



Escola Politécnica da USP

PSI2617 – Inovação em Engenharia (2018)

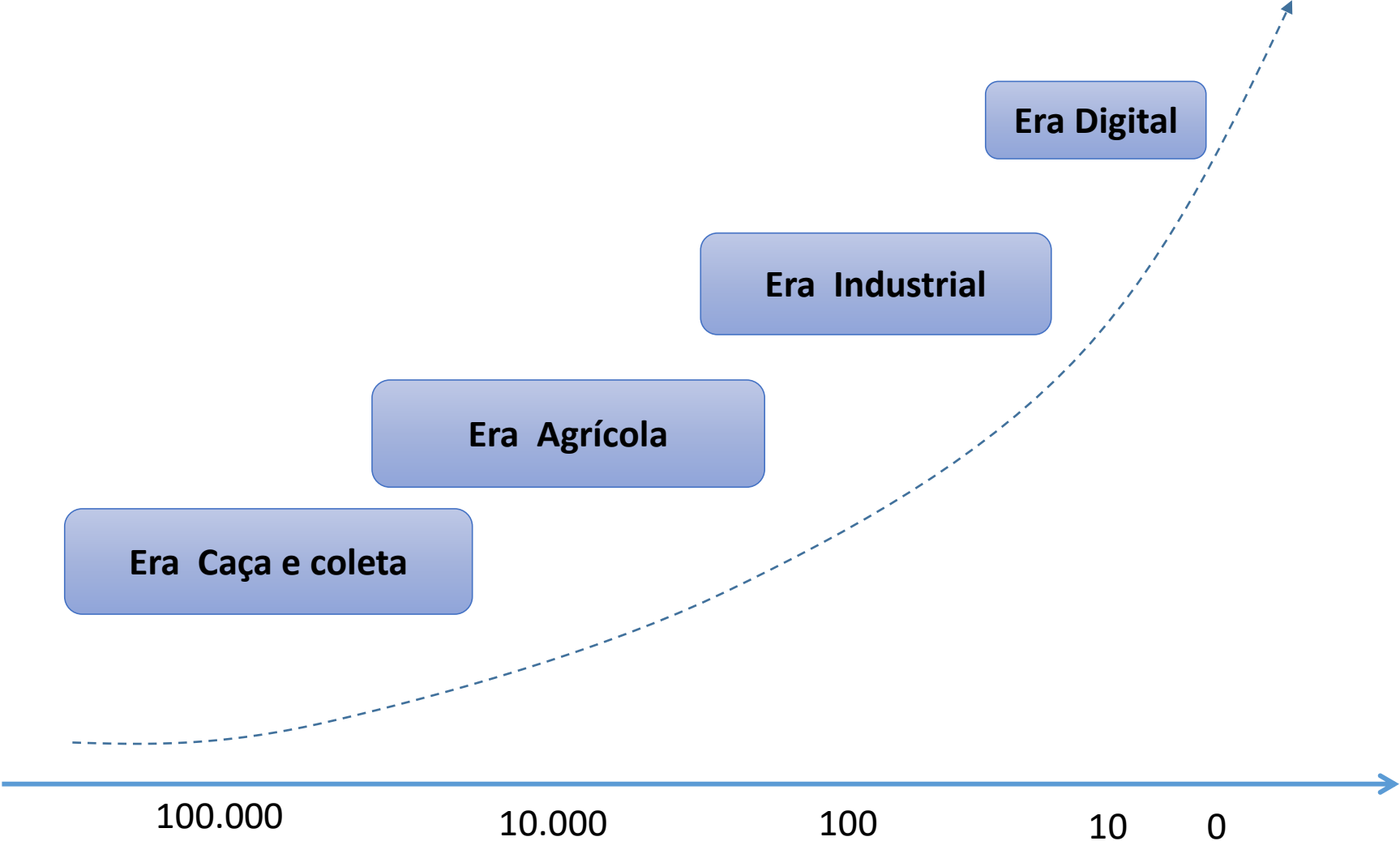
Uma breve história da Ciência e Inovação

20 de Março de 2018

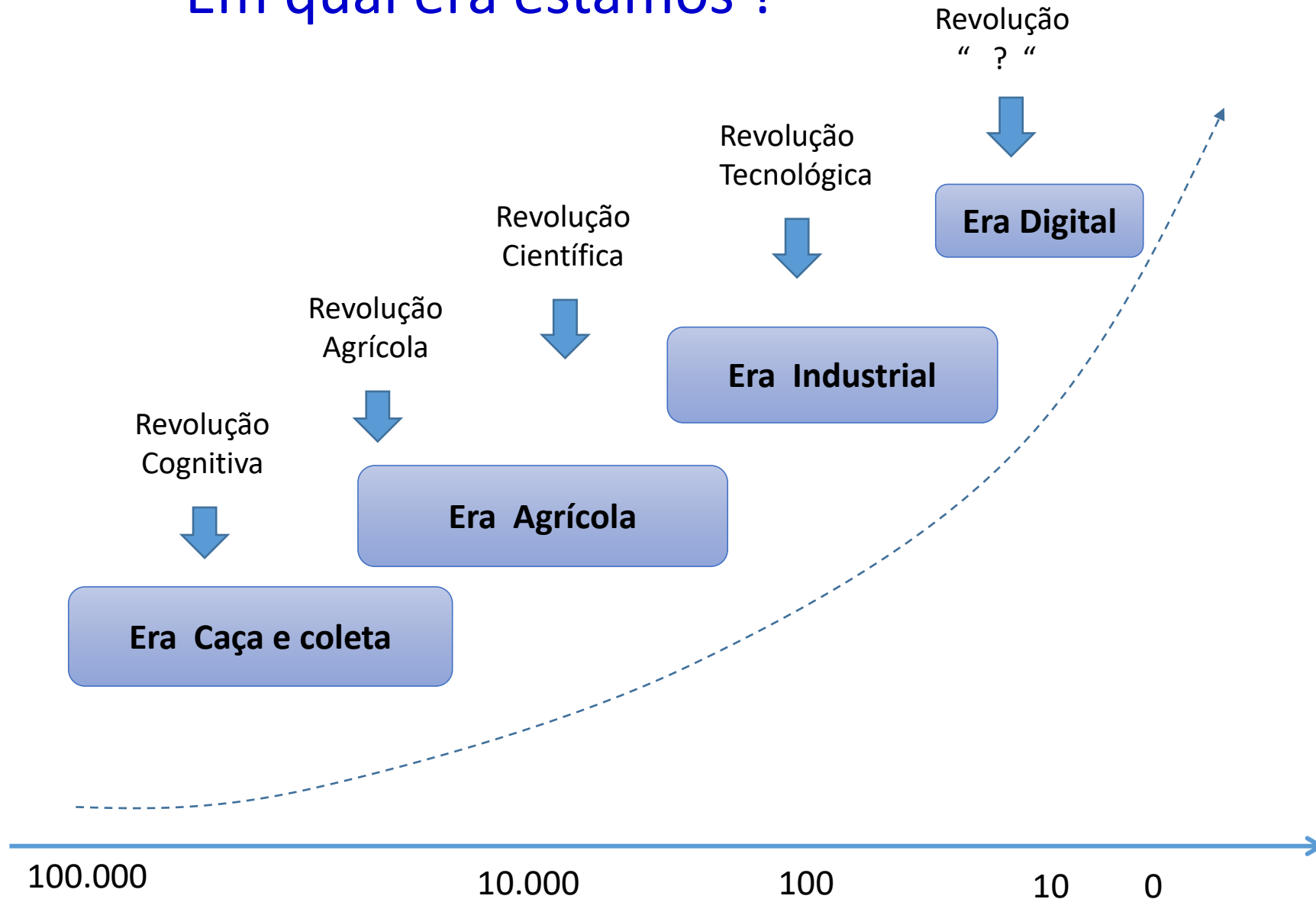
Leopoldo.Yoshioka@usp.br

Em qual era estamos ?

Em qual era estamos ?



Em qual era estamos ?



Antes de 2007



Depois de 2007



Como tudo isso aconteceu ?



Parte I
Onde
Estamos?

