



Invasioni Digitali al Museo degli Strumenti per il Calcolo dell'Università di Pisa

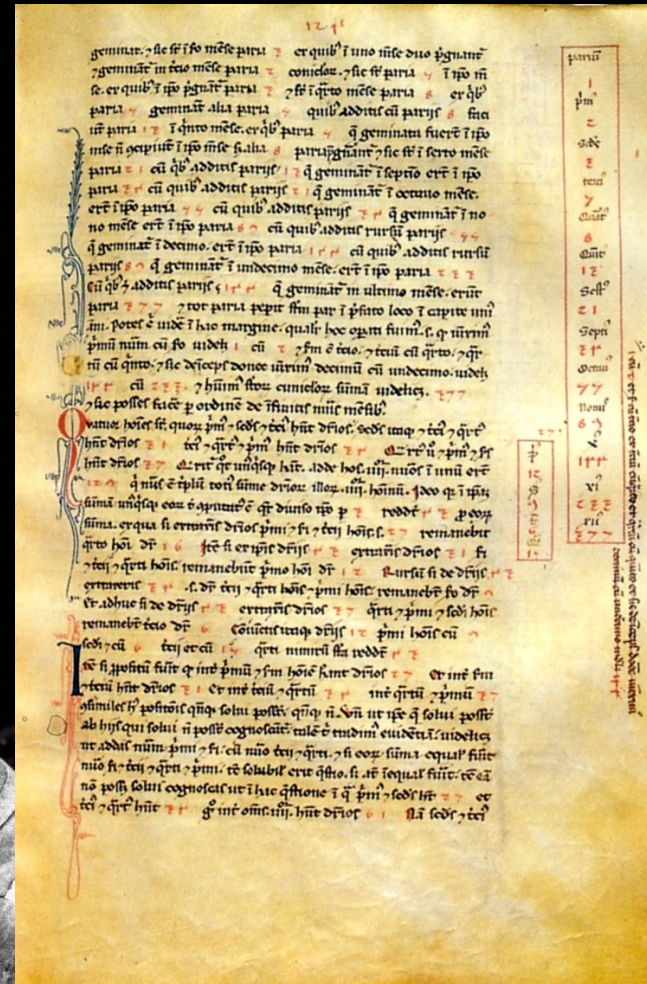
1

L'eredità di Fibonacci



Liber Abaci, 1202

Leonardo Fibonacci



Giovanni A. Cignoni - hmr.di.unipi.it



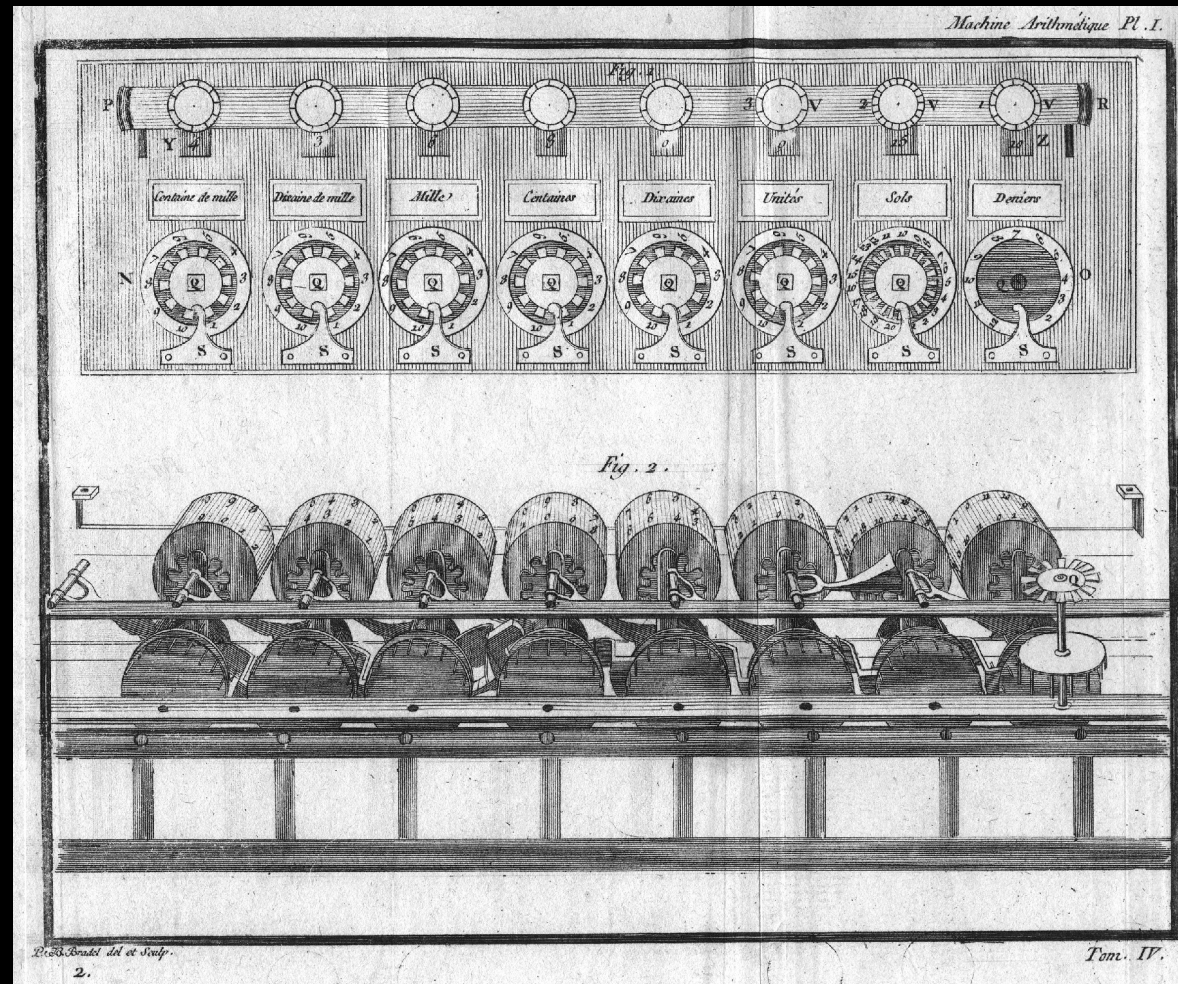
Invasioni Digitali - 20 aprile 2013

2/10



Pascaline, 1643

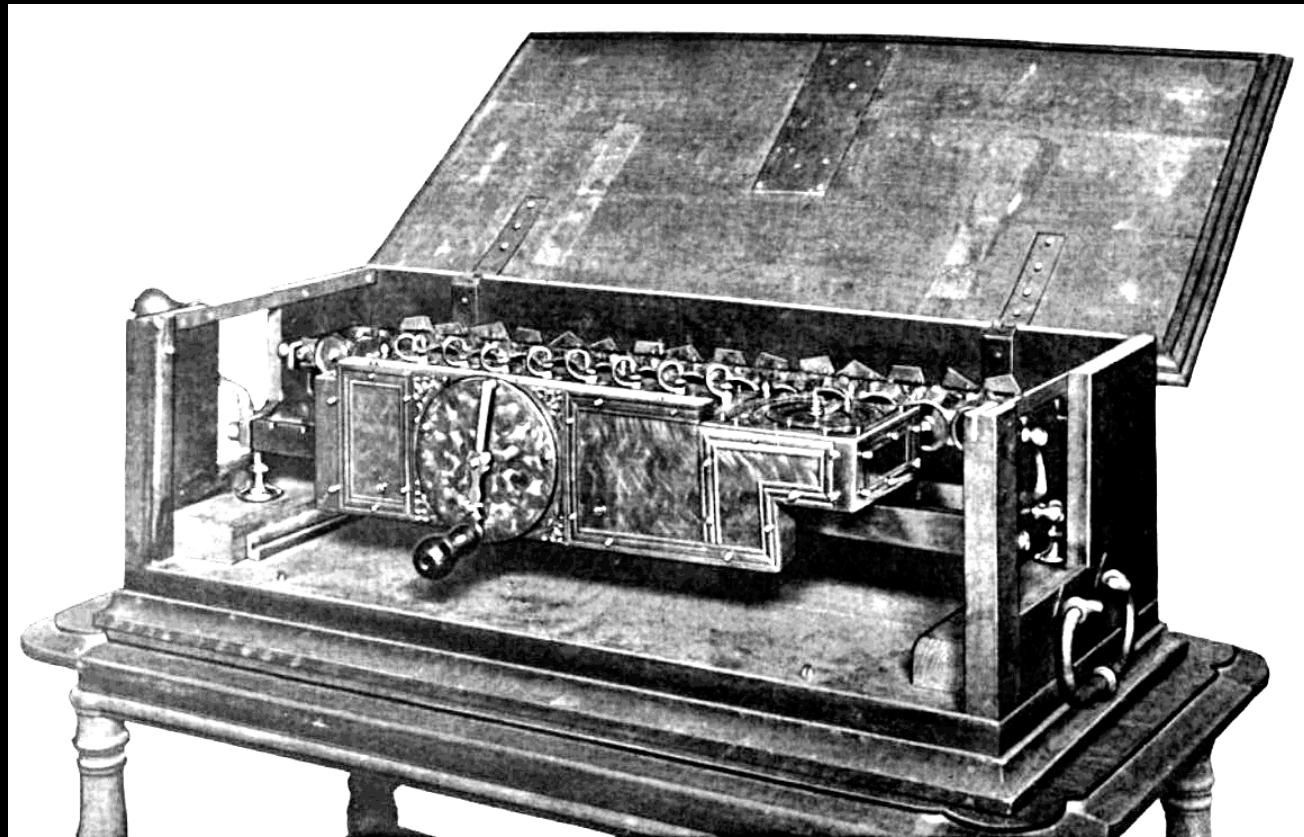
Blaise Pascal



Giovanni A. Cignoni – hmr.di.unipi.it

Rechenmaschine, 1694

Gottfried
Leibniz



Giovanni A. Cignoni – hmr.di.unipi.it



Aritmometri in serie, 1851

De Colmar, 1870

De Bojano, 1881

De Rancy, 1887

Payen, 1902

v. Payen, 1915



Giovanni A. Cignoni – hmr.di.unipi.it



Odhner & Brunsviga, 1892

Willgodt Odhner

Rechenmaschine „Brunsviga“

Modell 1905



rechnet immer fehlerlos

Additionen, Subtraktionen, Divisionen, Multiplikationen, Zinsrechnungen, Kalkulationen, Münz-, Mass- und Gewichtsrechnungen, Lohnberechnungen, Gleichungen, Quadratwurzel, Kubikwurzel etc.

