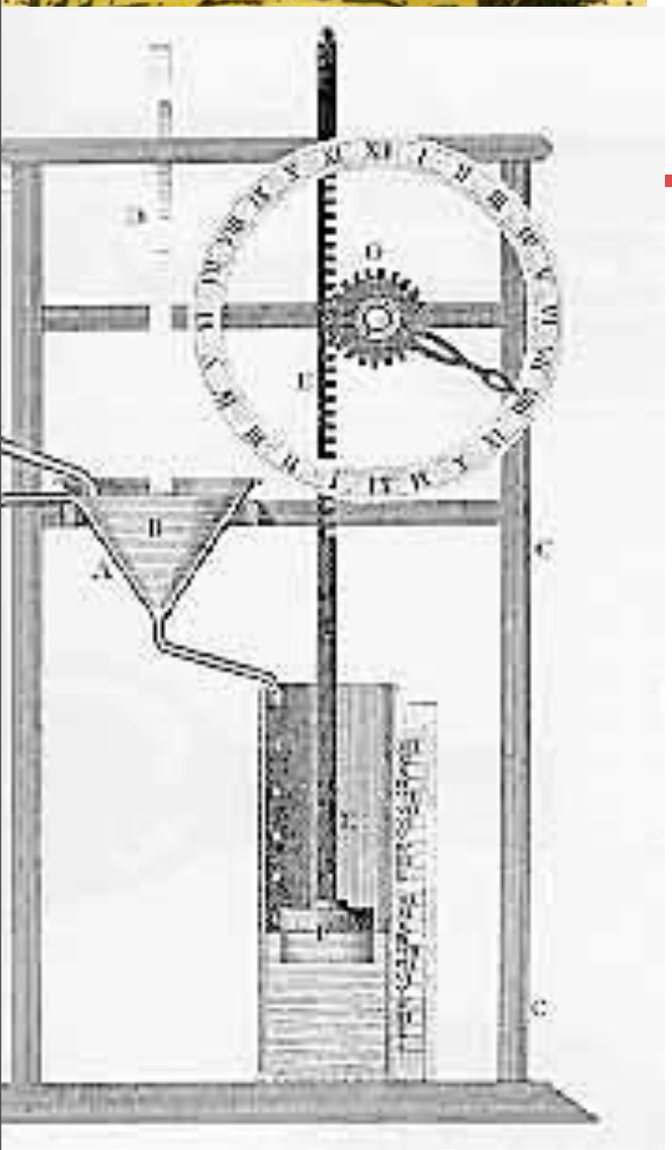




what is a computer?







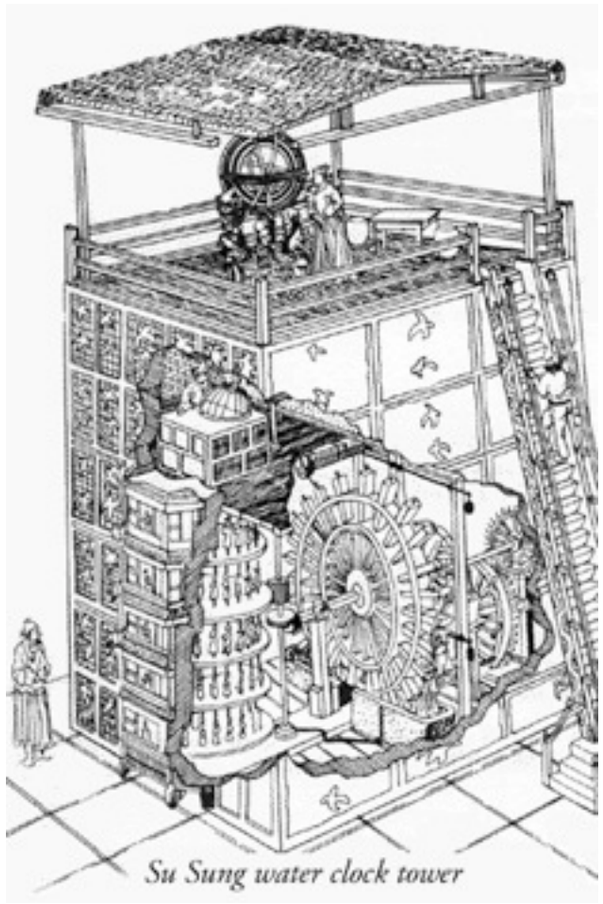
calculating?

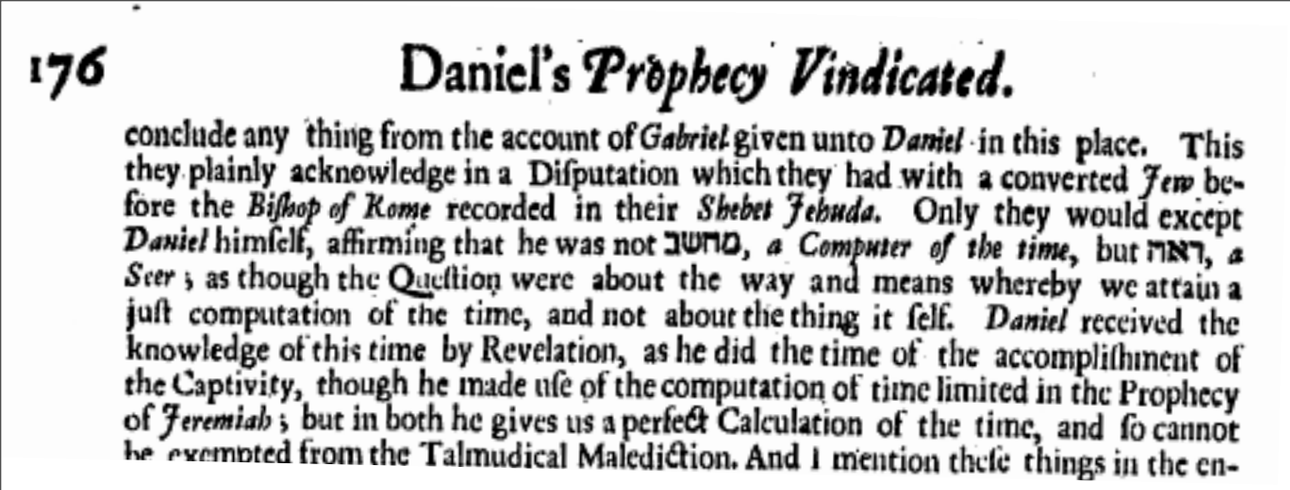
3500 bce: sundials

1400 bce: Egyptian water clocks

700 ce: hourglasses

1086: Su Sung's water tower




176 Daniel's Prophecy Vindicated.

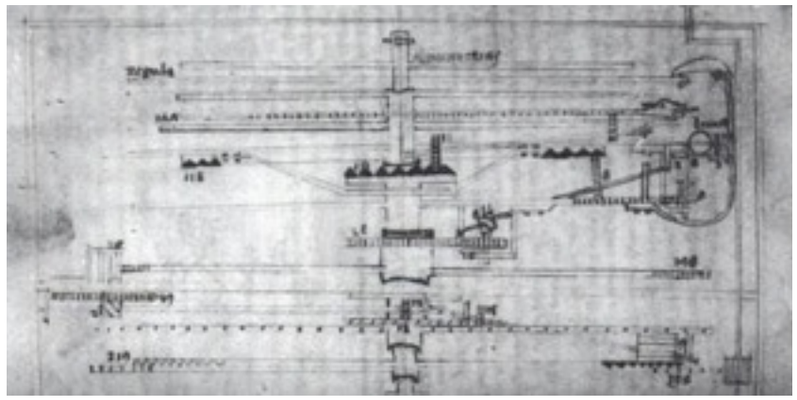
conclude any thing from the account of *Gabriel* given unto *Daniel* in this place. This they plainly acknowledge in a Diſputation which they had with a converted *Jew* before the *Biſhop of Rome* recorded in their *Shebet Jehuda*. Only they would except *Daniel* himſelf, affirming that he was not מחשב, *a Computer of the time*, but ראה, *a Seer*; as though the Queſtion were about the way and means whereby we attain a juſt computation of the time, and not about the thing it ſelf. *Daniel* received the knowledge of this time by Revelation, as he did the time of the accompliſhment of the Captivity, though he made uſe of the computation of time limited in the Prophecy of *Jeremiah*; but in both he gives us a perfect Calculation of the time, and ſo cannot be exempted from the Talmudical Malediction. And I mention theſe things in the en-

computer

"I have read the truest computer of Times" --*The Young Man's Gleanings*, 1614

In the Talmud ... they have laid down this general Rule, Male pereant qui temporum articulos suppetunt quibus venturus est Messiah. Or as they express it by a solemn Curse in the name of Rabbi Jonathan, a great man among them, **let their bones rot who compute the times of the end. ... [Daniel] was not a Computer** of the time but a Seer as though the Question were about the way and means whereby we attain a just computation of the time, and not about the thing it self. Daniel received the knowledge of this time by Revelation, as he did the time of the accomplishment of the Captivity, though he made use of the computation of time limited in the Prophecy of Jeremiah; but in both he gives us a perfect Calculation of the time, and so cannot be exempted from the Talmudical Malediction

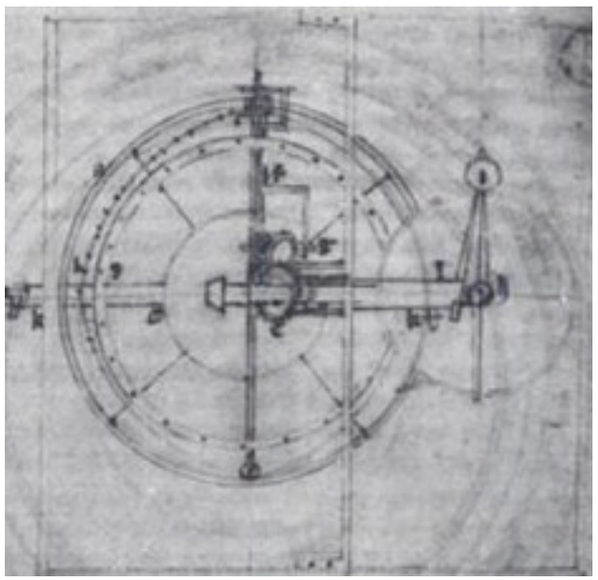
--John Owen, *Exercitations on the Epistle of the Hebrews*, 1688



automata

Richard of Wallingford
1292-1336

1300: mechanical clocks
Richard of Wallingford
celestial instruments & St Albans' clock



86 *The Antiquity* Chap. VI.

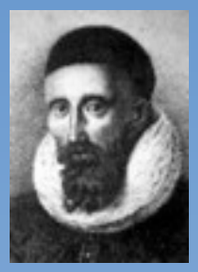
modum dentata, quæ unâ motione coacta, verſando faciunt effectus, varietateſque motionum: in quibus moventur Sigilla, vertuntur Metæ, calculi aut Tona projiciuntur,

Chap. VI. *of Clock-work.* 87

Clocks, and ſome other *Automata*, might have their beginning there; or that Clock-work (which had long been buried in oblivion) might be revived there. But

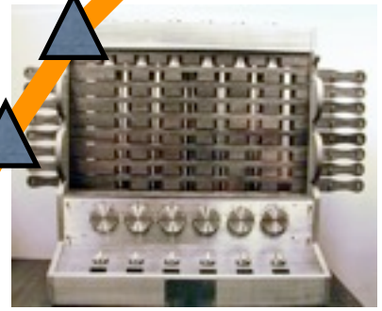
Derham, *The Artificial Clock Maker*, 1696

beyond time



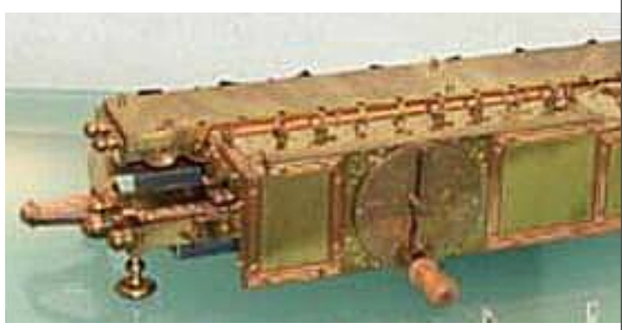
Napier 1617

Schickard
1623



Pascal 1642

Leibniz 1671



year

2010
1980
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week 1 2 3 4 5 6 7 8 10 11 12 13 14 15 week

17th century calculations

Napier's "bones"

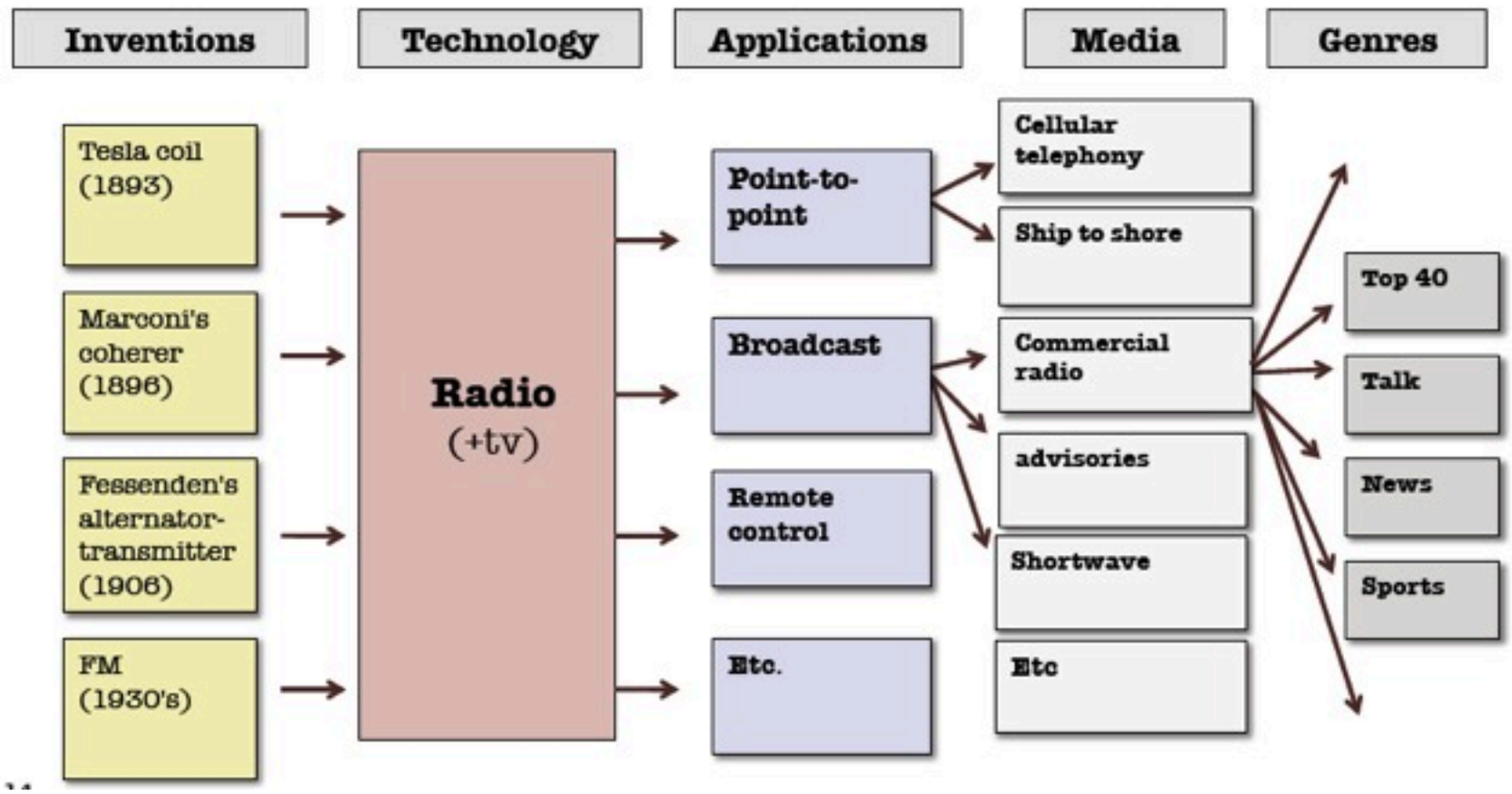
Schickard's astronomical calculator

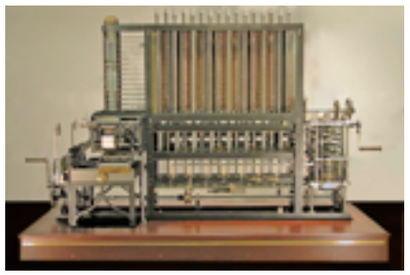
Pascal's calculator

Leibniz's binary calculator

where's the technology?