**Parte II
Como
aconteceu?**

Parte III
Projeto
Vencedor

Parte IV
Reflexão

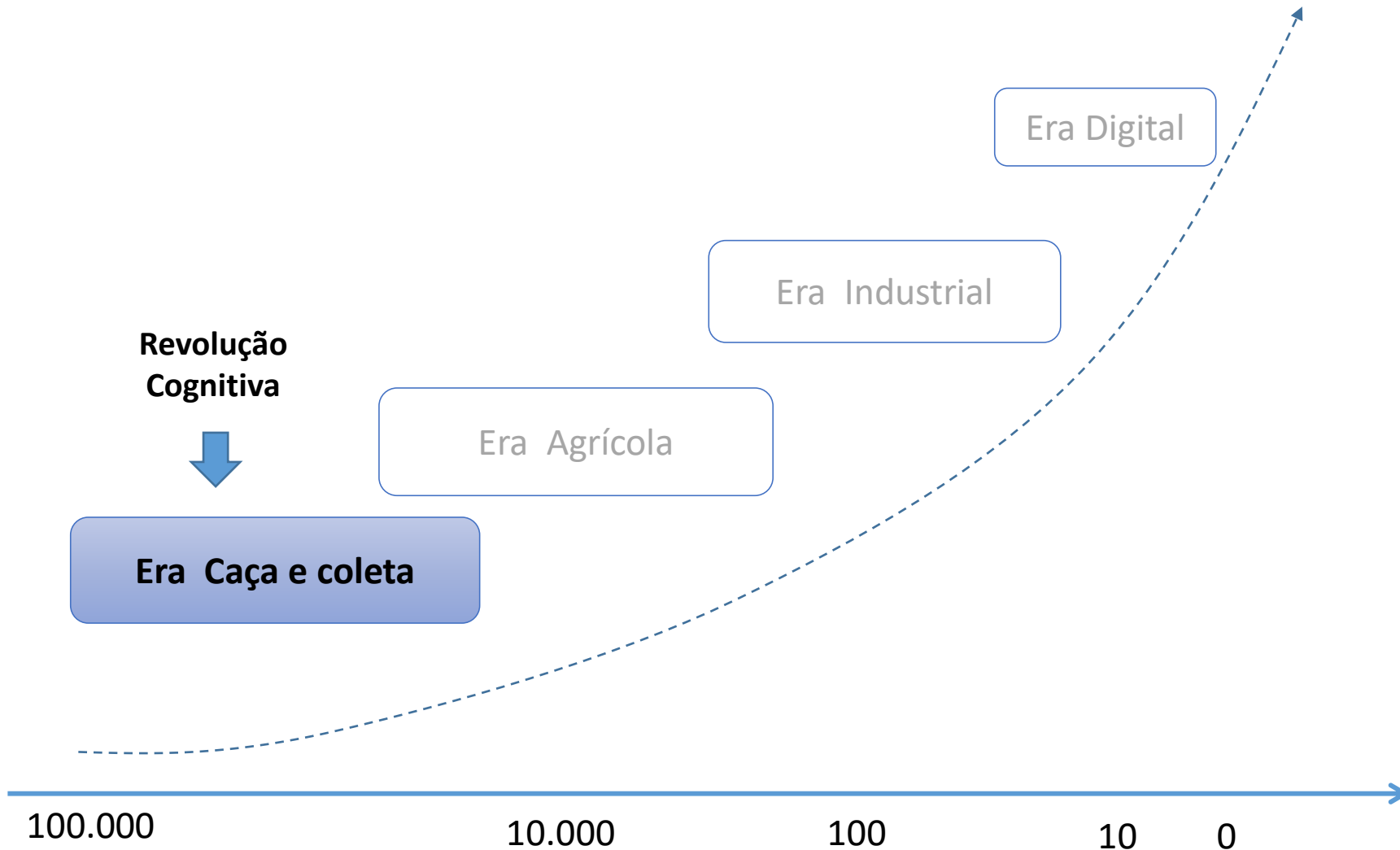
Uma breve história da Evolução

Há muito tempo (~ 13 bilhões anos)



Muito tempo depois (há 2 milhões de anos)





A Brief
History of
Humankind



Sapiens

Yuval Noah
Harari



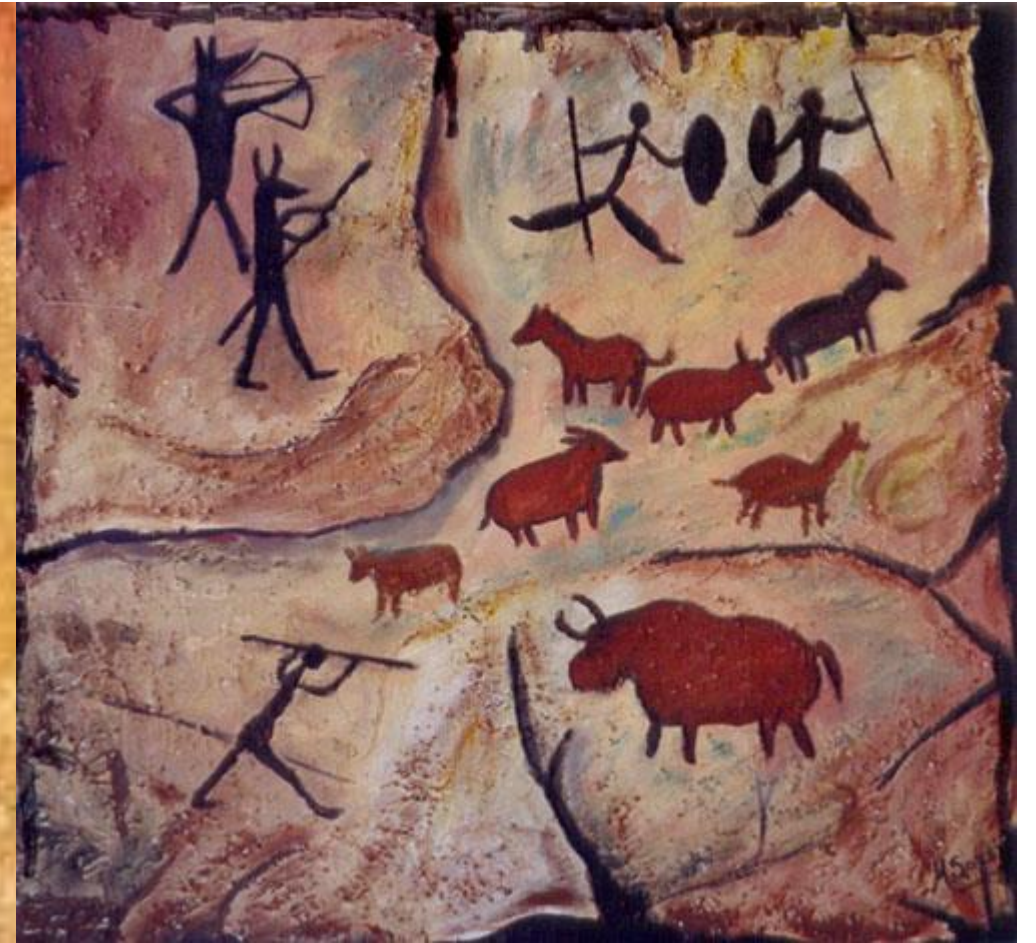
Revolução Cognitiva - 70 mil anos

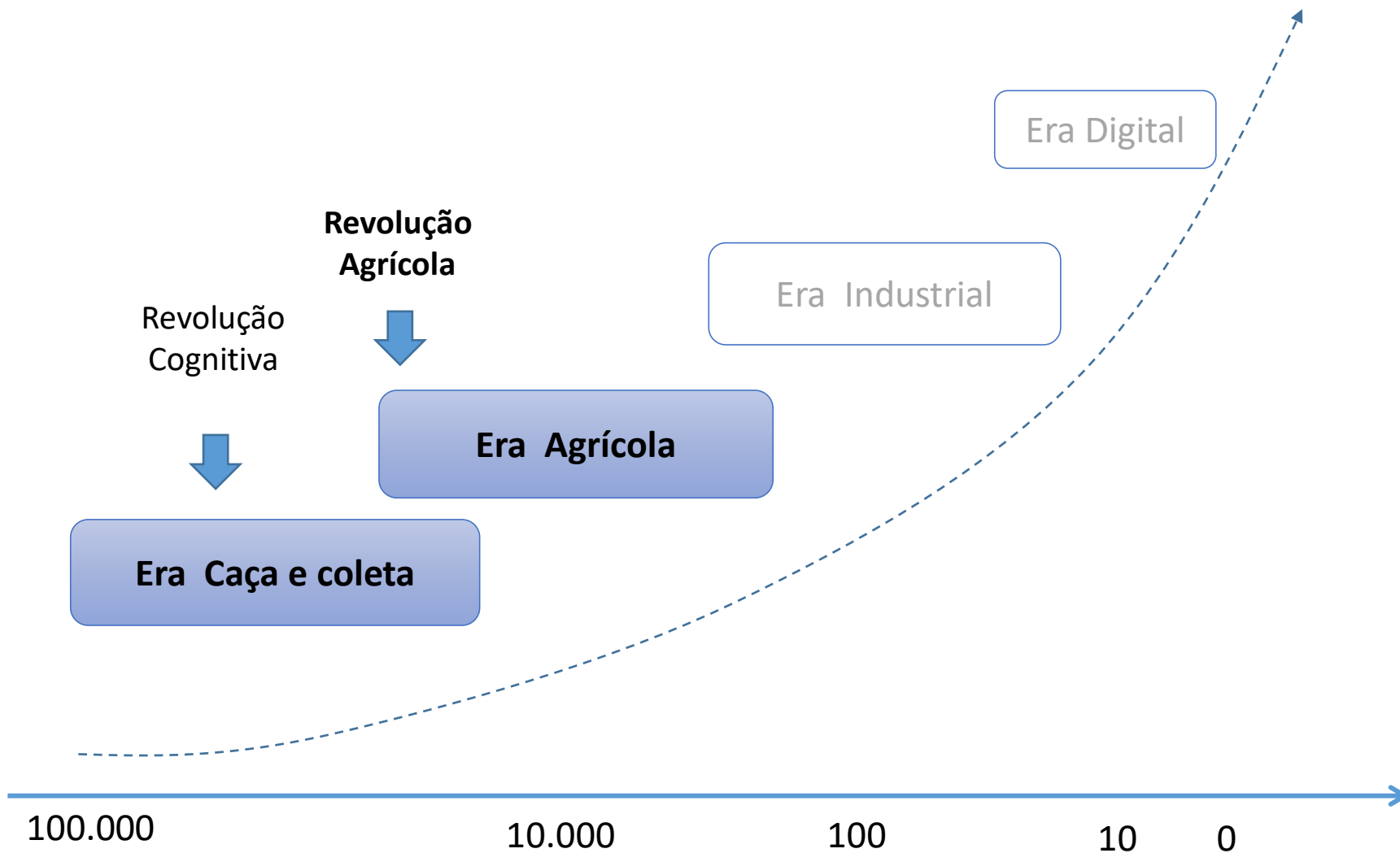


- Coletar
- Caçar
- Queimar
- Comunicar
- Relacionar
- Cooperar
- Trocar
- Imaginar

Arte?

ou Plano de Caça?