Grösste Zeitersparnis.

Grimme, Natalis & Co.
C.-G. a. A.
BRAUNSCHWEIG.

Giovanni A. Cignoni – hmr.di.unipi.it



Monroe LA-6, 1937

Frank Baldwin

Jay Randolph Monroe



CLEAR THE WAY !

Choked-up figures slow down a whole business

Figures pour over the desks of every business, every hour of every day. To keep them moving speedily, smoothly, and at low cost, has been Monroe's function for twenty-four years.

Today, Monroe offers 197 different models: calculators, adding listing machines, bookkeeping machines, check writers and signers. Each Monroe is compact enough to use right on the desk where figures originate. Each one has the famous "Velvet Touch" keyboard to take the strain from figuring.

Whether you use one Monroe or a thousand, your investment is protected by a nation-wide figure service, operating through 150 Monroe-owned branches from coast to coast.

Try a "Velvet Touch" Monroe on your own figures. The nearest Monroe branch will arrange it without obligation. Write to us for a free copy of the booklet, "If Only I Could Work On Your Desk For An Hour." Monroe Calculating Machine Company, Inc., Orange, New Jersey.



MONROE

ADDING-CALCULATOR
Model L2-6. Portable. Weighs only 10 pounds.
Complete in a case for multiplication and division.

• 217 •



Giovanni A. Cignoni - hmr.di.unipi.it



Invasioni Digitali - 20 aprile 2013

7/10



IBM 701, 1952

150 Extra Engineers

An IBM Electronic Calculator speeds through thousands of intricate computations so quickly that on many complex problems it's like having 150 EXTRA Engineers.

No longer must valuable engineering personnel . . . now in critical shortage . . . spend priceless creative time at routine repetitive figuring.

Thousands of IBM Electronic Business Machines . . . vital to our nation's defense . . . are at work for science, industry, and the armed forces, in laboratories, factories, and offices, helping to meet urgent demands for greater production.