Inventions, Technologies, Applications, Media





computer technology

Inventions	Technology	Applications	Media	Genres
clock	**computer**	calculating	mainframe	logarithms
loom		recording	desktop	ballistics
vacuum tube		sorting	laptop	registration
transistor		controlling	tablet	logistics
chip		*commun-icating*	cars	bbs
disc			phones	email
			the net	social networks
			the web	
			the cloud	

getting to (and beyond) the computer

individual inventors (and investors)

business / customers

government

military / intelligence

science / education

overview

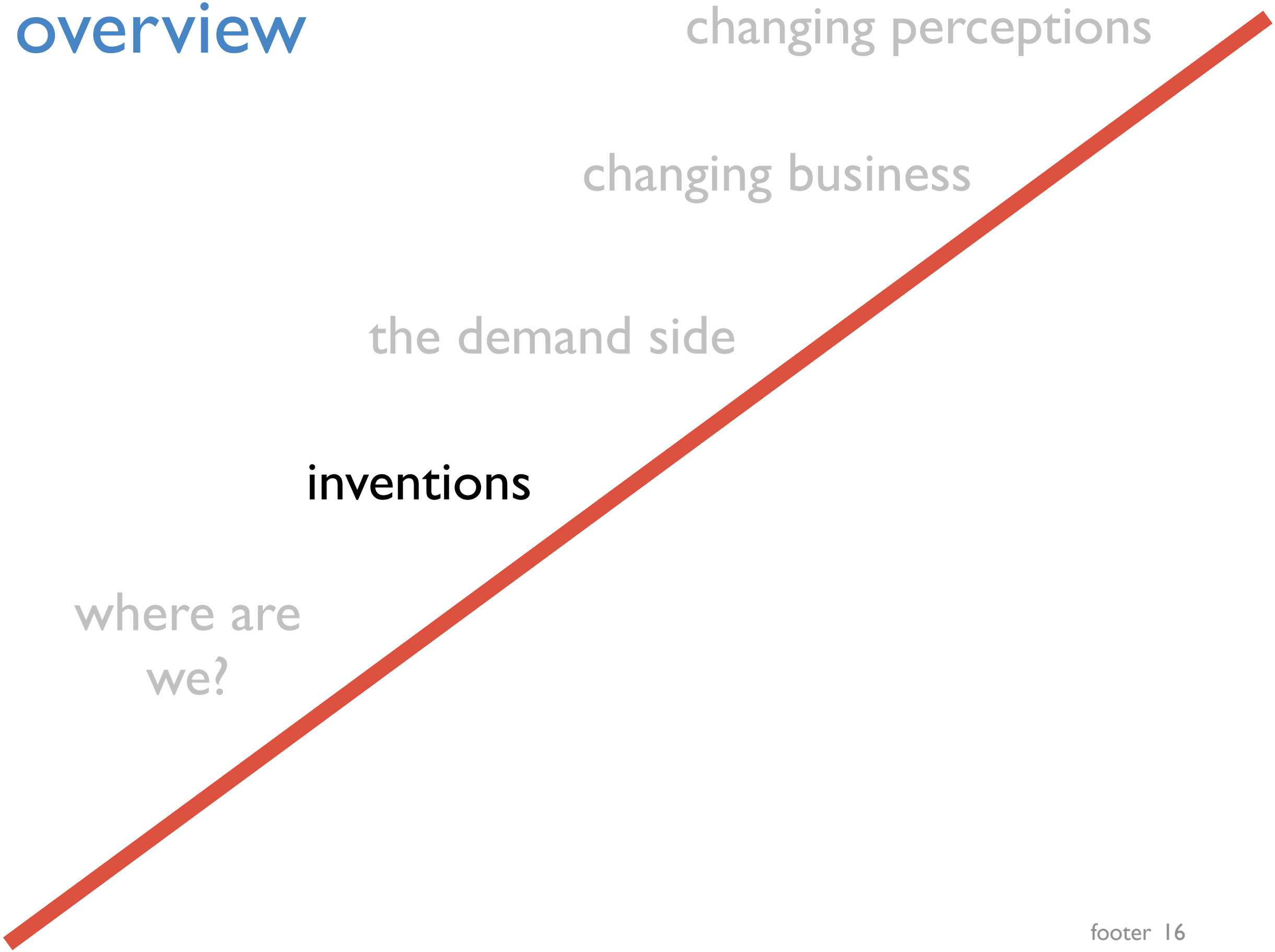
changing perceptions

changing business

the demand side

inventions

where are we?



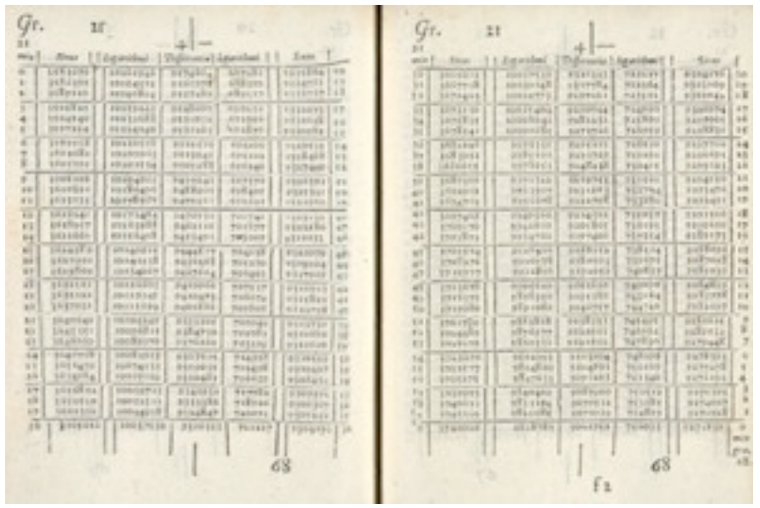
individual calculation

John Napier
1550-1617

Charles Babbage RS
1791-1871

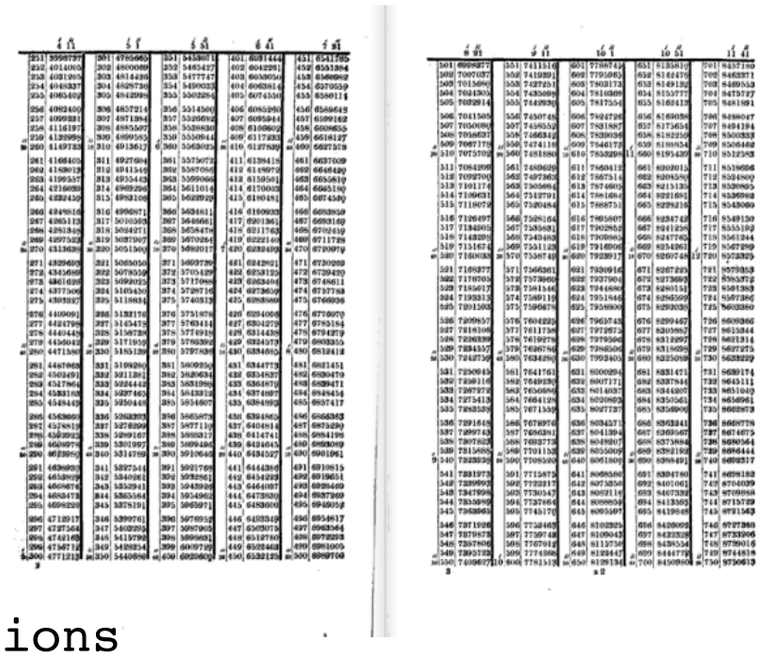
John Napier

Mirifici Logarithmorum Canonis Descriptio, 1614

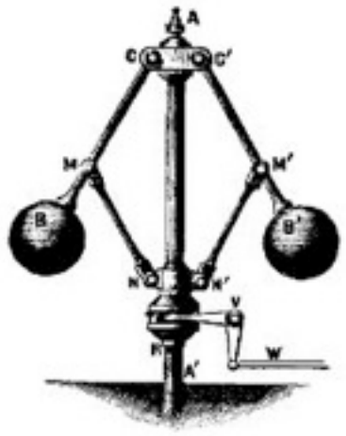


Charles Babbage

Table of Logarithms from 1 to 108000
1827

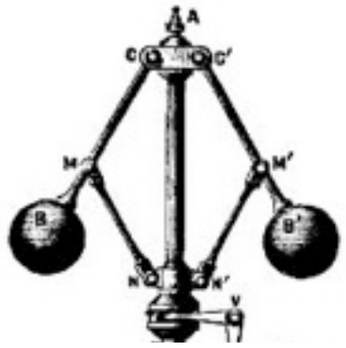


"I wish to God these calculations had been executed by steam" (1821)



on the economy of machinery and manufactures

chapters



on the economy of

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CHAPTER VIII.

REGISTERING OPERATIONS.

Pedometer. Counting Machines for Carriage. Steam-engine, § 45. Machine for measuring Calicoes, 46. Tell-tale, 47. Instrument to measure Liquor drawn from Casks, 48. To measure Liquor remaining in Casks, 49. Gas-meter, 50. Water-meter, 51. Machine for registering the Average of fluctuating Forces. Barometer Clock, 52. Alarums, Repeating Clocks and Watches, 53.

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4: Increase and diminution of velocity

5: Extending the time of action of forces

... watches & clocks ..

automatons

6: Saving time in natural operations

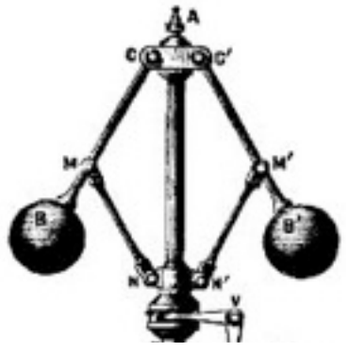
11: Of copying

12: On the method of observing manufacturies

...

19: On the division of labor

20 On the mental division of labour



on the economy of

res

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CHAPTER XIX.

ON THE DIVISION OF MENTAL LABOUR.

Great French Tables of Logarithms, § 183 to 187. On performing Arithmetical Calculations by Machinery, 189. Explanation of Mathematical Principle. Table of Square Numbers with Differences, 190. Illustration by three Clocks, 191.

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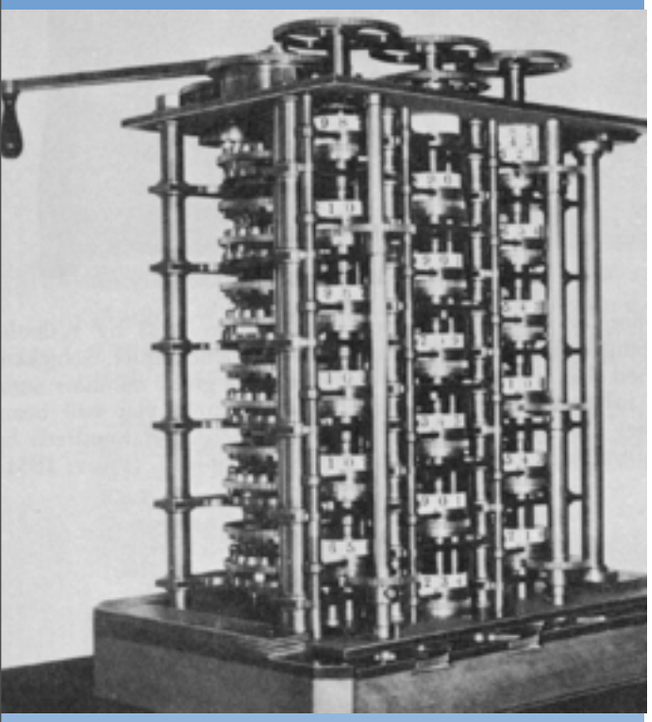
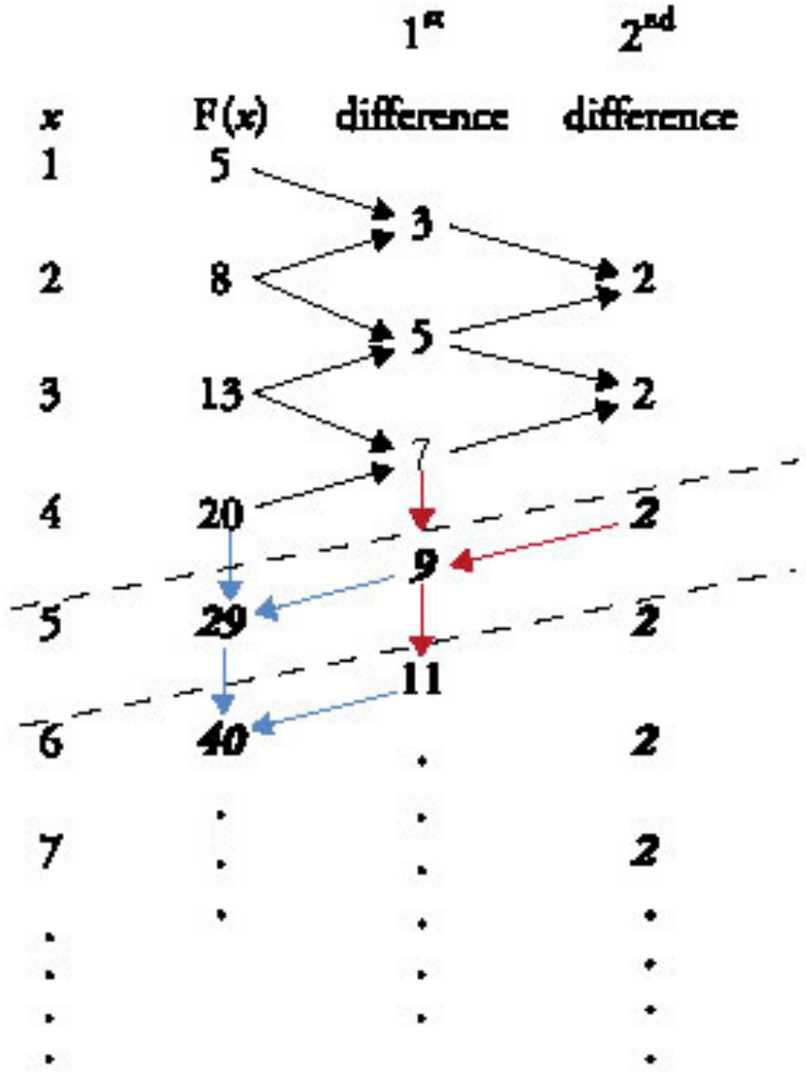
difference engine

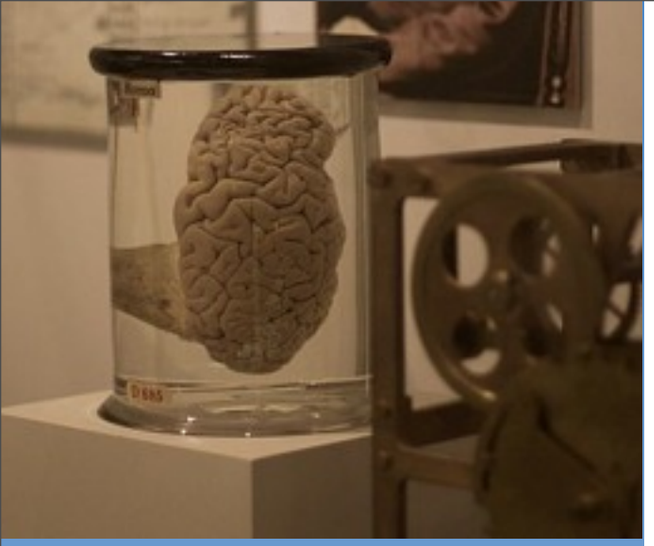


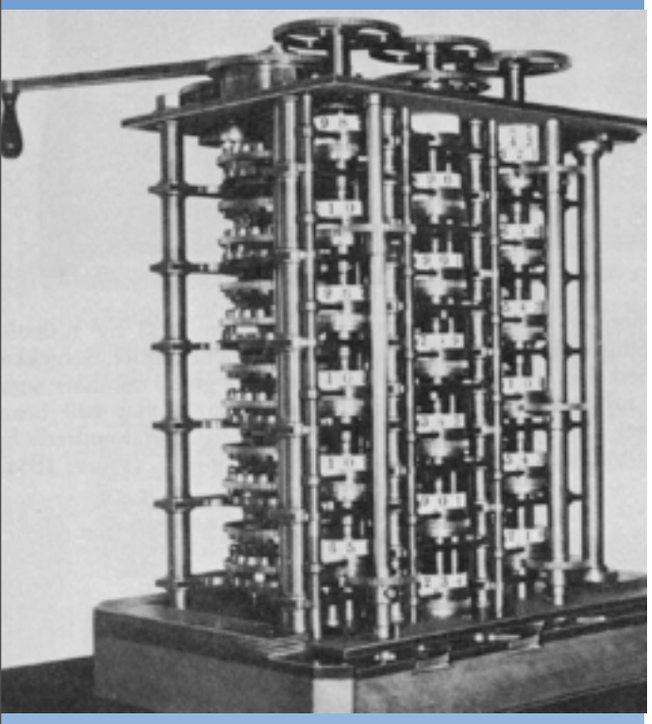
200 ON THE DIVISION OF MENTAL LABOUR.