Revolução Agrícola - 14 mil anos

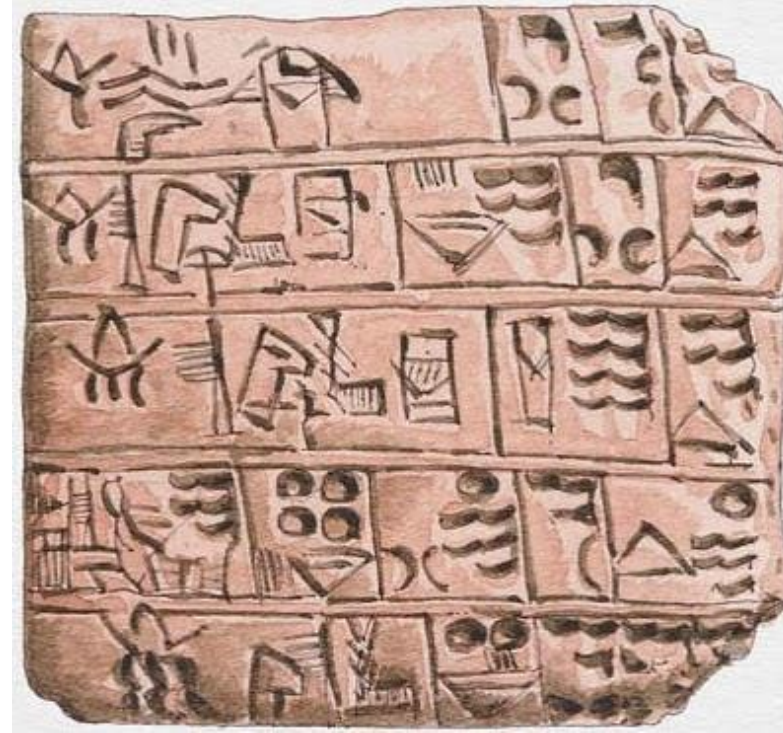


- Semear
- Cuidar
- Colher
- Armazenar
- Trocar
- Organizar
- Acreditar
- Controlar (plantas, animais domésticos e ambiente)

Cidades - 10 mil anos



Escrita - 5 mil anos



- Construir
- Reformar
- Ampliar
- Comprar
- Vender
- Emprestar
- Contar
- Calcular
- Medir
- Estimar
- Prever
- Legislar
- Coibir
- Punir
- Defender
- Atacar

Engenheiro

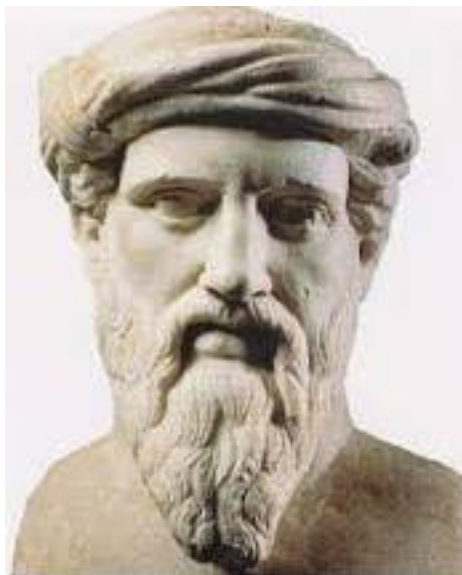
Contador

Advogado

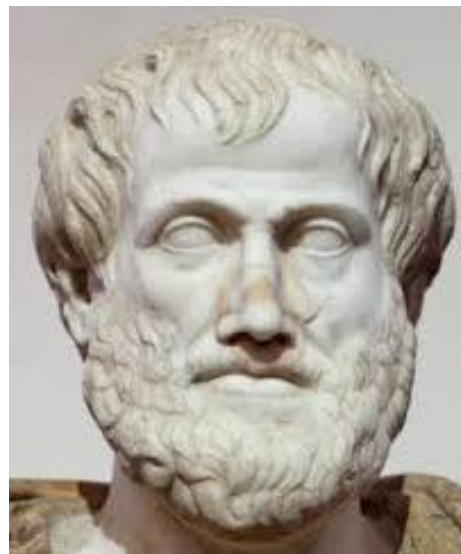
Rei

Sacerdote

Filosofia e Matemática - 300 a.C.



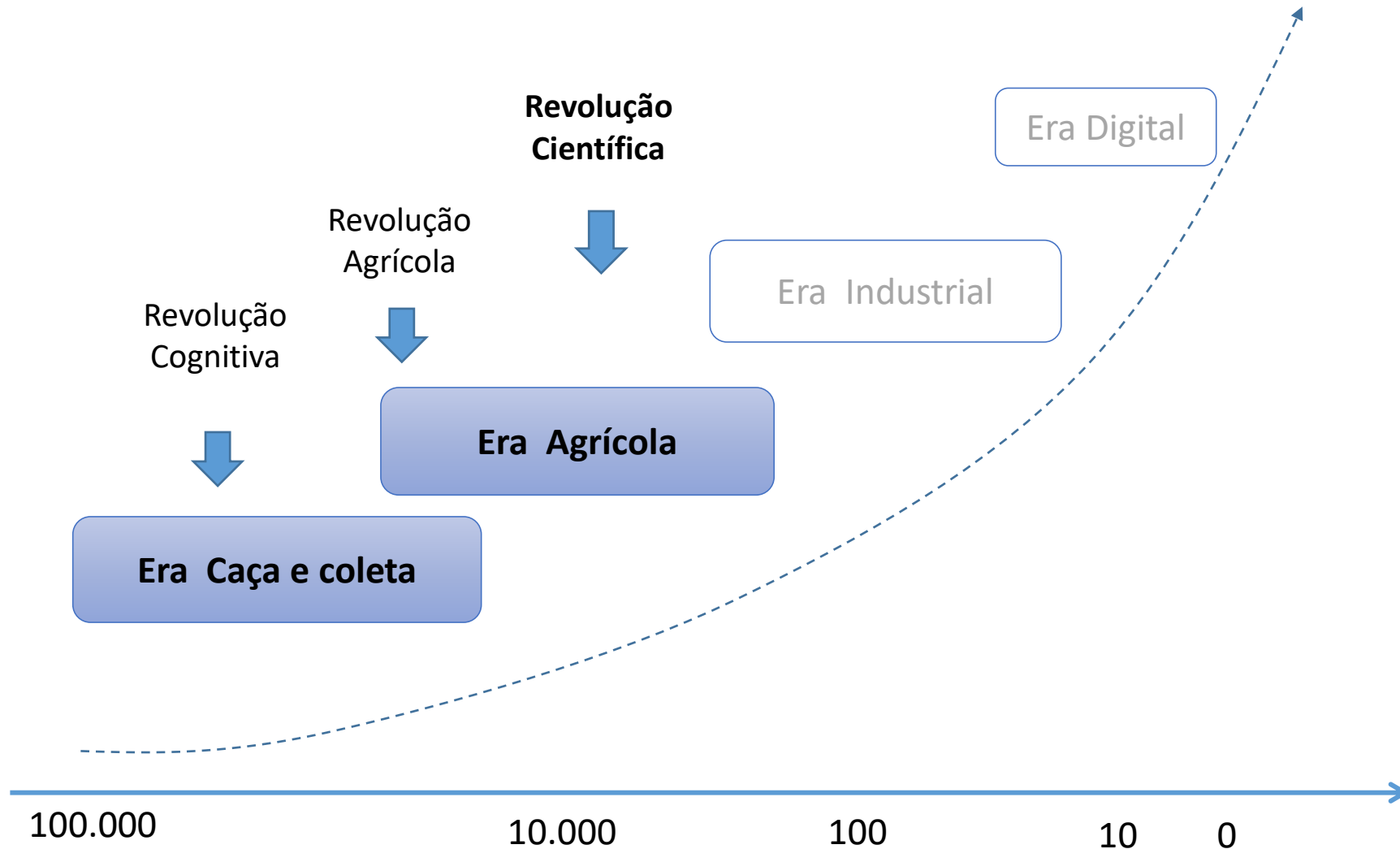
Pitágoras



Aristóteles



Euclides



QUIZ # 6

Reconhece essas pessoas?



1.