IBM INTERNATIONAL BUSINESS MACHINES

(a) LOGICAL ADDER

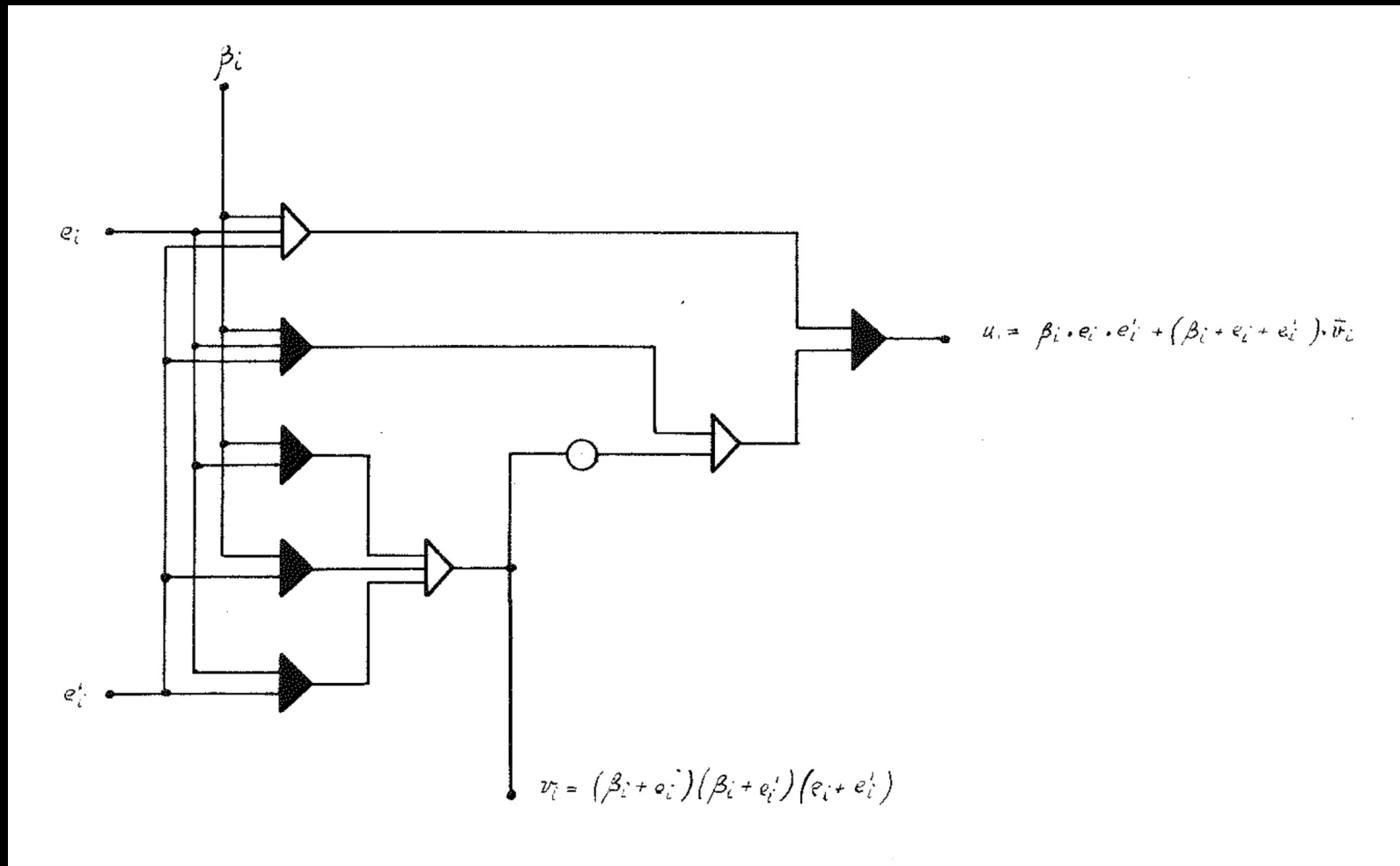
(b) "TRUTH TABLE"

X	Y	Z	S	C
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
1	0	0	1	0
0	1	1	0	1
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

$C = XY + YZ + XZ$
 $S = (X+Y+Z)(XYZ+\bar{C})$



Macchina Ridotta, 1956



L'eredità di Fibonacci

Leonardo Fibonacci, mercante pisano, incontra nei suoi viaggi la notazione indo-araba. Ne riconosce l'utilità, sia per rappresentare qualsiasi numero con un insieme finito di simboli, sia per manipolare i simboli meccanicamente e fare, con semplicità, le 4 operazioni dell'aritmetica. Grazie al suo *Liber Abaci*, la notazione posizionale (in base 10) si diffonde in Europa. L'era digitale è iniziata.

Pascal e Leibnitz intuiscono che ai simboli possono corrispondere elementi meccanici (10 cifre, ingranaggi a 10 denti) e costruiscono le prime macchine aritmetiche. Più tardi, De Colmar le ingegnerizzerà in modo da poterle produrre in serie.

Quando arrivano l'elettricità e l'elettronica, l'insieme di simboli si riduce al minimo: due sole cifre rappresentabili da stati elettrici, spento e acceso, negativo e positivo, 0 e 1.

Ma sempre notazione posizionale e operazioni in colonna.