Repetitions of Process.	Movements.	Clock A. — Hand set to I.	Clock B. — Hand set to III.	Clock C. — Hand set to II.
		TABLE.	First differences.	Second differences.
1	Pull A.	A. strikes 1	. . . . .	. . . .
	— B.	The hand is advanced (by B.) 3 divisions . .	B. strikes 3	. . . .
	— C.	. . . . .	The hand is advanced (by C.) 2 divisions . .	C. strikes 2
2	Pull A.	A. strikes 4	. . . . .	. . . .
	— B.	The hand is advanced (by B.) 5 divisions . .	B. strikes 5	. . . .
	— C.	. . . . .	The hand is advanced (by C.) 2 divisions . .	C. strikes 2
3	Pull A.	A. strikes 9	. . . . .	. . . .
	— B.	The hand is advanced (by B.) 7 divisions . .	B. strikes 7	. . . .
	— C.	. . . . .	The hand is advanced (by C.) 2 divisions . .	C. strikes 2
4	Pull A.	A. strikes 16	. . . . .	. . . .
	— B.	The hand is advanced (by B.) 9 divisions . .	B. strikes 9	. . . .
	— C.	.....	The hand is advanced (by C.) 2 divisions . .	C. strikes 2
5	Pull A.	A. strikes 25	. . . . .	. . . .
	— B.	The hand is advanced (by B.) 11 divisions .	B. strikes 11	. . . .
	— C.	. . . . .	The hand is advanced (by C.) 2 divisions . .	C. strikes 2
6	Pull A.	A. strikes 36	. . . . .	. . . .
	— B.	The hand is advanced (by B.) 13 divisions .	B. strikes 13	. . . .
	— C.	. . . . .	The hand is advanced (by C.) 2 divisions . .	C. strikes 2

$f(x) = x^2 + 4$

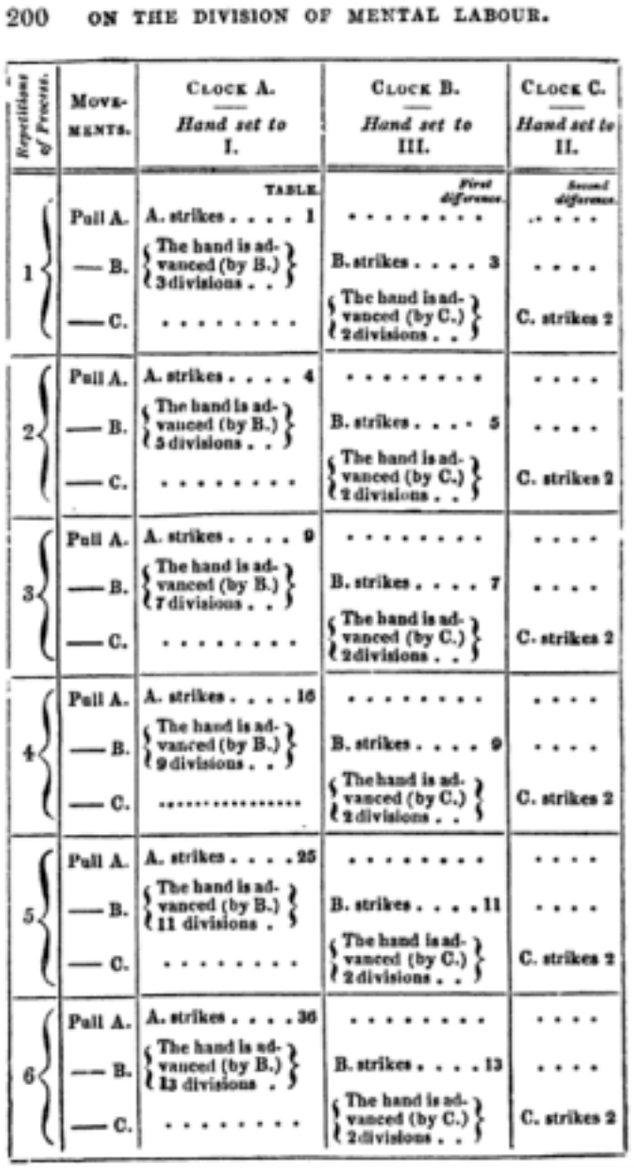






difference engine

$$f(x) = x^2 + 4$$



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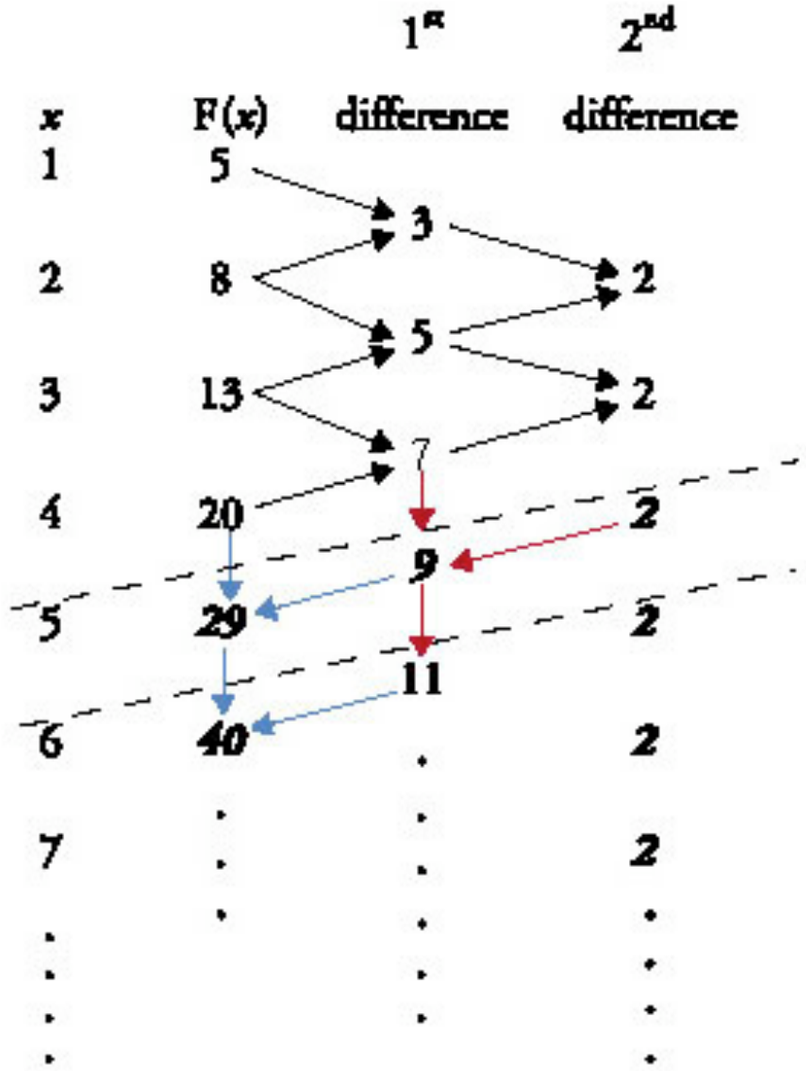
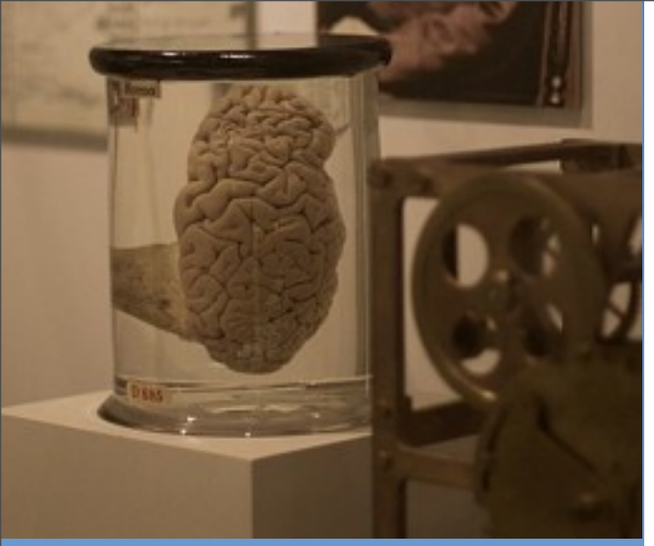
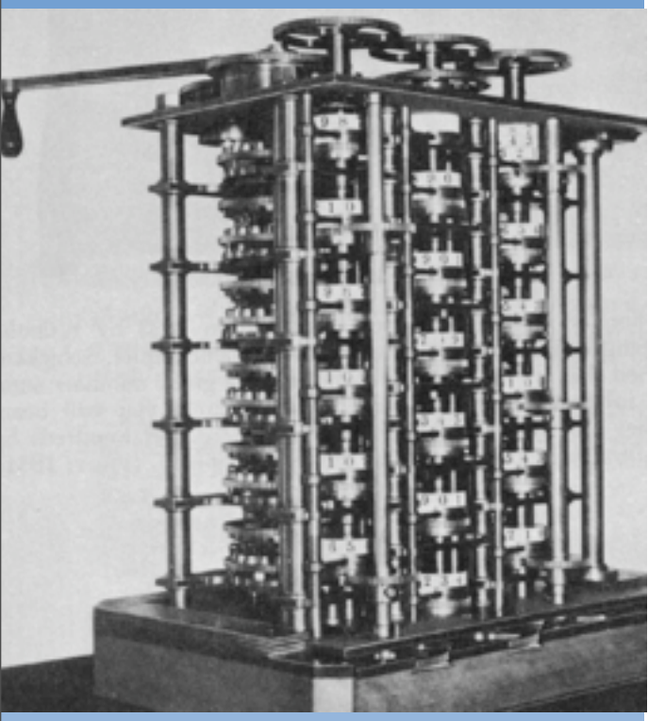




Brains: The mind as matter

29 March - 17 June 2012



difference engine

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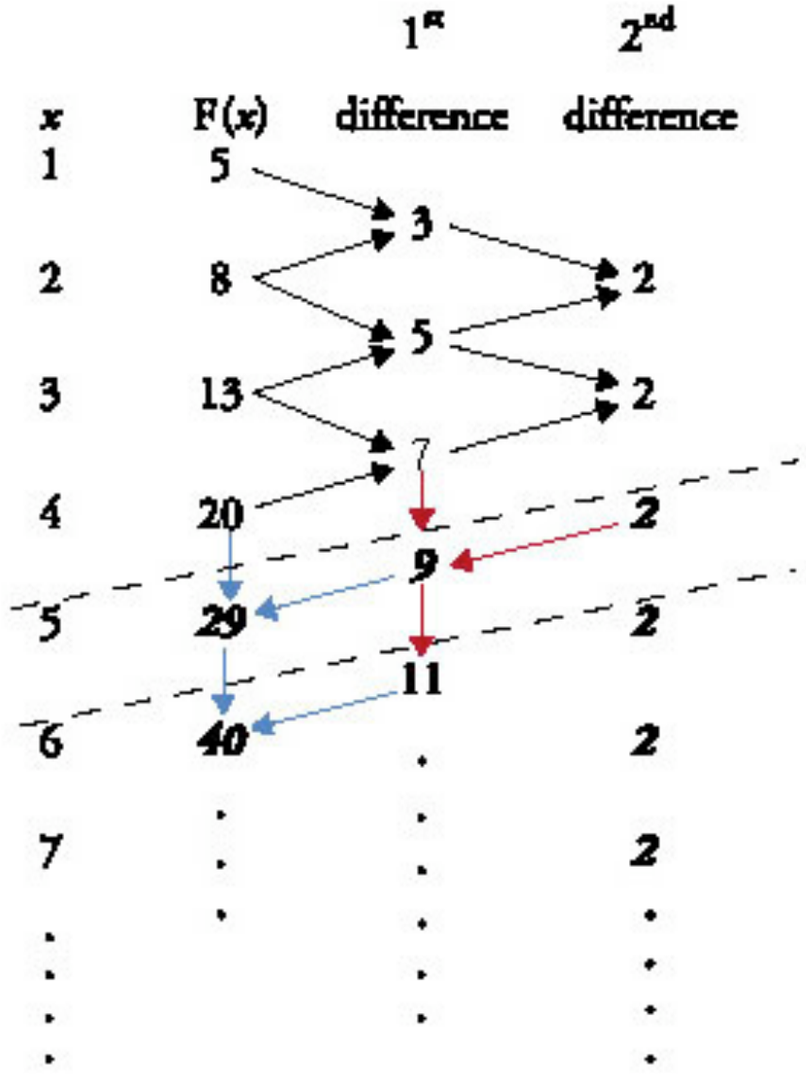
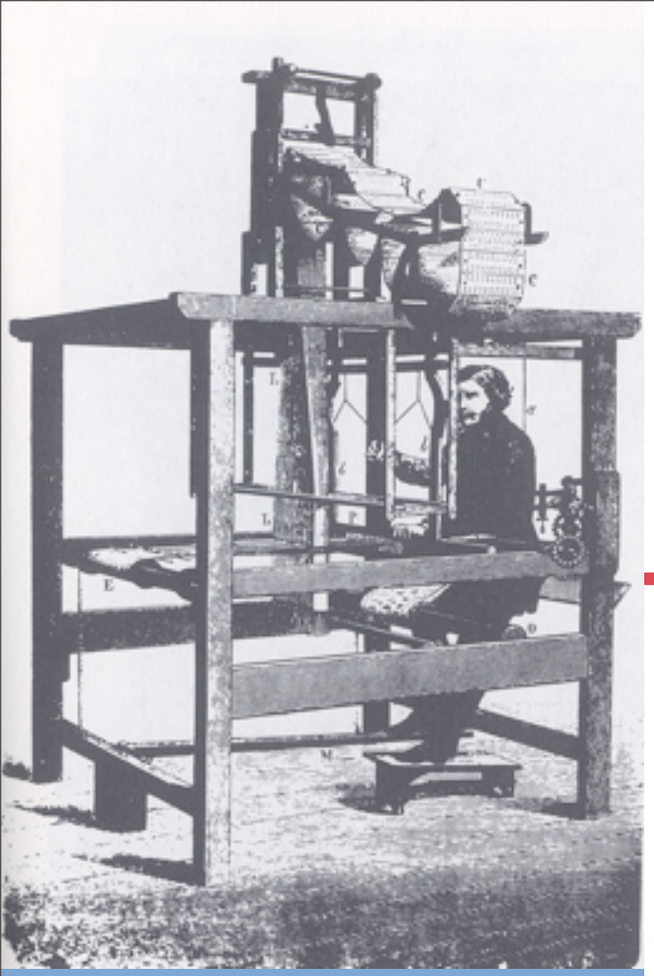
	— B.	The hand is advanced (by B.) 5 divisions . .	B. strikes 5	. . . .
	— C.	. . . . .	The hand is advanced (by C.) 2 divisions . .	C. strikes 2
3	Pull A.	A. strikes 9	. . . . .	. . . .
	— B.	The hand is advanced (by B.) 7 divisions . .	B. strikes 7	. . . .
	— C.	. . . . .	The hand is advanced (by C.) 2 divisions . .	C. strikes 2
4	Pull A.	A. strikes 16	. . . . .	. . . .
	— B.	The hand is advanced (by B.) 9 divisions . .	B. strikes 9	. . . .
	— C.	.....	The hand is advanced (by C.) 2 divisions . .	C. strikes 2
5	Pull A.	A. strikes 25	. . . . .	. . . .
	— B.	The hand is advanced (by B.) 11 divisions .	B. strikes 11	. . . .
	— C.	. . . . .	The hand is advanced (by C.) 2 divisions . .	C. strikes 2
6	Pull A.	A. strikes 36	. . . . .	. . . .
	— B.	The hand is advanced (by B.) 13 divisions .	B. strikes 13	. . . .
	— C.	. . . . .	The hand is advanced (by C.) 2 divisions . .	C. strikes 2

$f(x) = x^2 + 4$





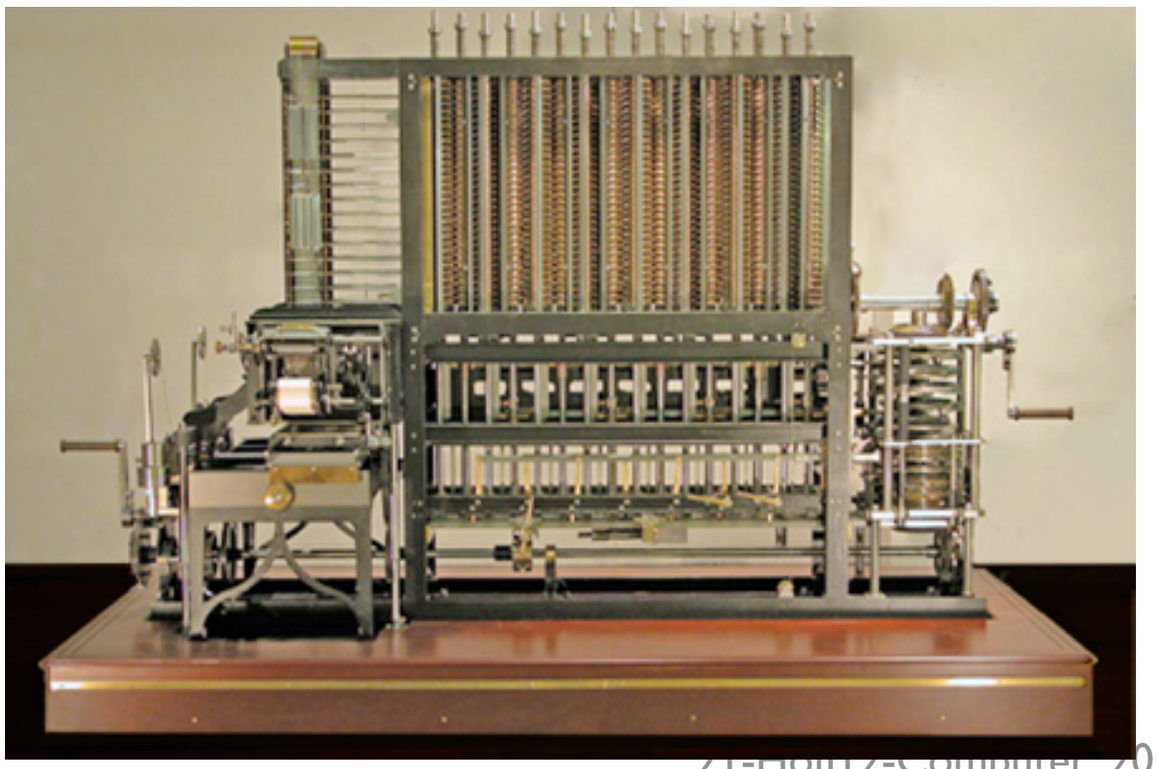
analytical engine

general purpose machine
programmable

storing

looping

branching



Ada Byron/Lovelace

Ada Lovelace
1815-1852

"a machine that not only would have foresight, but could act on that foresight"

"I want to put in something about Bernoulli's Number, in one of my notes, as an example of how an explicit function, may be worked out by the engine, without having been worked out by human head and hands first"

--Lovelace to Babbage, 1843

"Analytical Engine *weaves algebraical patterns* just as the Jacquard loom weaves flowers and leaves"

--Taylor's *Scientific Memoirs*, 1843

Ada Byron/Lovelace

Ada Lovelace
1815-1852

Science Times: April 3, 2012

Giving Women the Access Code

By KATIE HAFNER

Elaine Thompson/Associated Press

TANDEM Bill Gates and Maria Klawe at Microsoft headquarters in Redmond, Wash., in 2005.