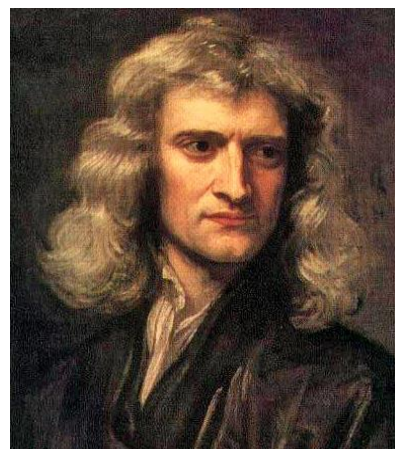
2.



3.



4..



5.



6.

Revolução Científica - Mecânica



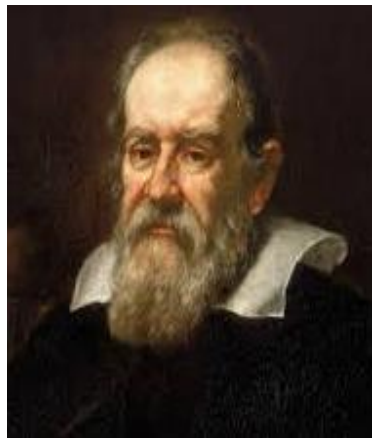
1. Nicolas Copernicus



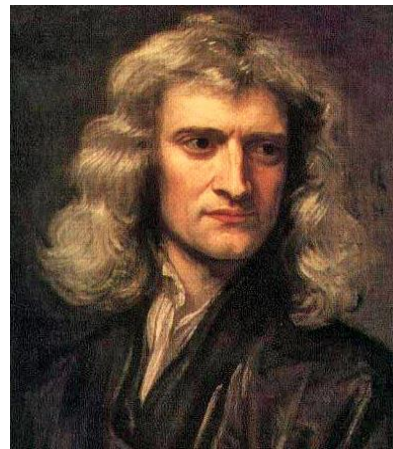
2. Tycho Brahe



3. Johannes Kepler



4. Galileo Galilei



5. Isaac Newton



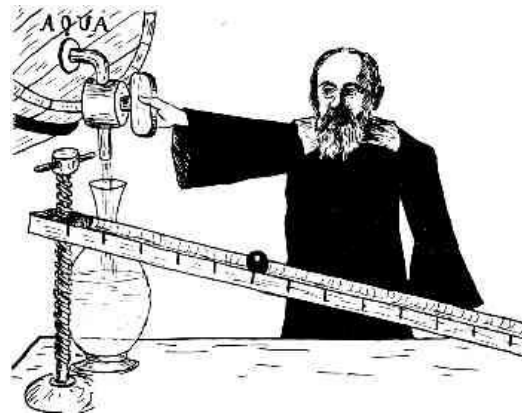
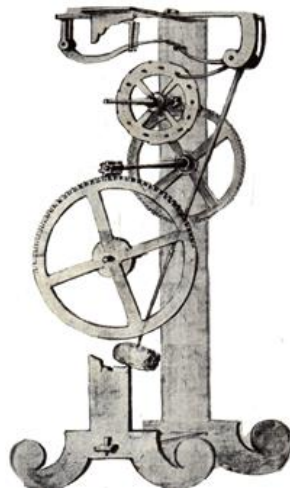
6. Gottfried Leibniz

Revolução Científica - Óptica



(vidro, espelho)

Revolução Científica - Relógios



1 hora:

- Verão: 82 min
- Inverno: 38 min

Revolução Científica 2/2 - Elétron



1. Gauss



2. Ampere



3. Faraday



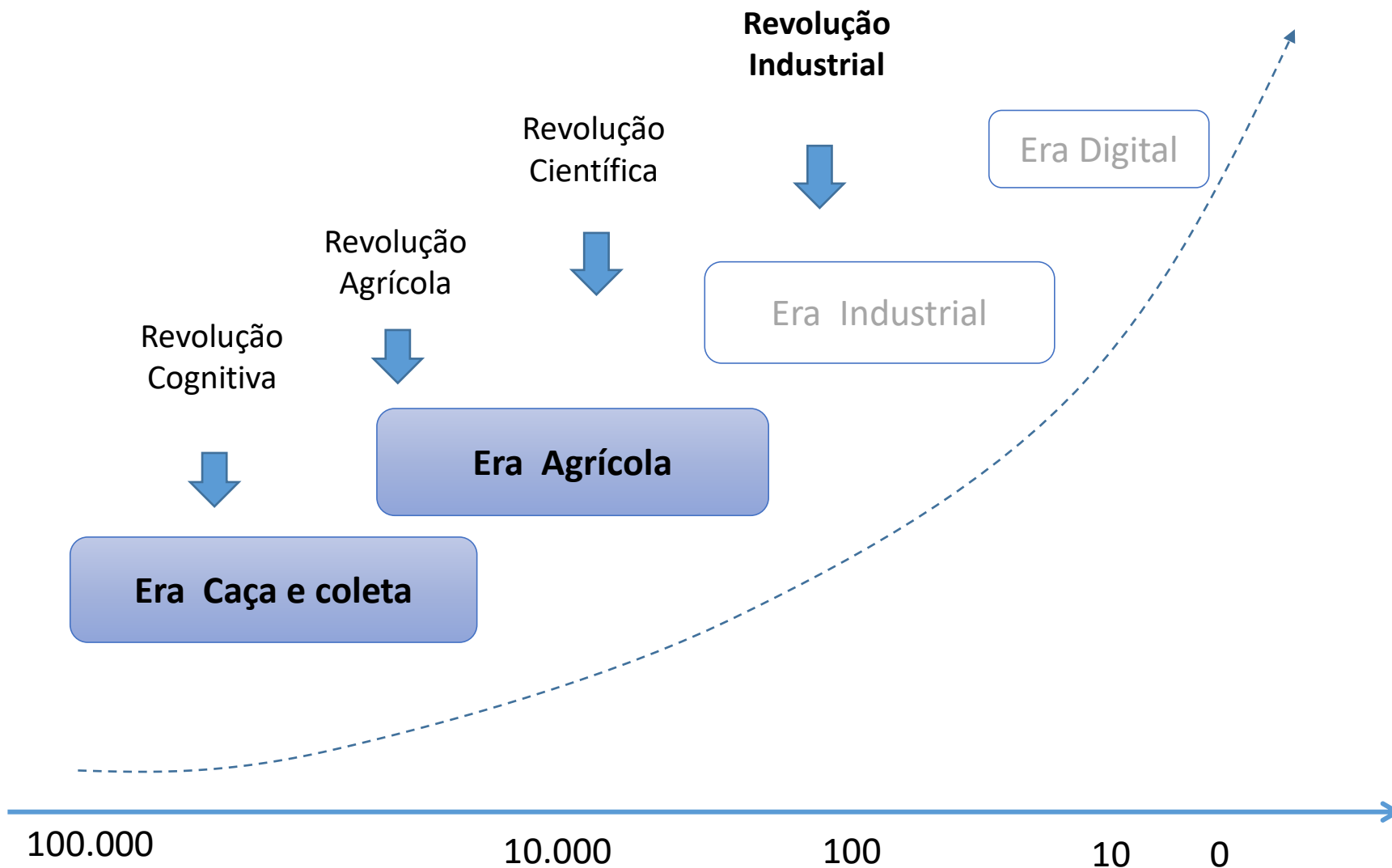
1. Maxwell



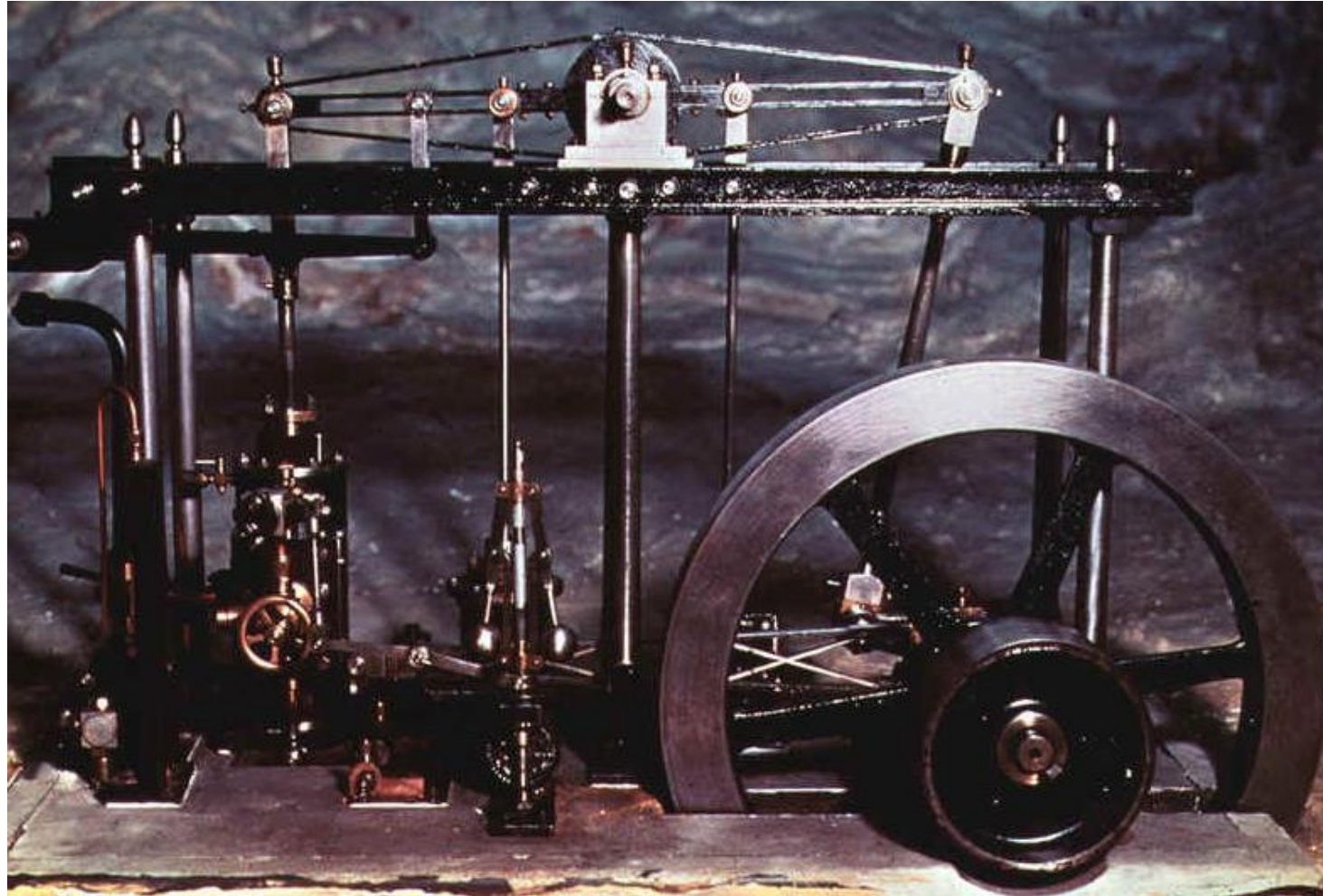
2. Hertz



3. Fourier

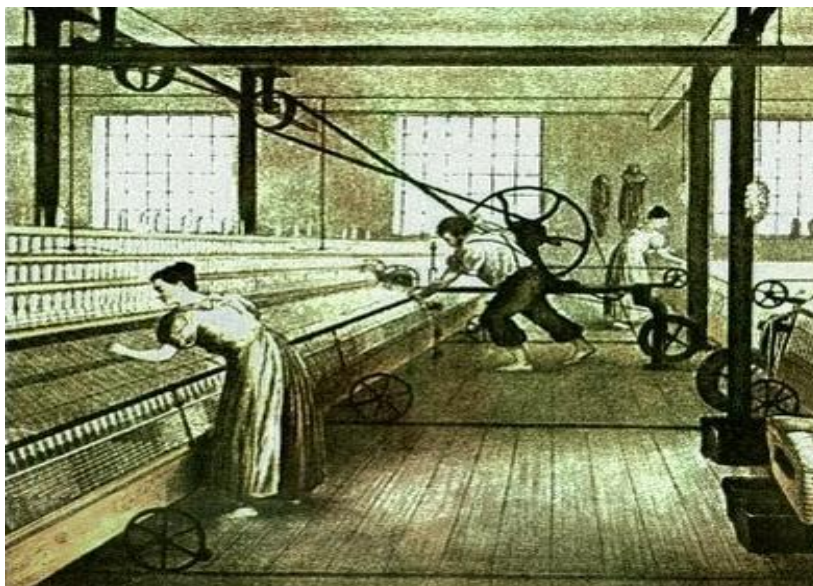
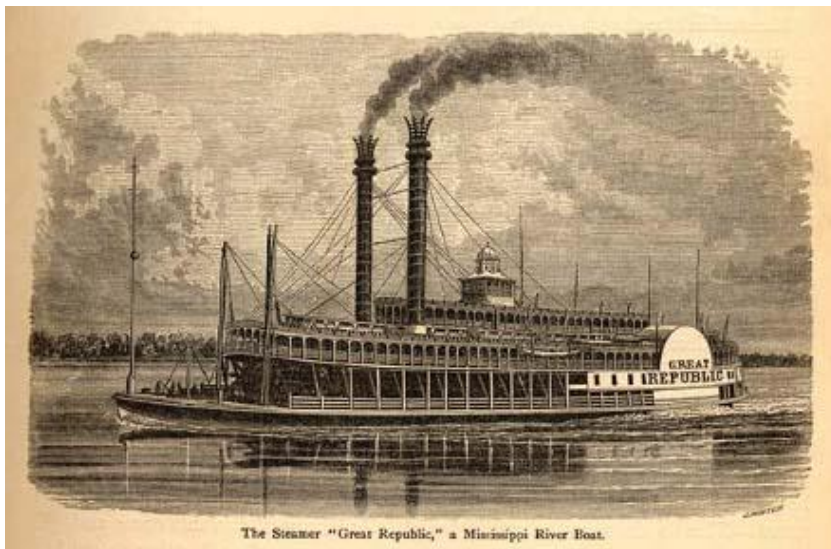


Revolução Industrial - Máquina a Vapor



(chaleira ficou fervendo por mais de 1000 anos !!)

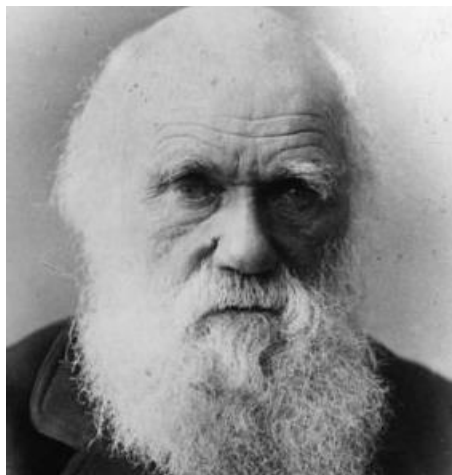
Revolução Industrial - Aumenta a capacidade



Revolução da Vida



Jean-Baptiste Lamarck



Charles Darwin

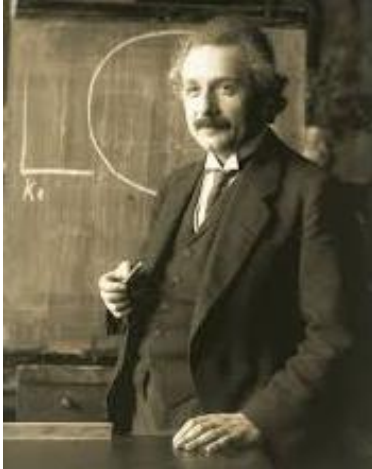


Gregor Mendel

Revolução do Átomo (início sec. XX)



Max Planck



Albert Einstein



Ludwig Boltzmann



Ernest Rutherford

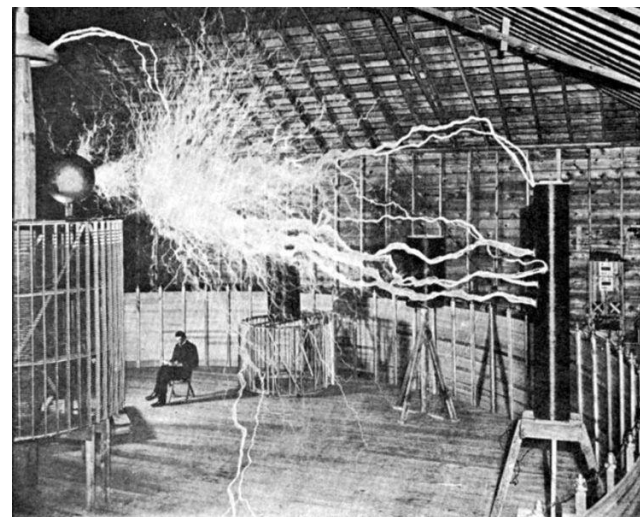
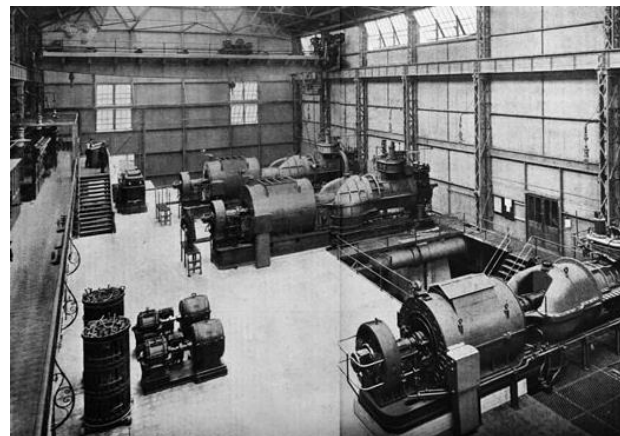


Werner Heisenberg

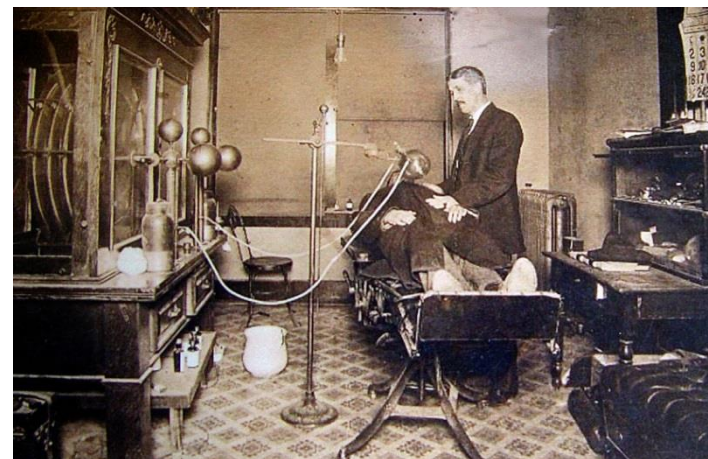
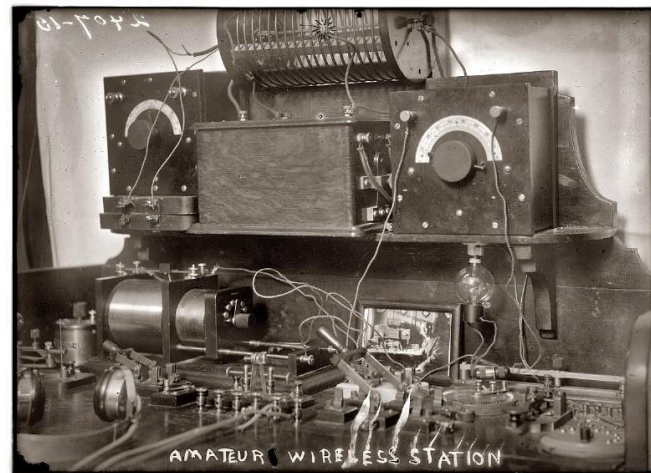
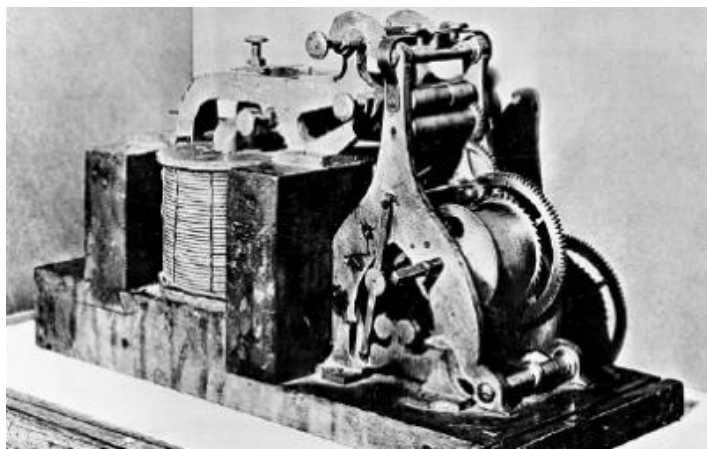


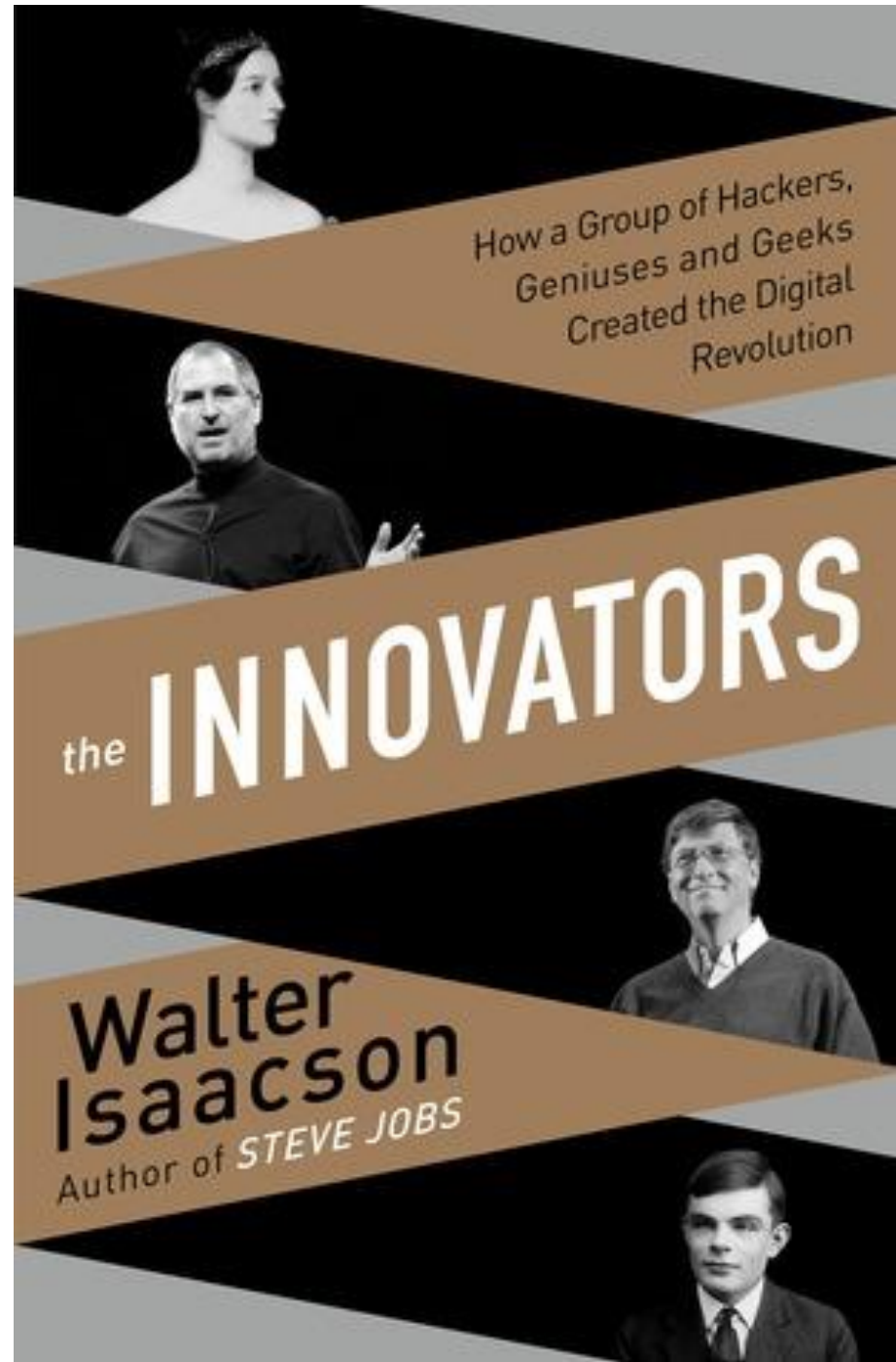
Erwin Schrödinger

Revolução da Eletricidade (1/2)



Revolução da Eletricidade (2/2)