Maria Klawe, president of Harvey Mudd College in California, has helped reverse the vexing trend toward fewer women in computer science, and others are following.

ut

mber,

icit

ut

irst"

1843

ust

1843

pretensions

[people tend to]

"first, overrate what we find to be … remarkable, and secondly, by a sort of natural reaction, to undervalue the true state of the case ... The Analytical Engine has no pretension whatever to originate anything"

--Ada Byron,

Taylor's *Scientific Memoirs*, 1843

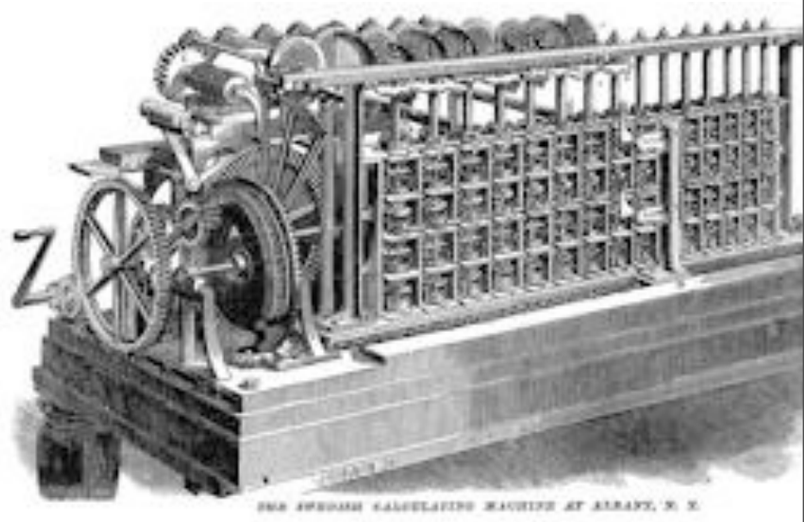
difference engines

Georg Scheutz
1785-1873

Edvard Scheutz
1822-1881

Georg & Edvard Scheutz

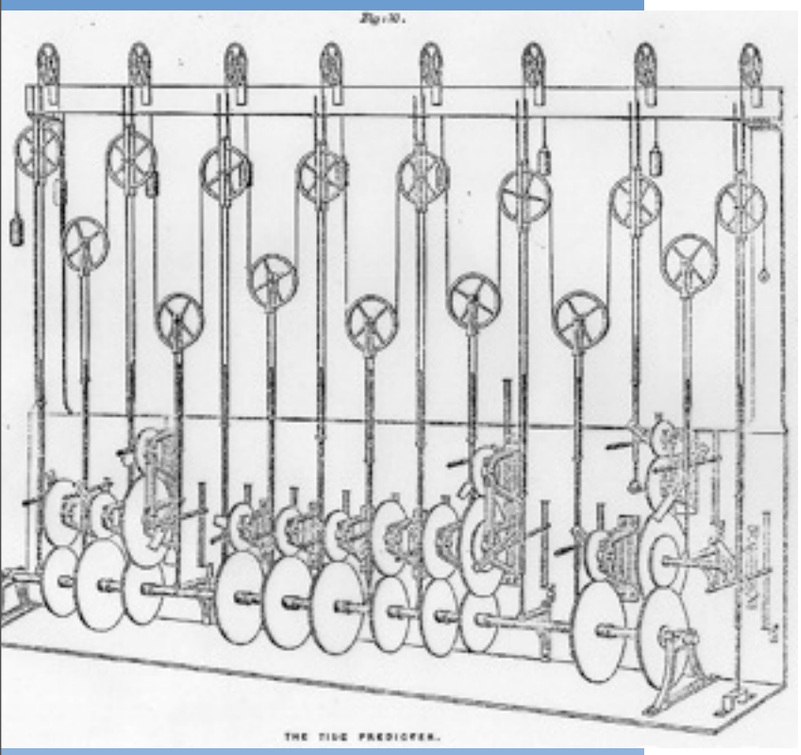
Scheutz Difference Engine, with printer c 1853



Dudley Observatory, Schenectady

British Government, actuarial calculations

analog predictors



Charles Boyle, Earl of Orrery

William Thomson, Lord Kelvin (1824-1907)

tide predictor, 1872

Lewis Fry Richardson (1881-1953)

Weather Predictions by Numerical Process, 1922 [1916]

overview

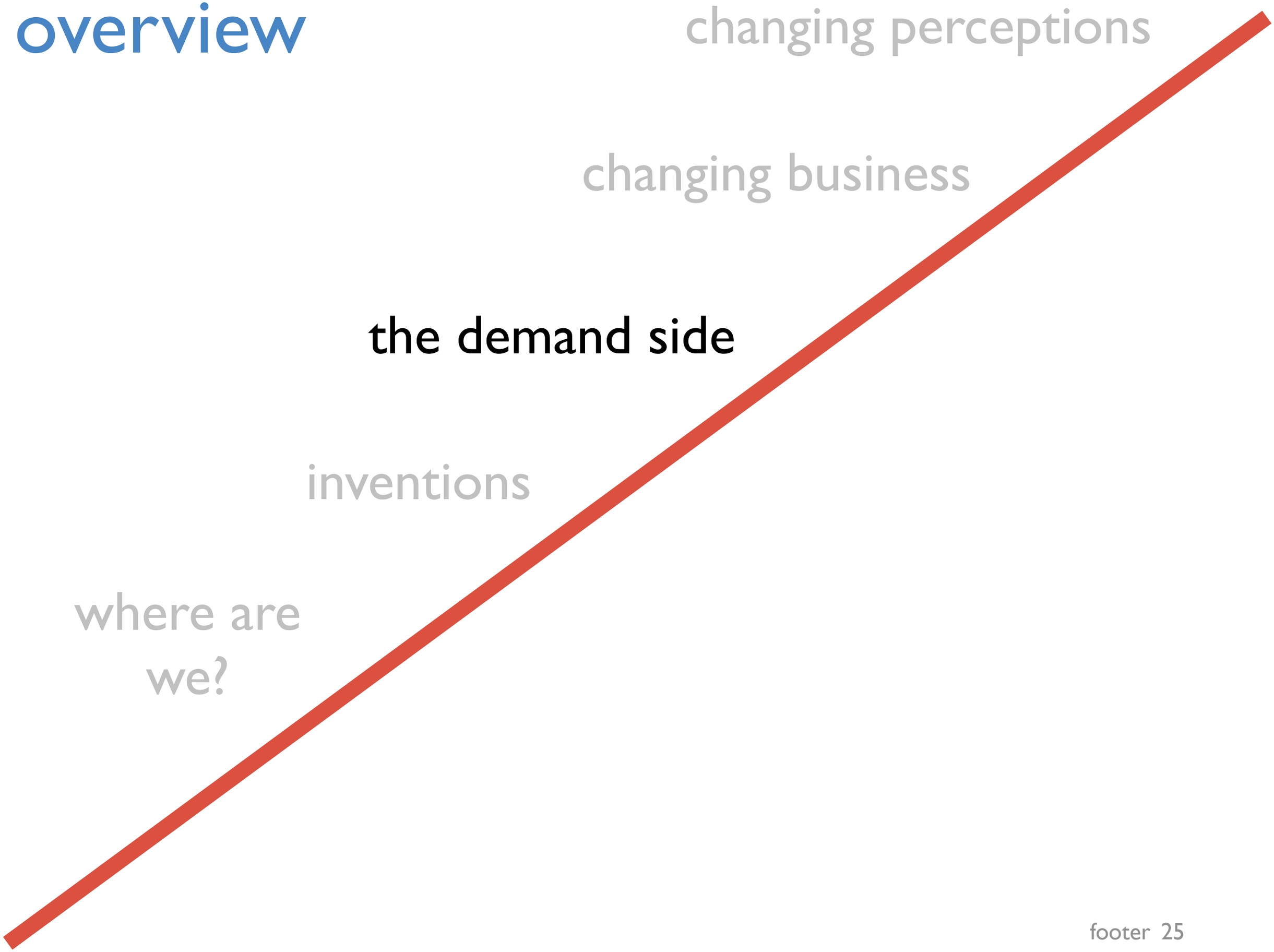
changing perceptions

changing business

the demand side

inventions

where are we?



on the demand side

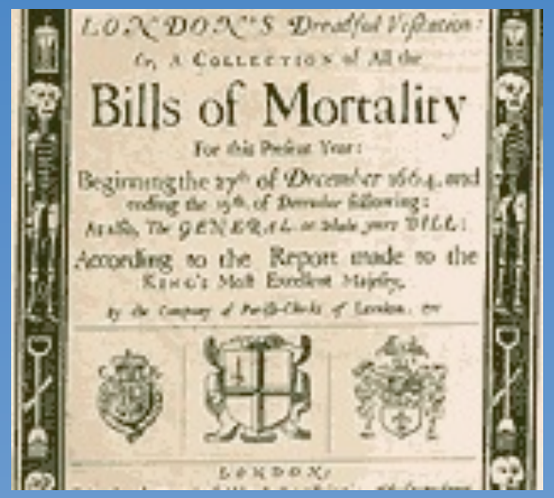
[just one]
"would suffice
the needs of the
whole world"

- Georg Scheutz

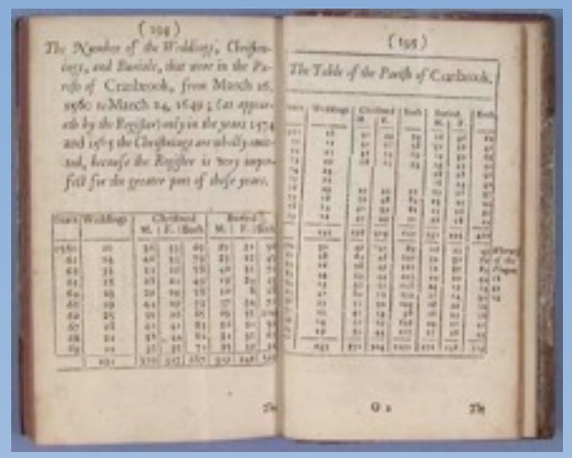
who might want these machines?

why?

what would they want?


LONDON'S Dreadful Visitation:
Or, A COLLECTION of All the
Bills of Mortality
For this Present Year:
Beginning the 29th of December 1664, and ending the 19th of December following:
Wherein, The GENERAL or Whole year's BILL:
According to the Report made to the KING's Most Excellent Majesty,
by the Company of Parish-Clerks of London, &c.
LONDON:


A generall Bill for this present year, ending the 19 of December 1665. according to the Report made to the KINGS most Excellent Majest.
By the Company of Parish Clerks of London, &c.
The Diseases and Casualties this year.
Abortive and Stillborne 617 Executed 31 Palsie 30
Aged 1545 Flox and Small Pox 655 Plague 68596
Ague and Feaver 5257 Found dead in Streets, fields, &c. 23 Planet 6
Appoplex and Suddenly 116 French Pox 86 Plurisie 19
Bedrid 12 Frighted 25 Poysoned 2
Blasted 5 Gout and Sciatica 27 Quinsie 35
Bleeding 16 Grief 46 Rickets 557
Bloody Flux, Scowring & Flux 185 Griping in the Guts 1288 Rising of the Lights 497
Burnt and Scalded 8 Hang'd & made away themselves 7 Rupture 34
Calenture 7 Headmould-shot & Mastif-fallen 14 Scurvy 17
Cancer, Gangrene and Fistula 56 Jaundice 120 Slunges and Swine pox 2
Canker, and Thrush 111 Impostume 225 Sores, Ulcers, broken and bruised 36
Childbed 625 Kill'd by severall accidents 46 Limbs 53
Chrisomes and Infants 1258 Kings Evill 86 Spleen 14
Cold and Cough 62 Leprosie 2 Spotted Feaver and Purples 1929
Collick and Winde 134 Lethargy 14 Stopping of the Stomach 348
Consumption and Tisick 4808 Livergrown 21 Stone and Strangury 58
Convulsion and Mother 1036 Meagrom and Headach 12 Surfet 235
Distracted 5 Measles 7 Teeth and Worms 2614
Dropsie and Tympany 1478 Murthered and Shot 9 Vomiting 51
Drowned 53 Overlaid & Starved 45 Worm 7
Christened: Males 5114, Females 4853, In all 9967. Buried: Males 48568, Females 48137, In all 97205. Of the Plague 68596
Increased in the Burials in the 130 Parishes and at the Pest-houses this year 79059
Increased of the Plague in the 130 Parishes and at the Pest-houses this year 68590


(154)
The Number of the Weddings, Christenings, and Burials, that were in the Parish of Cranbrook, from March 26. 1560. to March 24. 1649. (as appeareth by the Register) only in the years 1574 and 1585 the Christnings are wholly omitted, because the Register is very imperfect for the greater part of those years.
(155)
The Table of the Parish of Cranbrook.

government information

registration

bills of mortality

births & marriages

parish members

population

statistics and the state

Statistics: a word lately introduced to express a view or survey of any kingdom, country, or parish

Encyclopaedia Britannica, 1797

THE

STATISTICAL ACCOUNT

OF

SCOTLAND.

DRAWN UP FROM THE COMMUNICATIONS

OF THE

MINISTERS

OF THE

DIFFERENT PARISHES.

BY SIR JOHN SINCLAIR, BART.

VOLUME TWENTY-FIRST.

"*Ad consilium de republica dandum, caput est nosse rempublicam.*"
CICERO de Orat. lib. ii.

EDINBURGH:
PRINTED AND SOLD BY WILLIAM CREECH;
AND ALSO SOLD BY J. DONALDSON, A. GUTHRIE, W. LAING,
AND JO. FAIRBAIRN, EDINBURGH; T. CADELL, J. DEB-
RETT, AND J. SEWEL, LONDON; DUNLOP AND WIL-
SON, GLASGOW; ANGUS AND SON, ABERDEEN.

M,DCC,XCIX.


STATUTES OF CALIFORNIA.

FIRST SESSION

LEGISLATURE

WITH AN APPENDIX AND INDEX.

SAN JOSÉ.
J. WINCHESTER, STATE PRINTER.

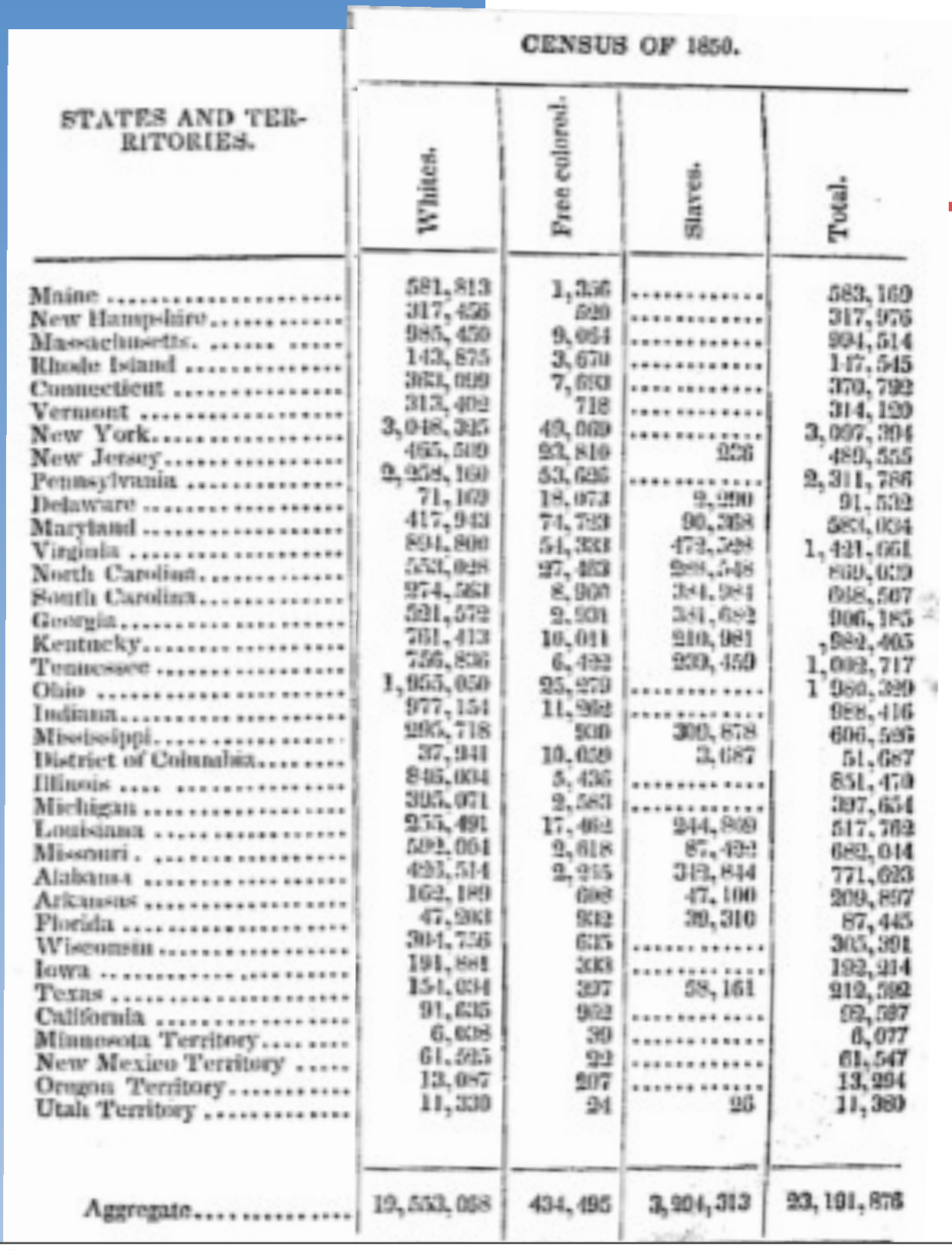
making states

An act concerning...

1. public archive
2. state printer
3. pilots for SF
4. comptroller
5. treasurer
6. sec. of state
8. translator
11. AG
14. Supreme Court
30. incorporation of cities
36. commissioner of deeds
41. notaries
49. lawful fences
48. incorporation of towns
53. weights & measures
55. limited partners
59. recorder's office
64. officers of health
67. surveyors
69. librarian
72. register of wills
89. marks & brands
90. reporter
93. conveyances
95. common law
117. incorp. of colleges
123. assayer

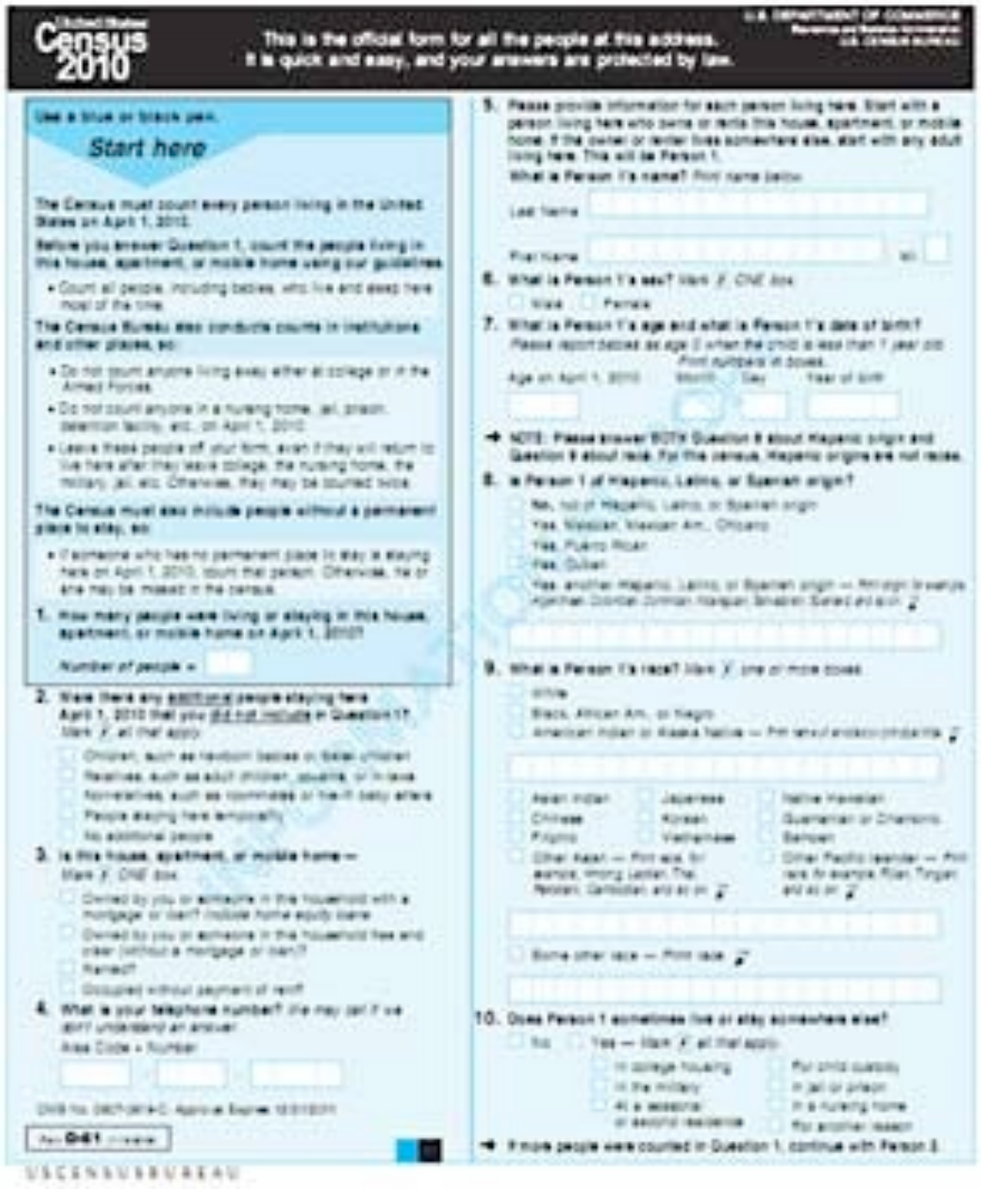
Statutes of California, 1849-50

counting



CENSUS OF 1850.

STATES AND TERRITORIES.	Whites.	Free colored.	Slaves.	Total.
Maine	581,813	1,356	.....	583,169
New Hampshire	317,456	520	.....	317,976
Massachusetts	985,450	9,064	.....	994,514
Rhode Island	143,875	3,670	.....	147,545
Connecticut	363,099	7,693	.....	370,792
Vermont	313,402	718	.....	314,120
New York	3,048,325	49,069	.....	3,097,394
New Jersey	465,509	23,810	226	489,555
Pennsylvania	2,258,160	53,626	.....	2,311,786
Delaware	71,169	18,073	2,290	91,532
Maryland	417,943	74,723	90,368	583,034
Virginia	894,800	54,333	473,528	1,421,661
North Carolina	553,028	27,463	288,548	869,039
South Carolina	274,563	8,960	384,984	668,507
Georgia	521,572	2,931	381,682	906,185
Kentucky	761,413	10,011	210,981	982,405
Tennessee	756,836	6,422	239,459	1,002,717
Ohio	1,955,050	25,279	.....	1,980,329
Indiana	977,154	11,262	.....	988,416
Mississippi	295,718	930	309,878	606,526
District of Columbia	37,941	10,059	3,687	51,687
Illinois	846,034	5,436	.....	851,470
Michigan	395,071	2,583	.....	397,654
Louisiana	255,491	17,462	244,809	517,762
Missouri	592,004	2,618	87,422	682,044
Alabama	426,514	2,265	342,844	771,623
Arkansas	162,189	608	47,100	209,897
Florida	47,203	932	39,310	87,445
Wisconsin	304,756	635	.....	305,391
Iowa	191,881	303	.....	192,214
Texas	154,034	397	58,161	212,592
California	91,635	962	.....	92,597
Minnesota Territory	6,038	39	.....	6,077
New Mexico Territory	61,525	22	.....	61,547
Oregon Territory	13,087	207	.....	13,294
Utah Territory	11,330	24	26	11,380
Aggregate	19,553,068	434,495	3,204,313	23,191,876



United States Census 2010

This is the official form for all the people at this address.
It is quick and easy, and your answers are protected by law.

U.S. DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. CENSUS BUREAU

Use a blue or black pen.

Start here

The Census must count every person living in the United States on April 1, 2010.

Before you answer Question 1, count the people living in this house, apartment, or mobile home using our guidelines.

- Count all people, including babies, who live and sleep here most of the time.

The Census Bureau also conducts counts in institutions and other places, so:

- Do not count anyone living away either at college or in the Armed Forces.
- Do not count anyone in a nursing home, jail, prison, detention facility, etc., on April 1, 2010.
- Leave these people off your form, even if they will return to live here after they leave college, the nursing home, the military, jail, etc. Otherwise, they may be counted twice.

The Census must also include people without a permanent place to stay, so:

- If someone who has no permanent place to stay is staying here on April 1, 2010, count that person. Otherwise, he or she may be missed in the census.

1. How many people were living or staying in this house, apartment, or mobile home on April 1, 2010?

   Number of people =

2. Was there any additional person staying here April 1, 2010 that you did not include in Question 1?
   Mark X all that apply.
   - Children, such as newborn babies or foster children
   - Relatives, such as adult children, cousins, or in-laws
   - Nonrelatives, such as roommates or live-in baby sitter
   - People staying here temporarily
   - No additional people

3. Is this house, apartment, or mobile home —
   Mark X ONE box.
   - Owned by you or someone in this household with a mortgage or loan? Include home equity loans.
   - Owned by you or someone in this household free and clear (without a mortgage or loan)?
   - Rented?
   - Occupied without payment of rent?

4. What is your telephone number? We may call if we don't understand an answer.
   Area Code + Number

OMB No. 0607-0919-C Approval Expires 12/31/2011

Form D-61 (1-page)

5. Please provide information for each person living here. Start with a person living here who owns or rents this house, apartment, or mobile home. If the owner or renter lives somewhere else, start with any adult living here. This will be Person 1.
   What is Person 1's name? Print name below.
   Last Name
   First Name MI

6. What is Person 1's sex? Mark X ONE box.
   - Male
   - Female

7. What is Person 1's age and what is Person 1's date of birth?
   Please report babies as age 0 when the child is less than 1 year old.
   Print numbers in boxes.
   Age on April 1, 2010 — Month — Day — Year of birth

→ NOTE: Please answer BOTH Question 8 about Hispanic origin and Question 9 about race. For the census, Hispanic origins are not races.

8. Is Person 1 of Hispanic, Latino, or Spanish origin?
   - No, not of Hispanic, Latino, or Spanish origin
   - Yes, Mexican, Mexican Am., Chicano
   - Yes, Puerto Rican
   - Yes, Cuban
   - Yes, another Hispanic, Latino, or Spanish origin — Print origin, for example, Argentinian, Colombian, Dominican, Nicaraguan, Salvadoran, Spaniard, and so on.

9. What is Person 1's race? Mark X one or more boxes.
   - White
   - Black, African Am., or Negro
   - American Indian or Alaska Native — Print name of enrolled or principal tribe.
   - Asian Indian
   - Japanese
   - Native Hawaiian
   - Chinese
   - Korean
   - Guamanian or Chamorro
   - Filipino
   - Vietnamese
   - Samoan
   - Other Asian — Print race, for example, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on.
   - Other Pacific Islander — Print race, for example, Fijian, Tongan, and so on.
   - Some other race — Print race.

10. Does Person 1 sometimes live or stay somewhere else?
    - No
    - Yes — Mark X all that apply.
      - In college housing
      - In the military
      - At a seasonal or second residence
      - For child custody
      - In jail or prison
      - In a nursing home
      - For another reason

→ If more people were counted in Question 1, continue with Person 2.

U.S. CENSUS BUREAU

counting

CENSUS OF 1850.

STATES AND TERRITORIES.	Whites.	Free colored.	Slaves.	Total.
Maine	581,813	1,3		
New Hampshire	317,456	5		
Massachusetts	985,450	9,0		
Rhode Island	143,875	3,6		
Connecticut	363,099	7,6		
Vermont	313,402	7		
New York	3,048,325	49,0		
New Jersey	465,509	23,8		
Pennsylvania	2,258,160	53,6		
Delaware	71,169	18,0		
Maryland	417,943	74,7		
Virginia	894,800	54,3		
North Carolina	553,028	27,4		
South Carolina	274,563	8,9		
Georgia	521,572	2,9		
Kentucky	761,413	10,0		
Tennessee	756,836	6,4		
Ohio	1,955,050	25,2		
Indiana	977,154	11,3		
Mississippi	295,718	5		
District of Columbia	37,941	10,0		
Illinois	846,054	5,4		
Michigan	395,071	2,5		
Louisiana	255,491	17,4		
Missouri	592,004	2,6		
Alabama	426,514	2,2		
Arkansas	162,189	6		
Florida	47,203	9		
Wisconsin	304,756	6		
Iowa	191,881	3		
Texas	154,034	2		
California	91,635	9		
Minnesota Territory	6,038			
New Mexico Territory	61,525			
Oregon Territory	13,087	2		
Utah Territory	11,330			
Aggregate	19,553,068	434,4		

The CHRISTIAN SCIENCE MONITOR

About these ad

1940 Census data: what you need to know to look up relatives

Monday's release of 1940 Census data sets off frenzy to dig into records on family past, crashing the website. When it comes back online, you'll need to know a few basics.

By Ron Scherer, *Staff writer* / April 2, 2012

This undated image provided by the National Archives and Records Administration shows a form used in the 1940 Census. On Monday, the US Census Bureau released a trove of personal information it had gleaned from its 1940 Census.

National Archives and Records Administration/AP

Enlarge

New Estimate Raises Civil War Death Toll

Library of Congress/Getty Images

A lithograph of the Battle of Gettysburg.

By GUY GUGLIOTTA
Published: April 2, 2012

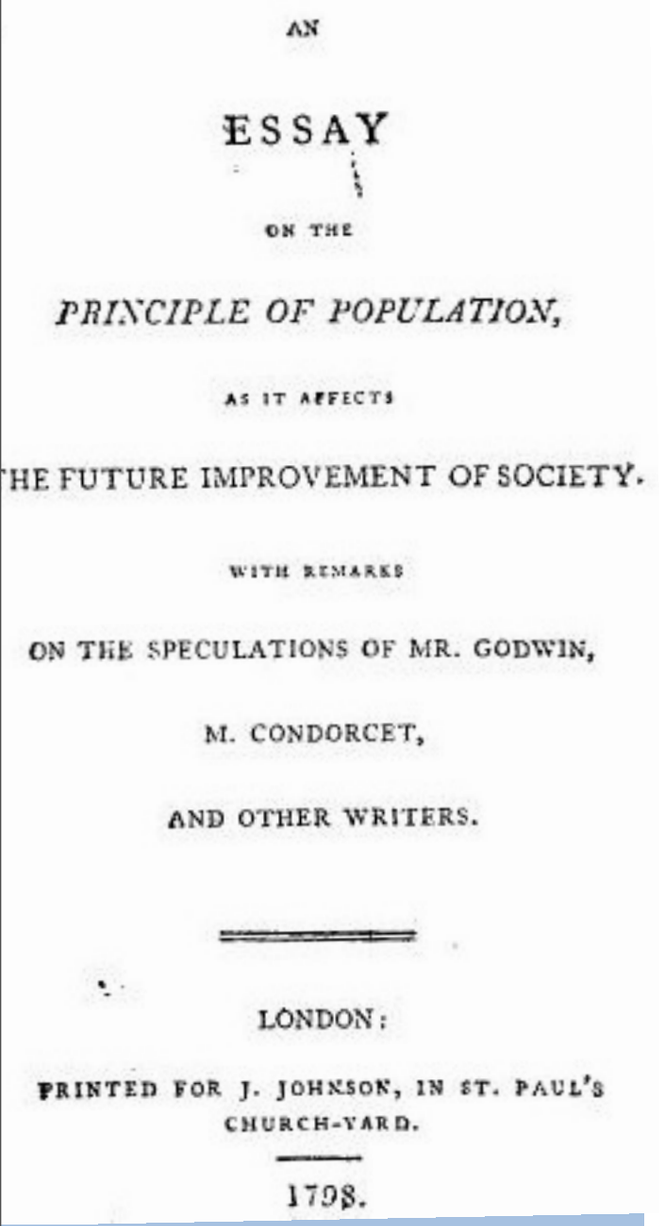
For 110 years, the numbers stood as gospel: 618,222 men died in the Civil War, 360,222 from the North and 258,000 from the South — by far the greatest toll of any war in American history.

But new research shows that the numbers were far too low.

By combing through newly digitized census data from the 19th century, J. David Hacker, a demographic historian from Binghamton University in New York, has recalculated the death toll and

Multimedia

decline to abundance



AN

ESSAY

ON THE

PRINCIPLE OF POPULATION,

AS IT AFFECTS

THE FUTURE IMPROVEMENT OF SOCIETY.

WITH REMARKS

ON THE SPECULATIONS OF MR. GODWIN,

M. CONDORCET,

AND OTHER WRITERS.

LONDON:

PRINTED FOR J. JOHNSON, IN ST. PAUL'S CHURCH-YARD.

1798.

"In Britain, however, the first census was taken, not out of a constitutional requirement, but as a way of resolving the Malthusian population controversy ... The 1800 Census Act was designed principally to determine whether or not the population was actually increasing."

-- Martin Campbell-Kelly,
"Change in the British Census," 1996

"And it came to pass in those days, that there went out a decree from Caesar Augustus that all the world should be taxed. ... And Joseph also went up from Galilee, out of the City of Nazareth, into Judaea, unto the City of David, which is called Bethlehem; (because he was of the house of David:) to be taxed with his espoused wife, being great with child."

government records

taxpayers

military eligible

aliens

racial groups

the poor

professions

midwives

prostitutes

cars

'National Insurance'

social security

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Half of Irish Homeowners Join Boycott of New Property Tax

By DOUGLAS DALBY
Published: April 2, 2012

DUBLIN — Anti-austerity protesters are claiming victory after the government acknowledged that around 50 percent of Ireland's estimated 1.6 million homeowners failed to pay a new, flat-rate $133 property tax by the March 31 deadline.

"It is quite clear a mass boycott has really sent this government a significant message it didn't want to hear," Luke Flanagan, one of the parliamentary deputies leading the opposition to the new household charge, said in an interview on Monday. "When we started this campaign, even 25 percent support translating to several hundred thousand would have been phenomenal, but we estimate over a million people eligible to pay this tax have refused."

Related

Growing Antitax Movement Shows Irish Stoicism Wearing Thin (March 20, 2012)

Times Topic: Ireland

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Related

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Times Topic: Ireland

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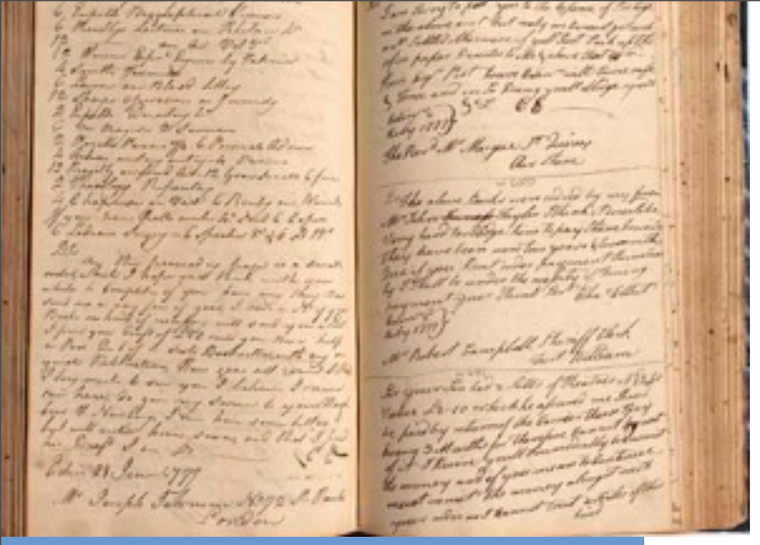
business interests

sorting operation: the clearing house

"In a large room in Lombard-street, about thirty clerks from the several London bankers take their stations ... at desks placed around the room. ... From time to time other clerks from every house enter the room, and passing along, drop into the box the checks due by that firm to the house from which this distributor is sent. ... The whole of these payments are made by a double system of balance, a very small amount of bank notes passing from hand to hand. --Babbage, *On the Economy*, 1835

"[1839] £954 million was cleared--$250 billion in today's money."

--Campbell-Kelly & Aspray



information technology

carbon paper
Wedgewood, 1806

typewriter
Remington, 1874

calculator
Burroughs, 1892

cash register
mechanical register, 1884

"No simple economic explanation
... America was gadget happy"

--Campbell-Kelly and Aspray, *Computer*, 1996

information workers / computers

clerks (UK)
1871: 262,100
1891: 534,622
1911: 918,186

female clerks
1891: 17,859
1911: 117,057

1921, women 46% of all clerks

typewriter girls
1931, 212,296 female typists
5,155 male typists

information workers / computers

clerks (UK)
1871: 262,100
1891: 534,622
1911: 918,186

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1911: 117,057

1921, women 46% of all clerks

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1931, 212,296 female typists
5,155 male typists

"In his office in San Francisco, seated before a massive desk of polished redwood, very ornate, Lyman Derrick sat dictating letters to his typewriter."