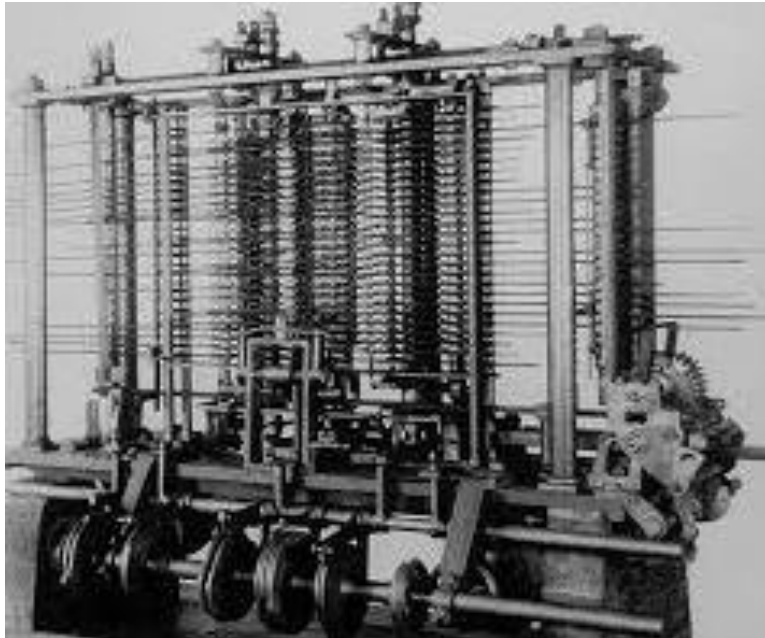


How a Group of Hackers,
Geniuses and Geeks
Created the Digital
Revolution

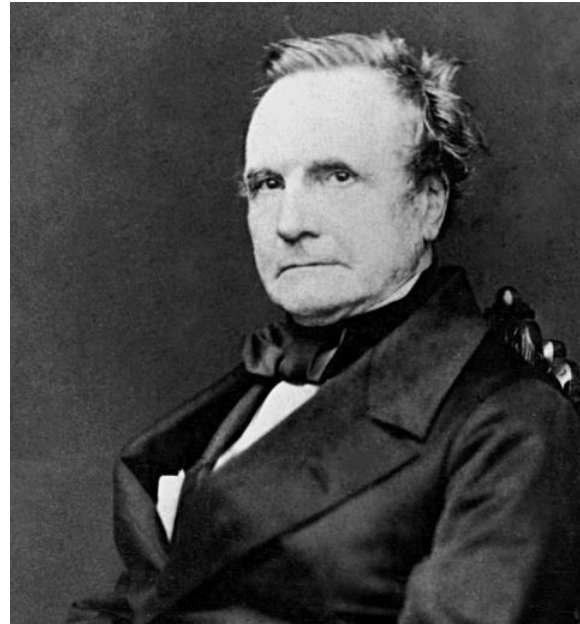
the **INNOVATORS**

**Walter
Isaacson**
Author of *STEVE JOBS*

Voltando um pouco no tempo



**Máquina Diferencial
(1847)**

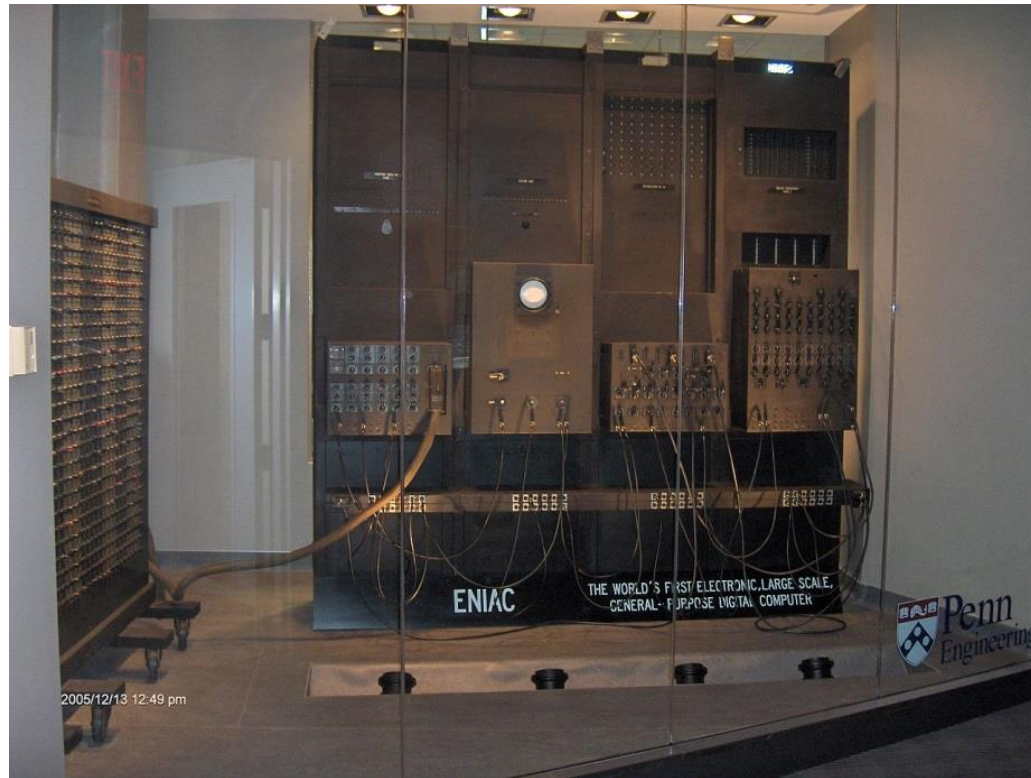


Charles Babbage



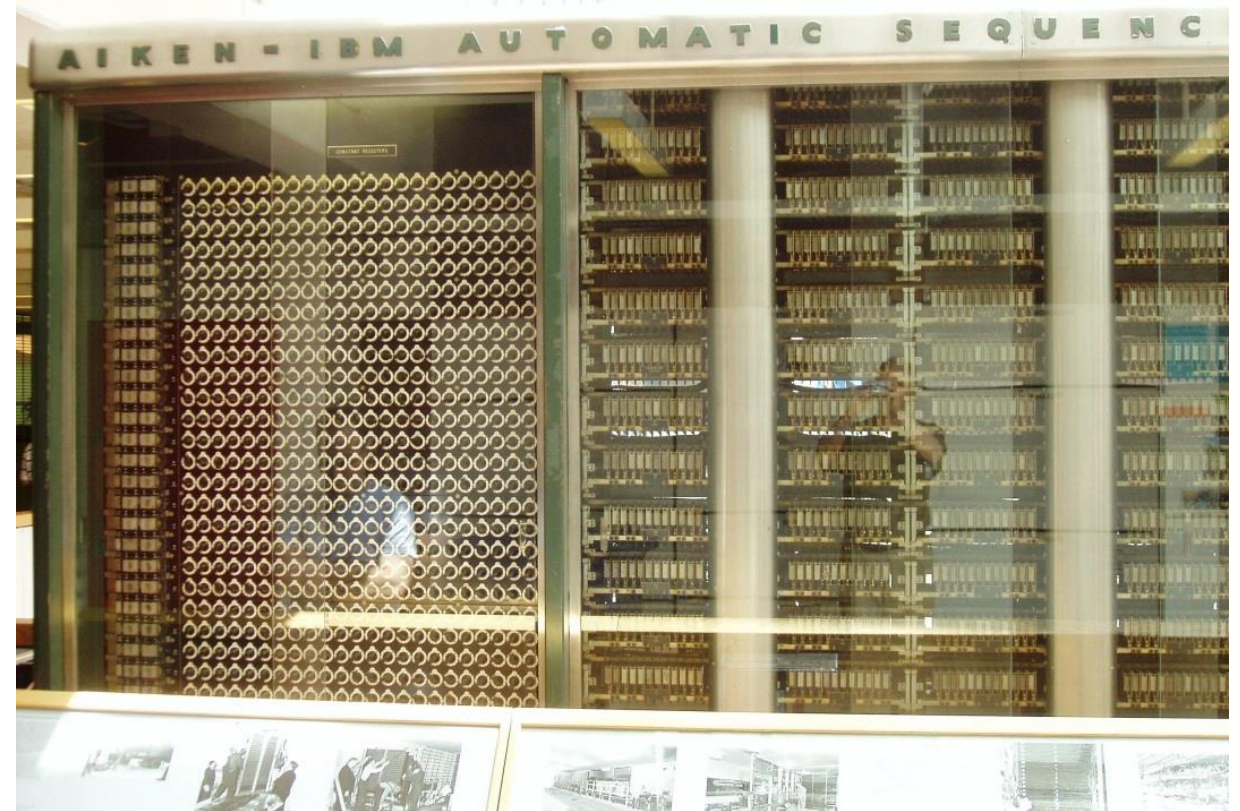
Ada Lovelace

Surge o Computador



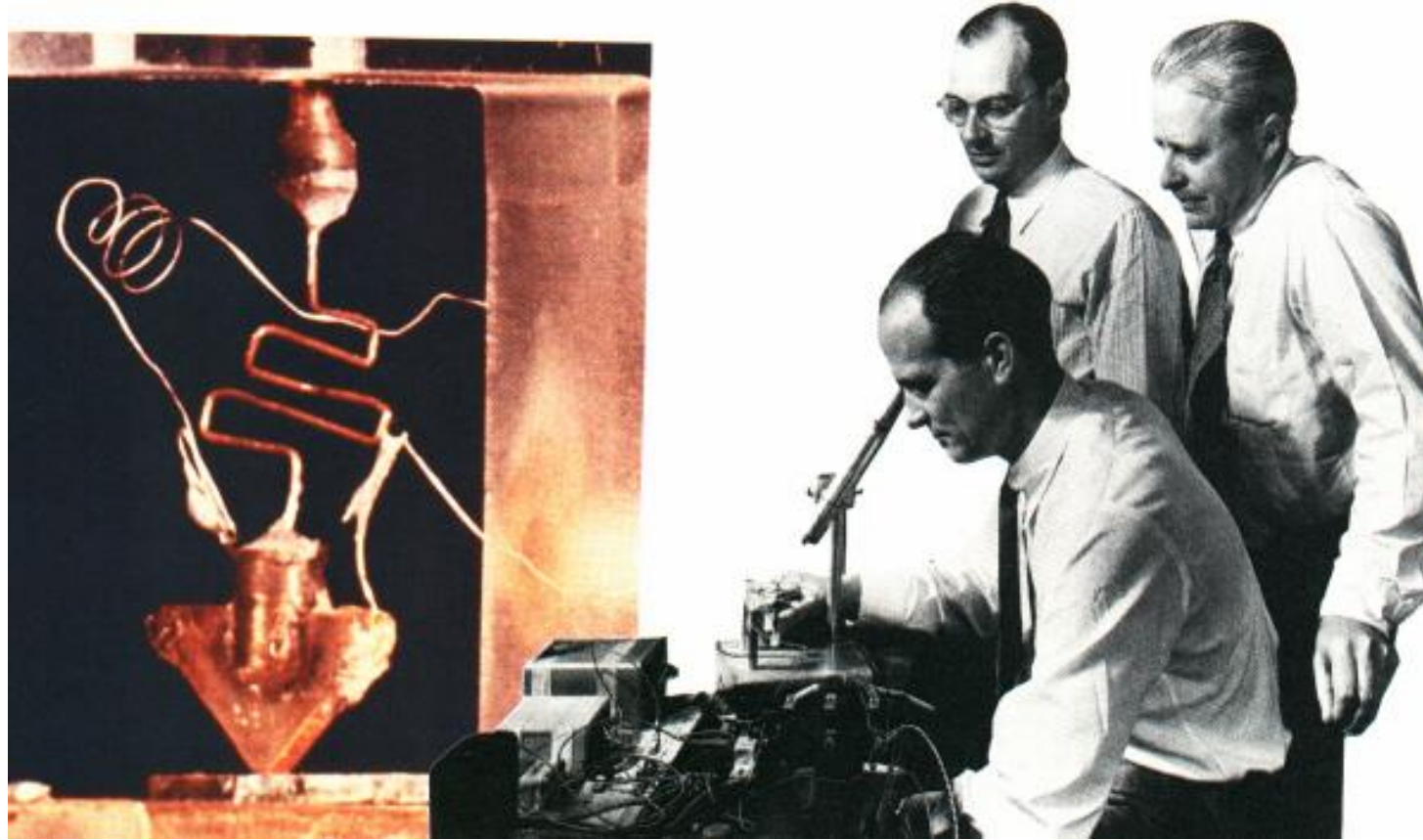
Electronic Numerical Integrator And Computer