Frank Norris, *The Octopus*, 1902

"[An] Enumeration shall be made within three Years after the first Meeting of the Congress of the United States, and within every subsequent Term of ten Years, in such Manner as they shall by Law direct."

back to government

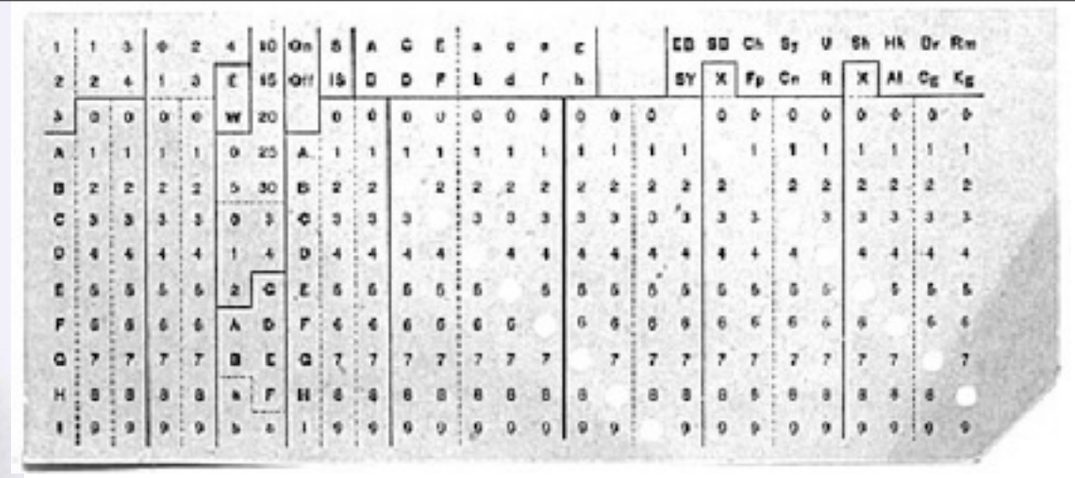
Year	Population	Gain		Clerks
1900	76,212,168	13,232,402	21.0	
1890	62,979,766	12,790,557	25.5	
1880	50,189,209	11,630,838	30.2	2000
1870	38,558,371	7,115,050	22.6	1495
1860	31,443,321	8,251,445	35.6	483
1850	23,191,876	6,128,523	35.9	
1840	17,063,353	4,202,651	32.7	28
1830	12,860,702	3,222,249	33.4	
1820	9,638,453	2,298,572	33.1	
1810	7,239,881	1,931,398	36.4	
1800	5,308,483	1,379,269	35.1	
1790	3,929,214	-	-	

Spain: 1787

US: 1790

UK: 1801

Herman Hollerith
1860-1929



tabulating

Hollerith

Electronic Tabulating Machine

1890 Census

"This apparatus works unerringly as the mills of the gods, but beats them hollow as to speed."

—*The Electrical Engineer*, 11 Nov 1891.

the punch card

government to business

Hollerith

Tabulating Machine Company

CTR:
Computing-Tabulating-Recording Company

Thomas Watson

NCR to CTR to ...

government to business

Hollerith

Tabulating Machine Company

IBM Turns 100: A Look Back

By Chloe Albanesius | June 16, 2011 08:30am EST | 14 Comments | Email | Print

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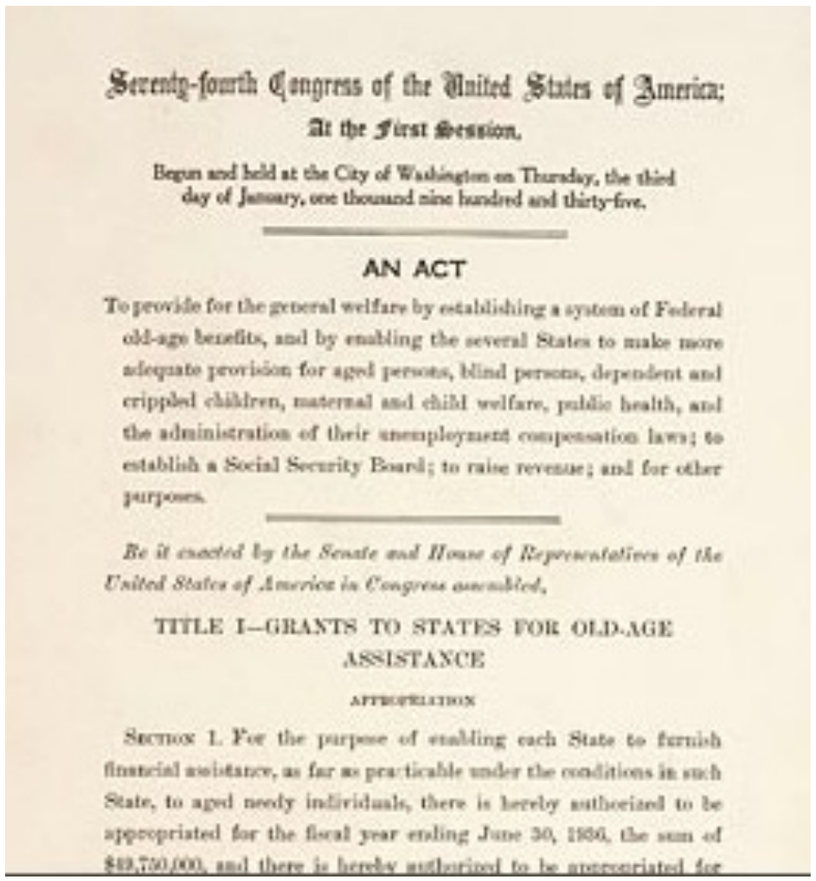
Apple and Microsoft have been in business for more than three decades, Google has been around for 12 years, and Twitter's just getting started with five years under its belt. But all of these tech giants have a long way to go to reach the 100-year milestone that Big Blue is celebrating today.

On this day in 1911, IBM started as the Computing-Tabulating-Recording Company (C-T-R), a name it changed in 1924. While some

the new deal

Social Security Act, 1935

"the world's largest bookkeeping job"



Seventy-fourth Congress of the United States of America;

At the First Session,

Begun and held at the City of Washington on Thursday, the third day of January, one thousand nine hundred and thirty-five.

AN ACT

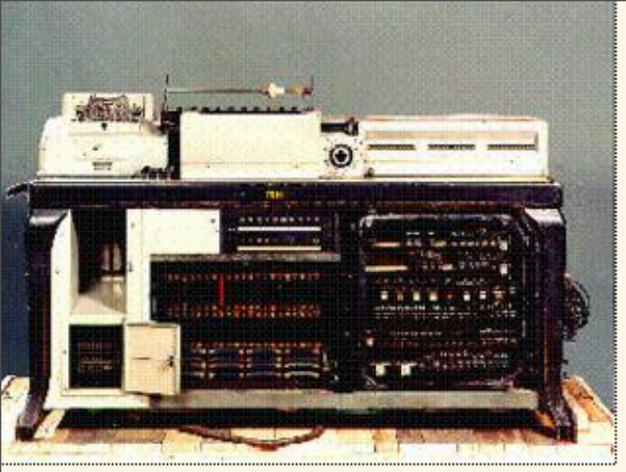
To provide for the general welfare by establishing a system of Federal old-age benefits, and by enabling the several States to make more adequate provision for aged persons, blind persons, dependent and crippled children, maternal and child welfare, public health, and the administration of their unemployment compensation laws; to establish a Social Security Board; to raise revenue; and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE I—GRANTS TO STATES FOR OLD-AGE ASSISTANCE

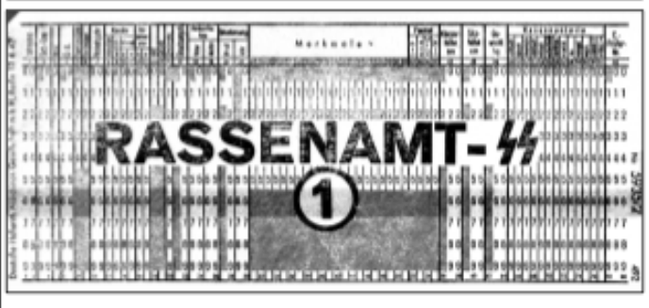
APPROPRIATION

SECTION 1. For the purpose of enabling each State to furnish financial assistance, as far as practicable under the conditions in such State, to aged needy individuals, there is hereby authorized to be appropriated for the fiscal year ending June 30, 1936, the sum of $49,750,000, and there is hereby authorized to be appropriated for



Hollerith-Maschine Dehomag D11, die 1933 in Deutschland

controlling numbers



controlling people

"the Nazi census"
--Aly & Roth, 2004

IBM D11

Census, 1933, 1939

Labor Book, 1935

Health Pedigree book, 1936

Registry of the Populace, 1939

Blood (high, average, acceptable, inferior), 1940

Personal Identification Number, 1944

still registering

INDIA'S WAY

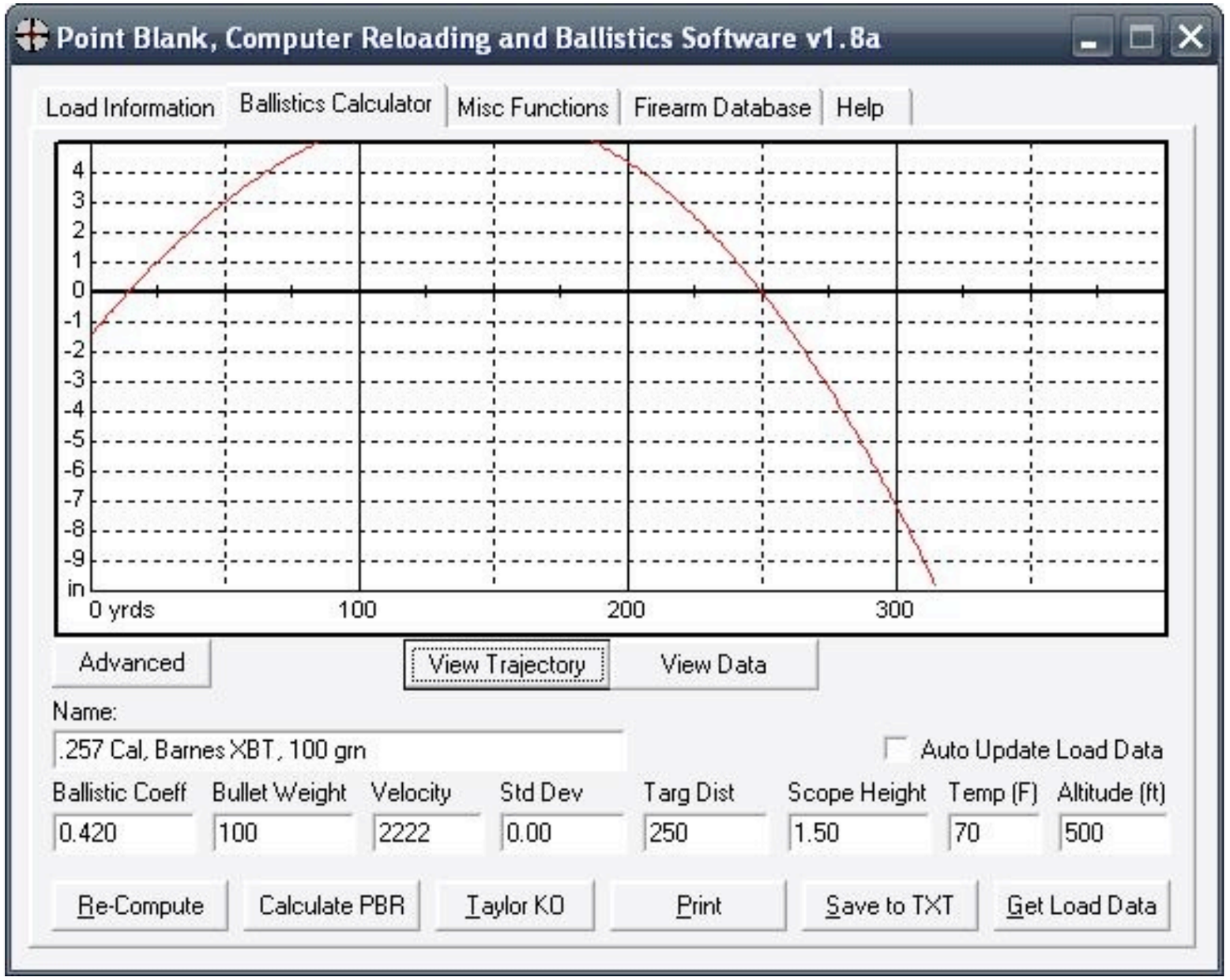
Scanning 2.4 Billion Eyes, India Tries to Connect Poor to Growth

Ruth Fremson/The New York Times

A migrant farm worker peers into an iris scanner in New Delhi in the first effort to officially record each Indian's identity as an individual.

By LYDIA POLGREEN
Published: September 1, 2011

military takeover



military processing

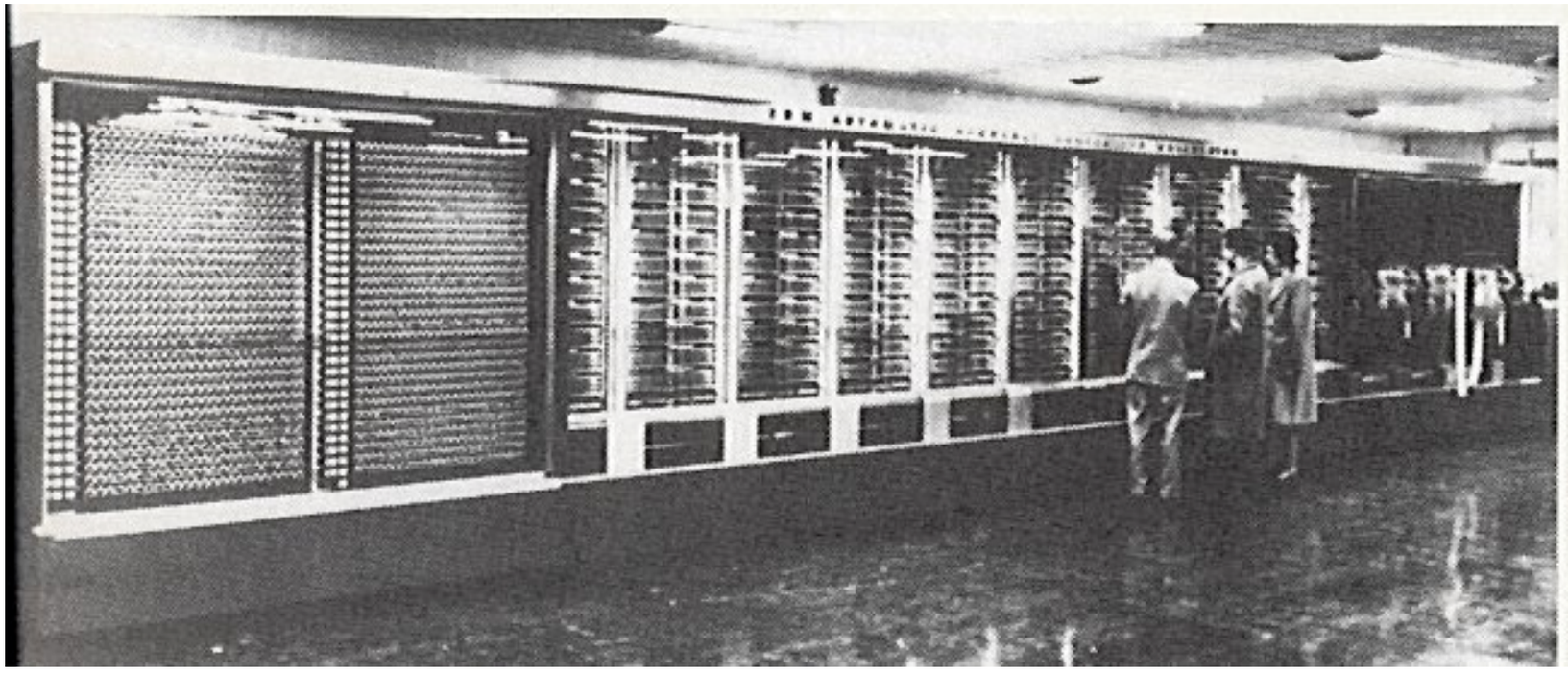
ballistics "firing tables"

N. Katherine Hayles, *My Mother Was a Computer*, 2005

Vannevar Bush
1935, Differential Analyzer

Harvard mark I

aka **IBM Automatic Sequence Controlled Calculator**



so what?

"I went to see Professor Douglas Hartree, who had built the first differential analyzers in England and had more experience in using these very specialized computers than anyone else. He told me that, in his opinion, all the calculations that would ever be needed in this country could be done on the three digital computers which were then being built—one in Cambridge, one in Teddington, and one in Manchester. No one else, he said, would ever need machines of their own, or would be able to afford to buy them."

--Lord Bowden, *American Scientist* 58 (1970) pp. 43—53

[just one] "would suffice the needs of the whole world" - Georg Scheutz

so what?

"I went to see Professor Douglas Hartree, who had built the first differential analyzers in England and had more experience in using these very specialized computers than anyone else. He told me that, in his opinion, all the calculations that would ever be needed in this country could be done on the three digital computers which were then being built—one in Cambridge, one in Teddington, and one in Manchester. No one else, he said, would ever need machines of their own, or would be able to afford to buy them."

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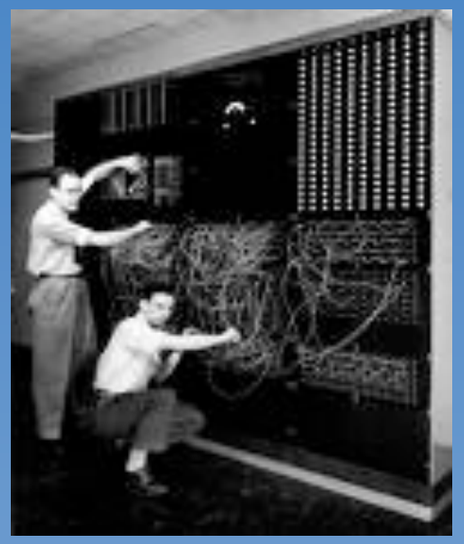
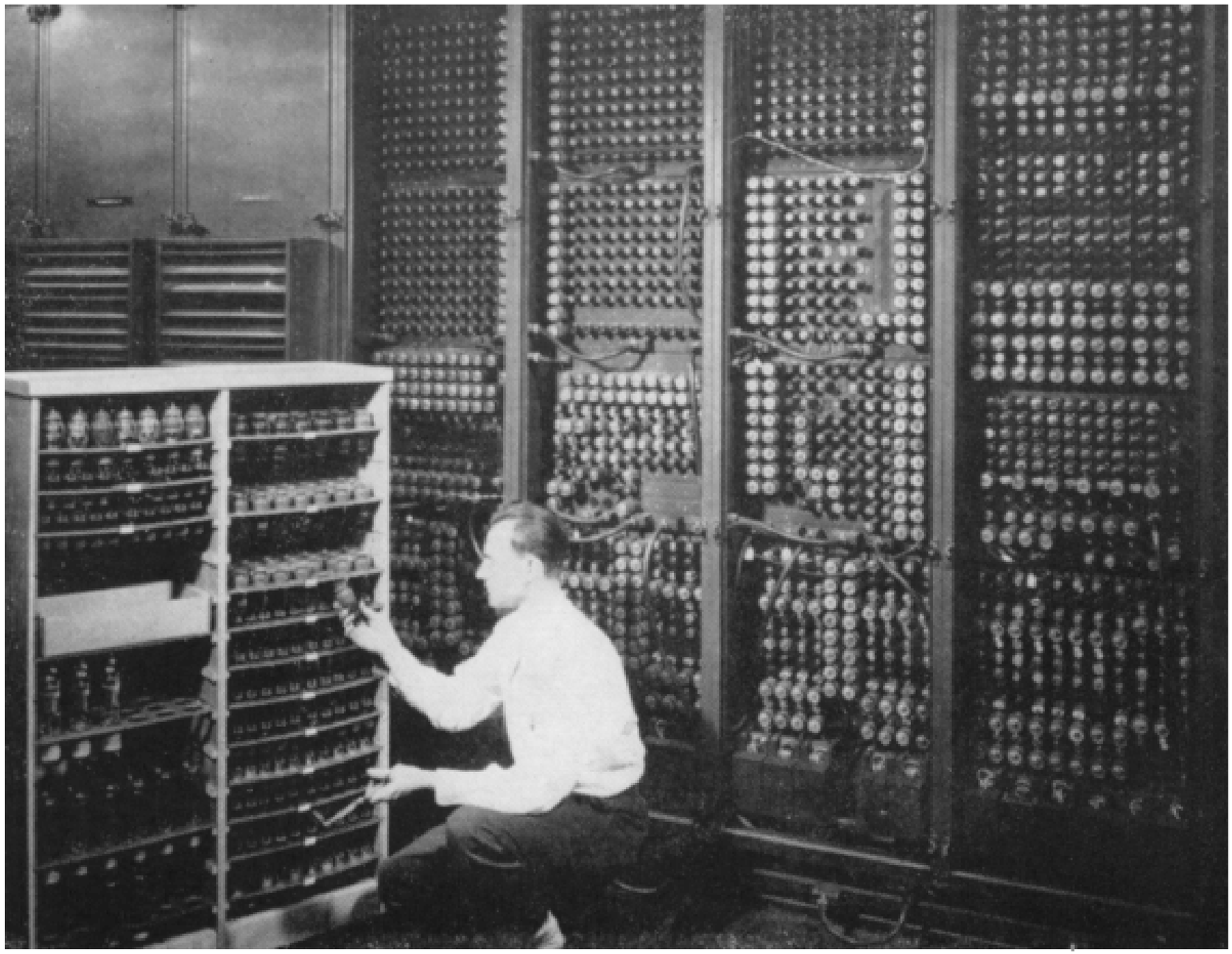


military processing

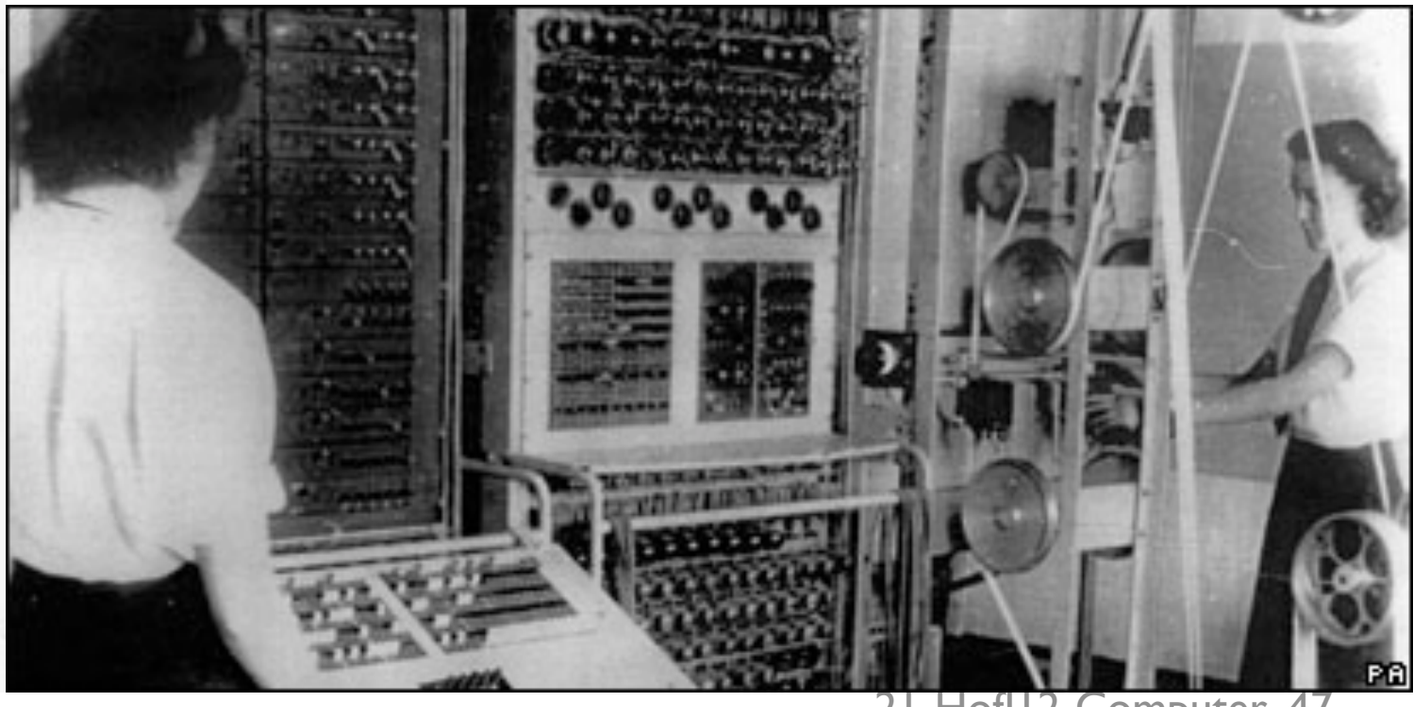


decoding

1943, Colossus

Bletchley Park

(what about the Poles?)



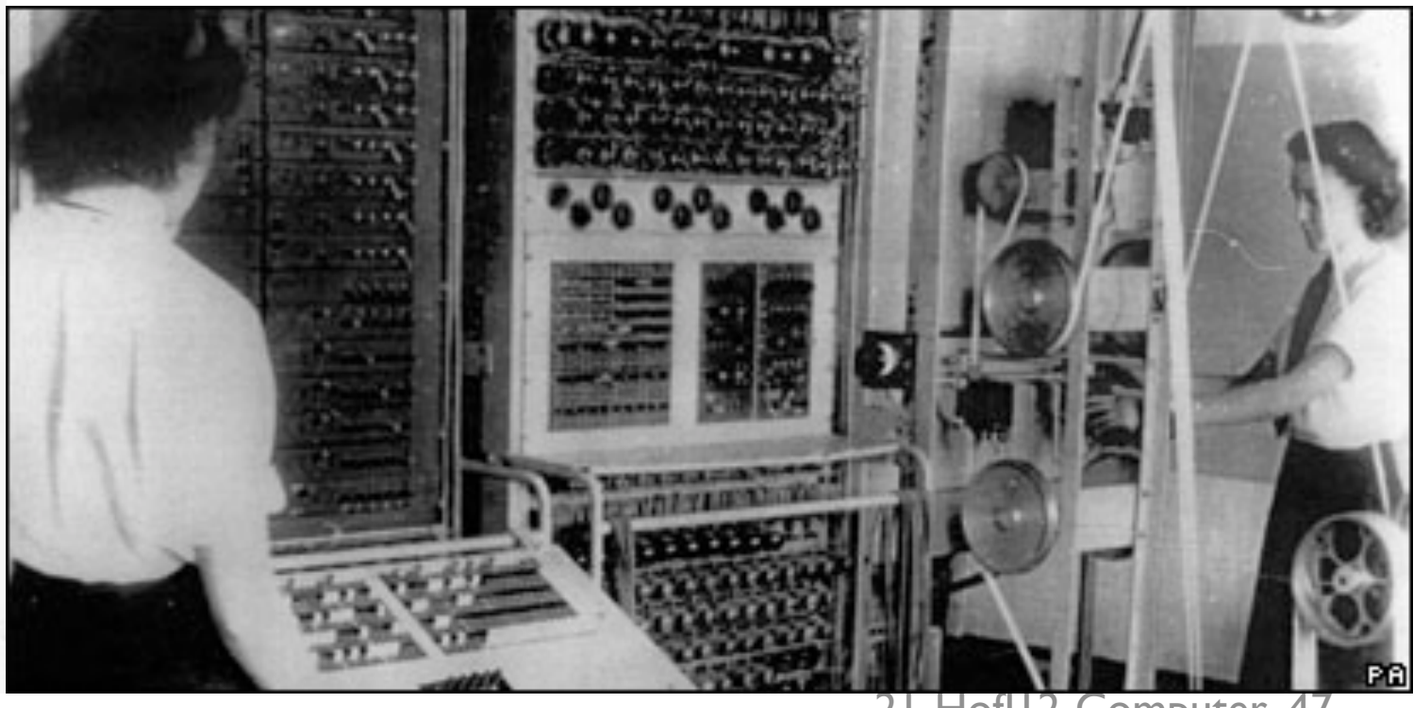
2012 THE ALAN TURING YEAR

A Centenary Celebration of the Life and Work of Alan Turing

1943, Colossus

Bletchley Park

(what about the Poles?)



Turing

1936	"On computable numbers ... "
1936-8	Princeton; von Neumann
1938	Cambridge; Wittgenstein
1938-45	Code-breaking
1944	Colossus
1945	NPL: Automatic Computing Engine (ACE)
1948	Manchester, UK
1950	"Computing Machinery and Intelligence"
1952	"On the Chemical Basis of Morphogenesis

overview

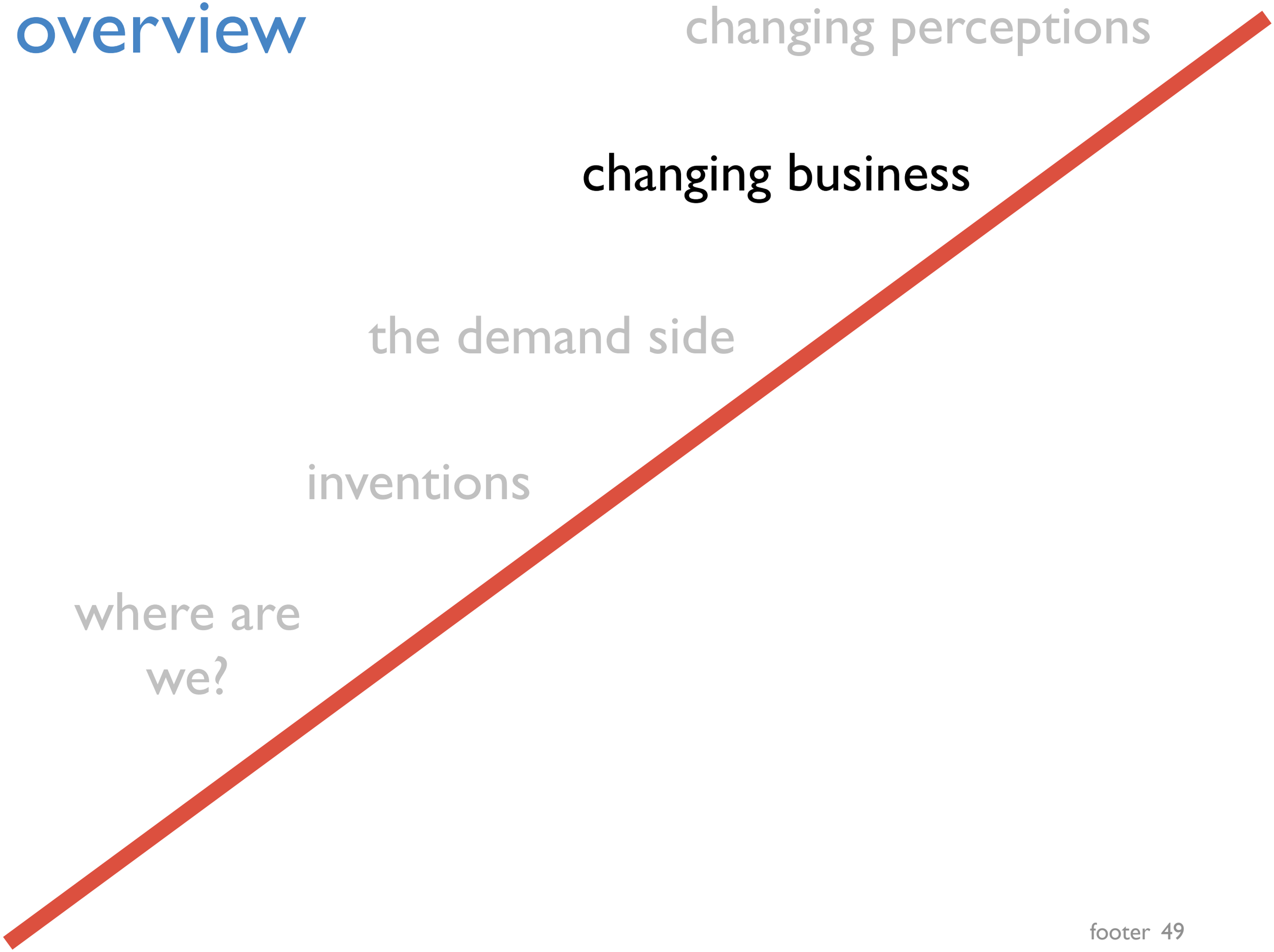
changing perceptions

changing business

the demand side

inventions

where are we?



back in business vertical integration

John Simmons
Lyons & Cambridge (1947)
ENIAC, EDVAC, UNIVAC
EDSAC

1954
LEO (Lyons electronic office)
CLEO (Clear language for expressing orders)

from payroll to baking

back in business
vertical integration

How a chain of tea shops kickstarted the computer age

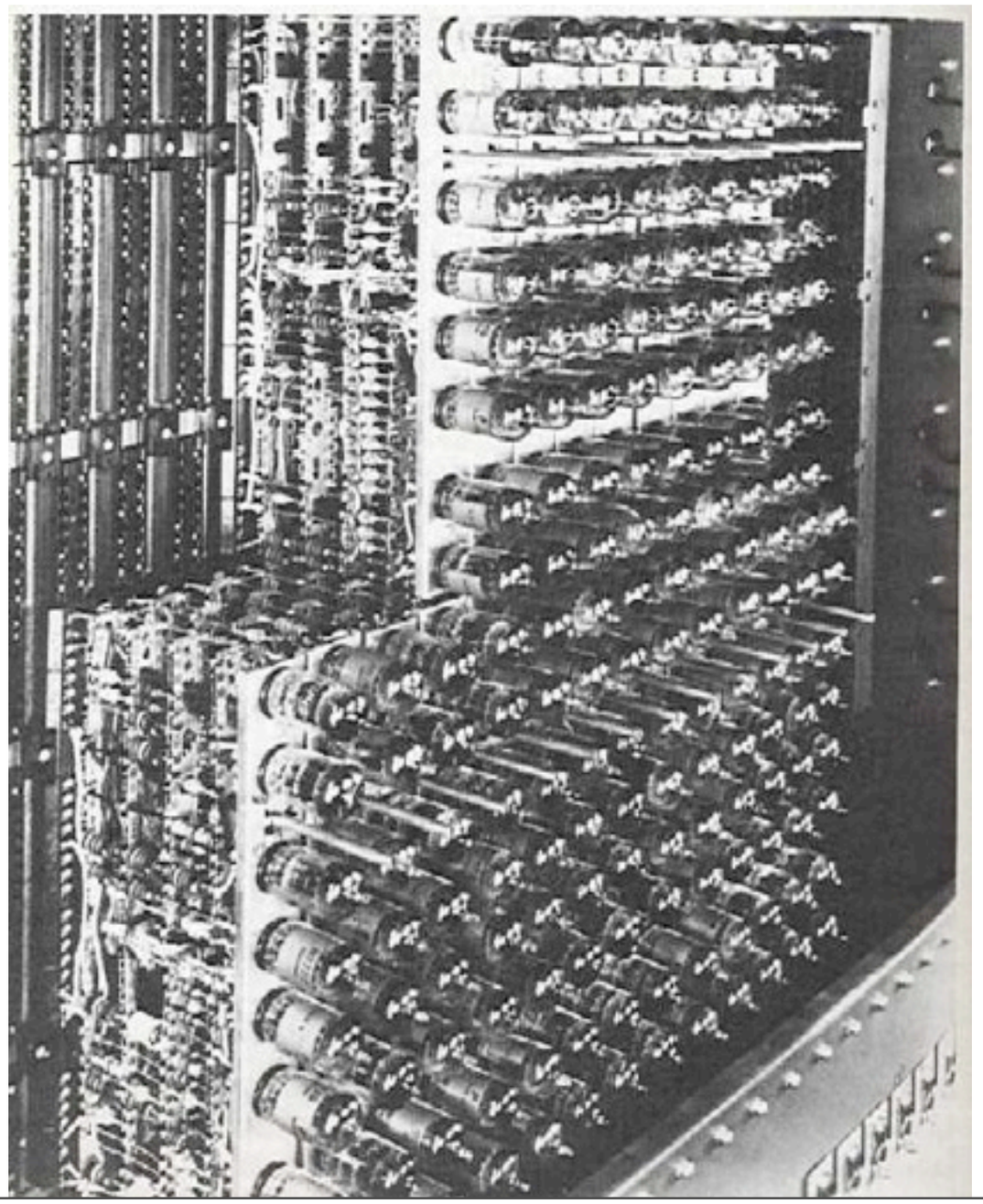
In November 1951 a British company switched on the world's first business computer