ENIAC (1944)
Univ. Pennsylvania



Mark I (1944)
Harvard (IBM)

Revolução do Silício (´50) - Transistor



**Transistor (1947) ATT – Bell Labs
John Bardeen, Willian Shockley, Walter Brattain**

Revolução do Silício (´60) – Circuitos Integrados



Robert Noyce

FAIRCHILD
SEMICONDUCTOR®



Gordon Moore

Enquanto isso

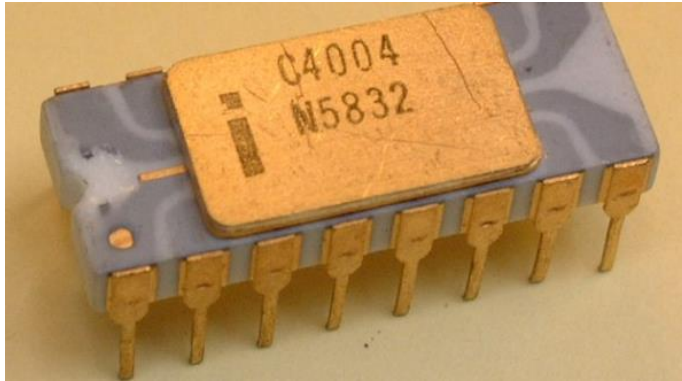


Yuri Gagarin (12 Abril 1961)

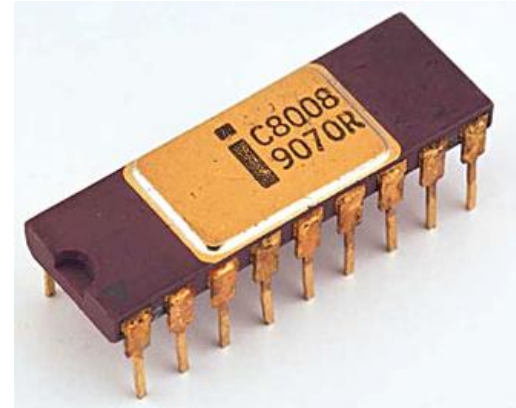


Apolo 11 (20 de julho 1969)

Chega o Microprocessador ('70)



Intel – 4004 (1971)



Intel – 8008 (1972)

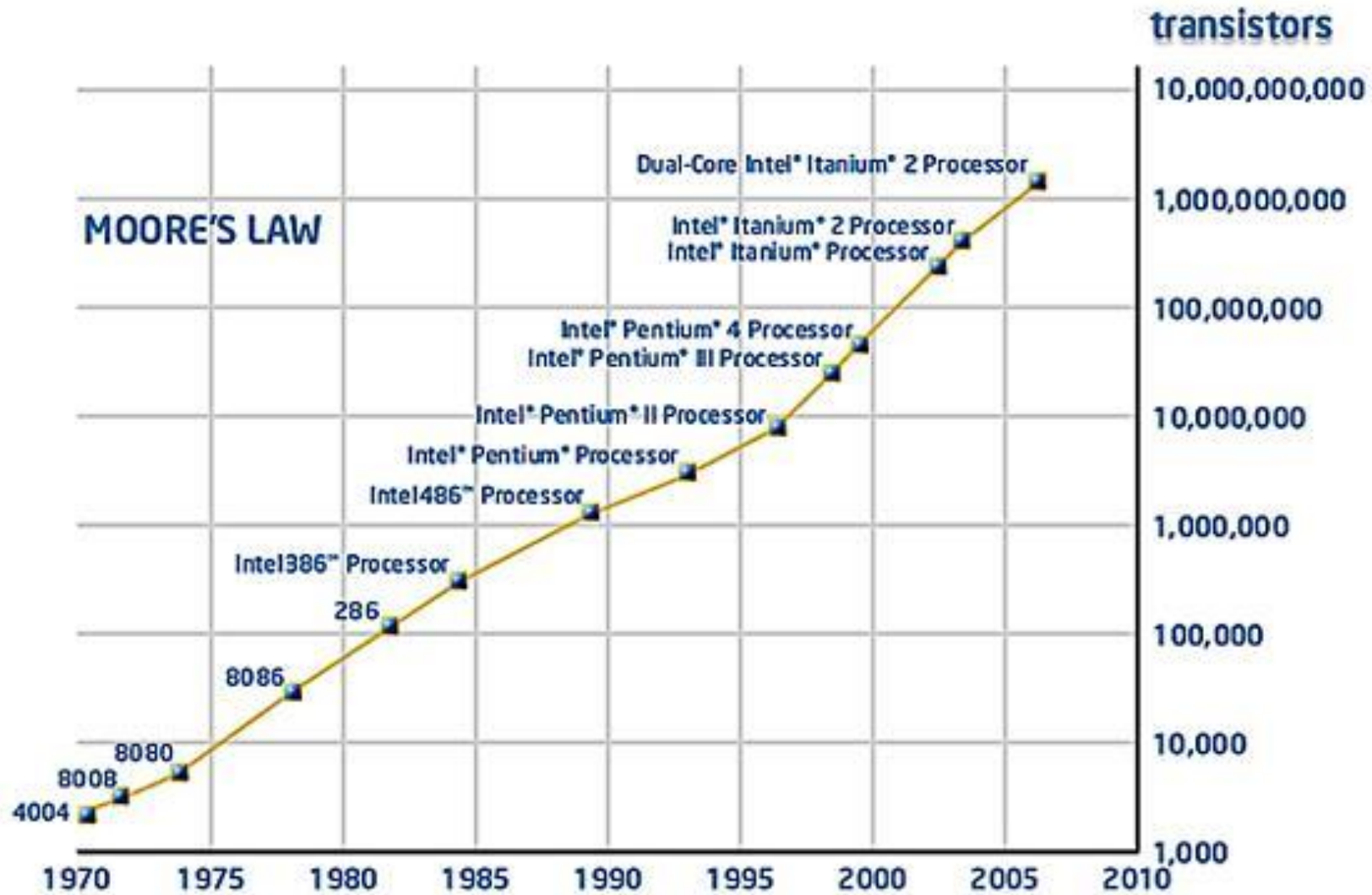


Intel 8080 (1974)



Intel 8086 (1976)

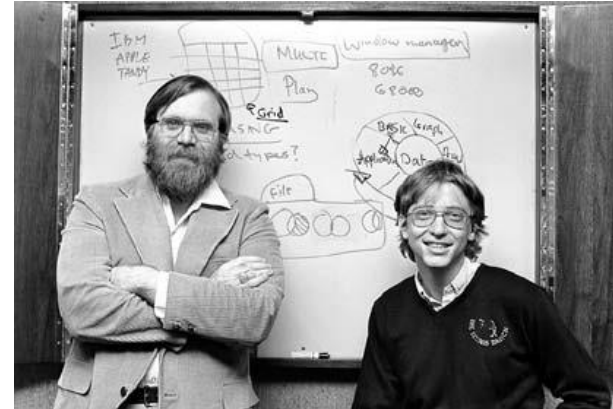
Revolução do Silício Lei de Moore



Revolução dos Microcomputadores ('74 ~)



Altair 8800 (1974)



**Paul Allen & Bill Gates
(Microsoft, 1975)**



Aple I (1976)



Steve Jobs & S. Wosniak

World Wide Web (' 90 ~)



**Microcomputador NeXT
Utilizado pelo Tim Berners-
Lee no CERN (1989)**

World Wide Web

The WorldWideWeb (W3) is a wide-area [hypermedia](#) information retrieval initiative aiming to give universal access to a large universe of documents.

Everything there is online about W3 is linked directly or indirectly to this document, including an [executive summary](#) of the project, [Mailing lists](#) , [Policy](#) , November's [W3 news](#) , [Frequently Asked Questions](#) .

What's out there?

Pointers to the world's online information, [subjects](#) , [W3 servers](#) , etc.

Help

on the browser you are using

Software Products

A list of W3 project components and their current state. (e.g. [Line Mode](#) , [X11 Viola](#) , [NeXTStep](#) , [Servers](#) , [Tools](#) , [Mail robot](#) , [Library](#))

Technical

Details of protocols, formats, program internals etc

Bibliography

Paper documentation on W3 and references.

People

A list of some people involved in the project.

History

A summary of the history of the project.

How can I help ?

If you would like to support the web..

Getting code

Getting the code by [anonymous FTP](#) , etc.

Era dos Dispositivos Móveis (2000 ~)



Era dos APPs (2007 ~)



QUIZ # 7

O que têm em comum?



Reflexão

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