Image 1 of 3
LEO at Lyons HQ in Hammersmith

By Christopher Williams, Technology Correspondent
7:00AM GMT 10 Nov 2011

breaking down

Cathode-ray tube memory, from the IBM 701 Defense Calculator, 1952



breaking things down

1947 transistor

Bell Labs

John Bardeen, William Brattain, William Shockley

1958 integrated circuit

Texas Instruments

Jack Kilby

Shockley

Fairchild

Intel

breaking things down

1947 transistor

Bell Labs

John Bardeen, William Brattain, William Shockley

1958 integrated circuit

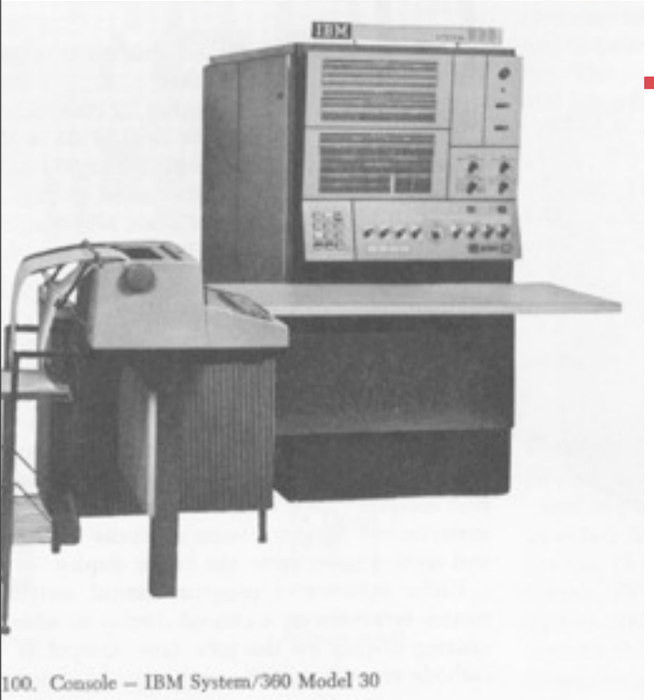
Texas Instruments

Jack Kilby

Shockley

Fairchild

Intel



100. Console – IBM System/360 Model 30

corporate computing

1960 DEC PDP-1

"programmable data processor"

1964 IBM 360

1969 Xerox PARC

"the architecture of information"

(**1946** SRI)

vertical disintegration 1970-1990

Software	IBM
OS	IBM
CPU	IBM
Hardware	IBM

vertical disintegration 1970-1990

Software	IBM	DEC
OS	IBM	DEC
CPU	IBM	DEC
Hardware	IBM	DEC

vertical disintegration 1970-1990

Software	IBM	DEC	3d party
OS	IBM	DEC	Apple
CPU	IBM	DEC	Apple
Hardware	IBM	DEC	Apple

vertical disintegration 1970-1990

Software	IBM	DEC	3d party	3d party
OS	IBM	DEC	Apple	AT&T-Unix
CPU	IBM	DEC	Apple	Sun
Hardware	IBM	DEC	Apple	Sun

vertical disintegration 1970-1990

Software	IBM	DEC	3d party	3d party	3d party
OS	IBM	DEC	Apple	AT&T-Unix	Microsoft
CPU	IBM	DEC	Apple	Sun	Intel & co
Hardware	IBM	DEC	Apple	Sun	[IBM]/OEM

brand wars

computer power

computer power

OS?

computer power

OS?

processor?

computer power

OS?

processor?

hard drive?

computer power

OS?

processor?

hard drive?

```
2000
6 hard drive companies
```

computer power

OS?

processor?

hard drive?

```
2000
6 hard drive companies
196 million disks
```

computer power

OS?

processor?

hard drive?

```
2000
6 hard drive companies
196 million disks
0 profit
```

computer power

OS?

processor?

hard drive?

```
2000
6 hard drive companies
196 million disks
0 profit

Dell: 7%
```

computer power

OS?

processor?

hard drive?

```
2000
6 hard drive companies
196 million disks
0 profit

Dell: 7%
Microsoft:  31%
```

computer power

OS?

processor?

hard drive?

```
2000
6 hard drive companies
196 million disks
0 profit

Dell: 7%
Microsoft:  31%
Intel: 13%
```

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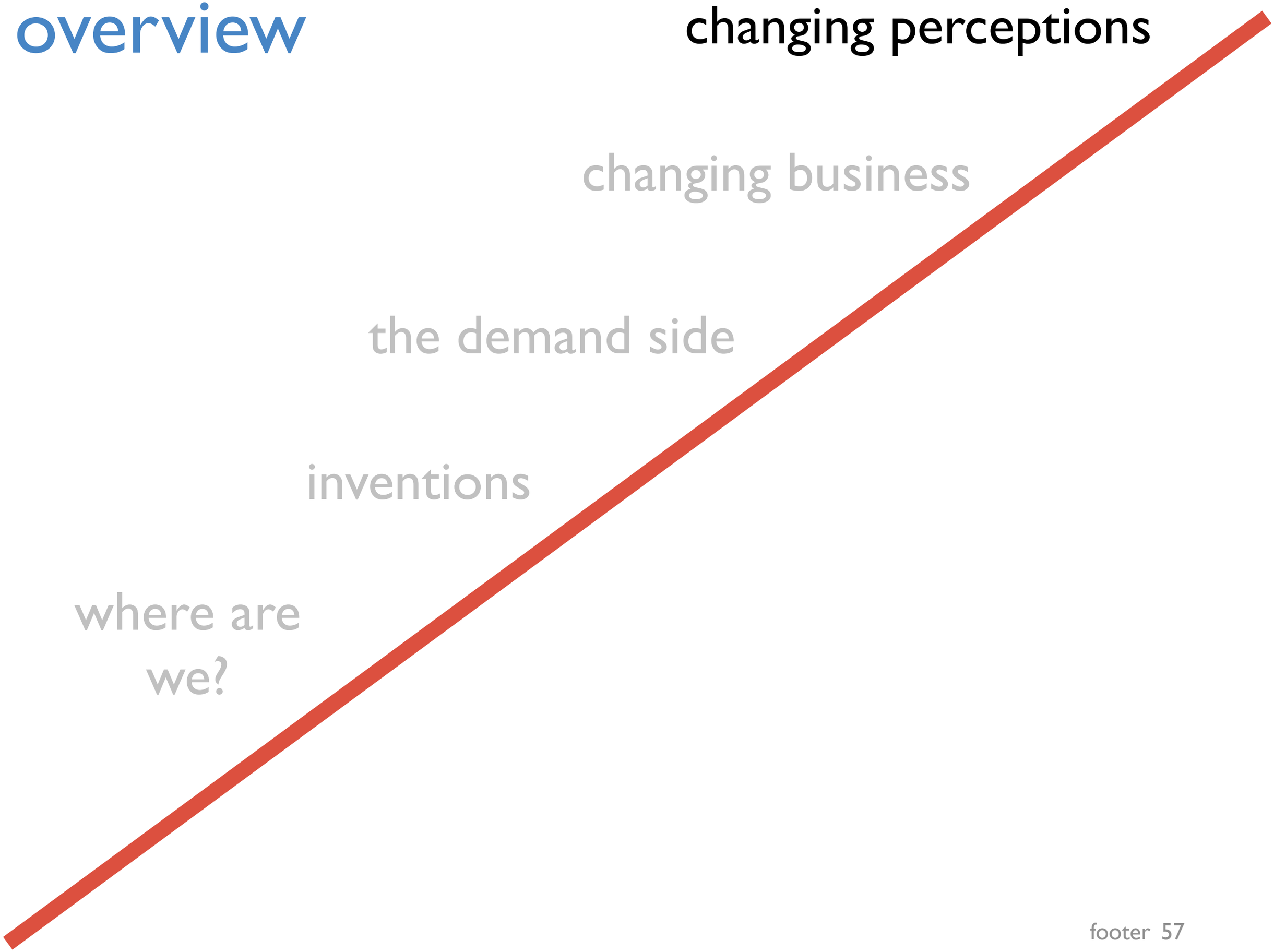


culture clash

home brew, fone freaks

1975 Altair

1976 Apple I

1983 Lisa

1984 Macintosh

culture clash

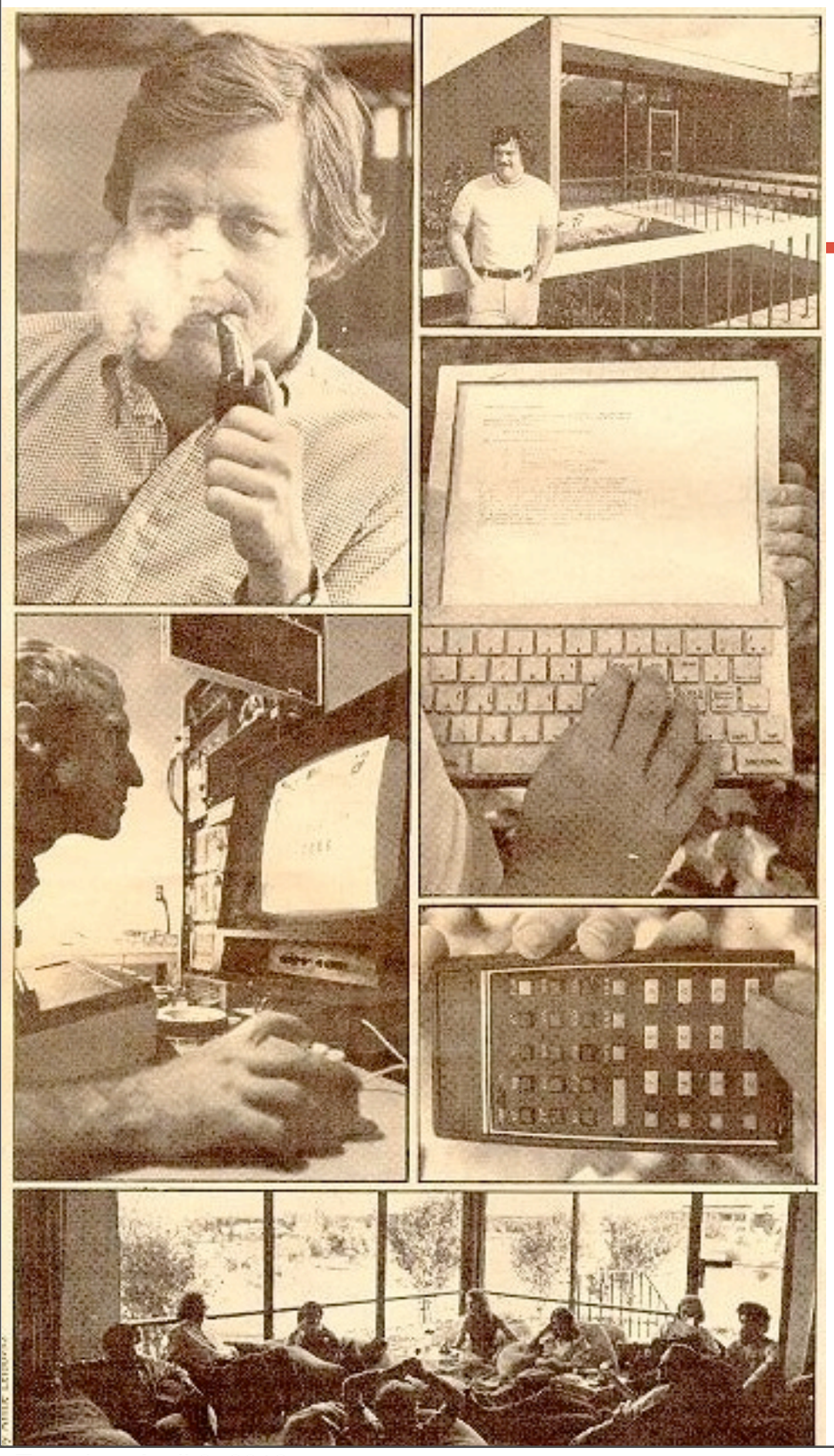
home brew, fone freaks

1975 Altair

1976 Apple I

1983 Lisa

1984 Macintosh



fast forward

Stewart Brand, "Fanatic Life and Symbolic Death
Among the Computer Bums

--*Rolling Stone*, 7 December, 1972

a libertarian vision

Brand, Barlow, Dyson, Gilder, Kelly, Rosetto,

"the internet ... an exciting kind of metaphor for spontaneous order" -- Gilder

Fred Turner, *From Cyberculture to Counterculture*, 2006

killer apps

Charles Simonyi
Xerox PARC

Bravo, 1974

Dan Briklin &
Bob Frankston
HBS

Visicalc, 1978

Lotus 1-2-3, 1983

Excel (for Mac), 1984

Ken Thompson
Dennis Ritchie
Bell Labs

unix

Thompson, Ritchie, & AT&T

1965: AT&T, MIT& GE work on multics

1969: multics to unix

"What we wanted to preserve was not just a good environment in which to do programming, but a system around which a fellowship could form. We knew from experience that the essence of communal computing, as supplied by remote-access, time-shared machines, is not just to type programs into a terminal instead of a keypunch, but to encourage close communication."

--Ritche, "Evolution of the Unix Time-Sharing System"

unix at ucb

Bill Joy
UCB

1973: Thompson at Berkeley

Bill Joy develops em editor

1977: 1BSD released

1979: 3BSD (for Vax)

1981: 4.1BSD

1983: 4.2 BSD (with tcp/ip stack)

1-800-ITS-UNIX

SO ...

1991: Networking release 2; 386 BSD

1992: AT&T sues UCB

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

UNIX SYSTEM LABORATORIES, INC. Plaintiff, vs. BERKELEY SOFTWARE DESIGN, INC., and certain named individuals in their collective capacity as The Regents of the University of California, Defendants.	Civ. No. 92-1667 O P I N I O N

settlement

1994 settlement: USL, UCB, Novell

SETTLEMENT AGREEMENT

This Settlement Agreement is entered into between UNIX System Laboratories, Inc. ("USL"), a Delaware corporation, and The Regents of the University of California (the "University"), a California corporation.

Recitals

1. USL contends it is the owner of the intellectual property rights in portions of certain computer operating system software (the "UNIX System").

2. USL and USL's predecessor in interest, the American Telephone and Telegraph Co. ("AT&T"), have licensed the University to use certain versions of UNIX® system software,

Richard Stallman
MIT

Linus Torvalds
Helsinki

elsewhere ...

MIT 1983-GNU

Finland 1991

Richard Stallman
MIT

Linus Torvalds
Helsinki

elsewhere ...

MIT 1983-GNU

Finland 1991

```
From: torvalds@klaava.Helsinki.FI (Linus Benedict Torvalds)
Newsgroups: comp.os.minix
Subject: What would you like to see most in minix?
Summary: small poll for my new operating system
Message-ID:
Date: 25 Aug 91 20:57:08 GMT
Organization: University of Helsinki


Hello everybody out there using minix -

I'm doing a (free) operating system (just a hobby, won't be big and
professional like gnu) for 386(486) AT clones.  This has been brewing
since april, and is starting to get ready.  I'd like any feedback on
things people like/dislike in minix, as my OS resembles it somewhat
(same physical layout of the file-system (due to practical reasons)
among other things).

I've currently ported bash(1.08) and gcc(1.40), and things seem to work.
This implies that I'll get something practical within a few months, and
I'd like to know what features most people would want.  Any suggestions
are welcome, but I won't promise I'll implement them :-)

                Linus (torvalds@kruuna.helsinki.fi)

PS.  Yes - it's free of any minix code, and it has a multi-threaded fs.
It is NOT protable (uses 386 task switching etc), and it probably never
will support anything other than AT-harddisks, as that's all I have :-(.
```

Richard Stallman
MIT

Linus Torvalds
Helsinki

elsewhere ...

MARCH 30, 2012

Red Hat's $1 billion proves value of software freedom

CIOs have become slaves to licenses and restrictions placed on them by software vendors, except when choosing open source

By Simon Phipps | InfoWorld

Follow @webmink

Print | 15 Comments

Like 29

This week, an open source company -- Red Hat -- reported annual revenues of more than $1 billion for the first time. For the full fiscal year 2012, total revenue was $1.13 billion, an increase of 25 percent over the prior year. That's more remarkable than it may seem. As Red Hat exec and open source pioneer Michael Tiemann comments, "I have found that for every $1 Red Hat sells, we have to displace $10 of proprietary junk that never really worked in the first place." Red Hat didn't get big the easy way; instead, it's been a purveyor of liberty to CIOs.

Those Red Hat revenues are the result of enormous numbers of corporations of all sizes discovering that software freedom translates into business value. The so-called four software freedoms are not just a source of philosophical comfort -- they are a practical source of business benefit.

going open?

101 Ways to Save Apple

By James Daly

An assessment of what can be done to fix a once

Dear Apple,

In the movie *Independence Day*, a PowerBook saves the ea
you look a little beleaguered these days: a confusing produ

But who wants to live in a world without you? Not us. So we
salvation. We chose not to resort to time travel or regurgit
your price/performance in 1993).

We don't believe Apple is rotten to the core. Chrysler nearly
to fix your once-great company using the material at hand.

Edited by James Daly

1. Admit it. You're out of the hardware game. Outsource your hardware production, or s
manufacturing boxes.

2. License the Apple name/technology to appliance manufacturers and build GUIs fo
them all use the same communications protocol. Result: you monopolize the market for sma

the story so far

registering

predicting

calculating

controlling

communicating

controlling again?