

# The Digital Revolution and the Hackers Culture.

SAS Summer School  
June 10–15th, 2019

Fabio Grazioso

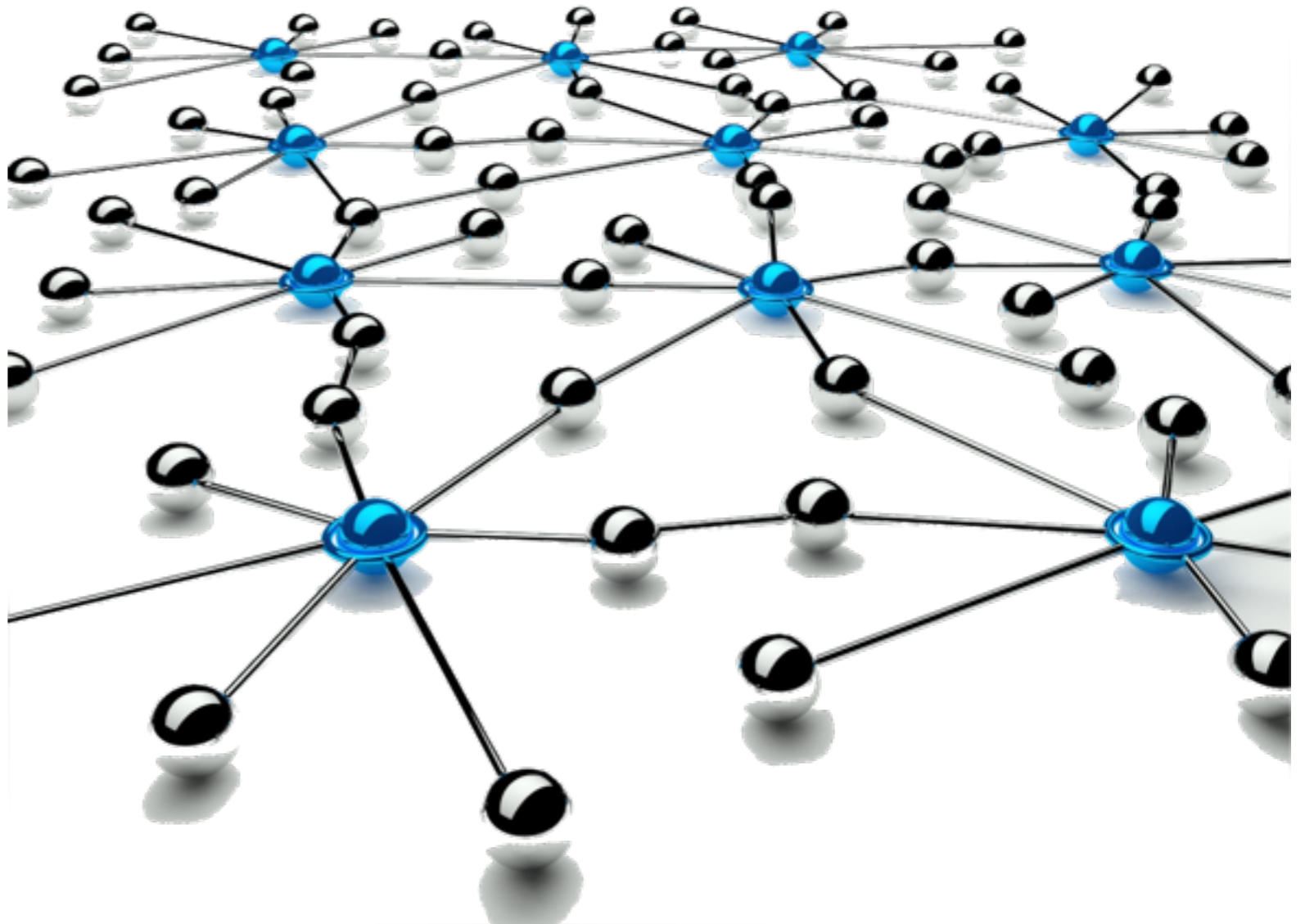
# The Digital Revolution

# List of topics

- The history and evolution of digital technologies
- The details of some examples of digital technologies and digital media
- Authors who have contributed to the debate on digital technologies
- Critical analysis of digital technology

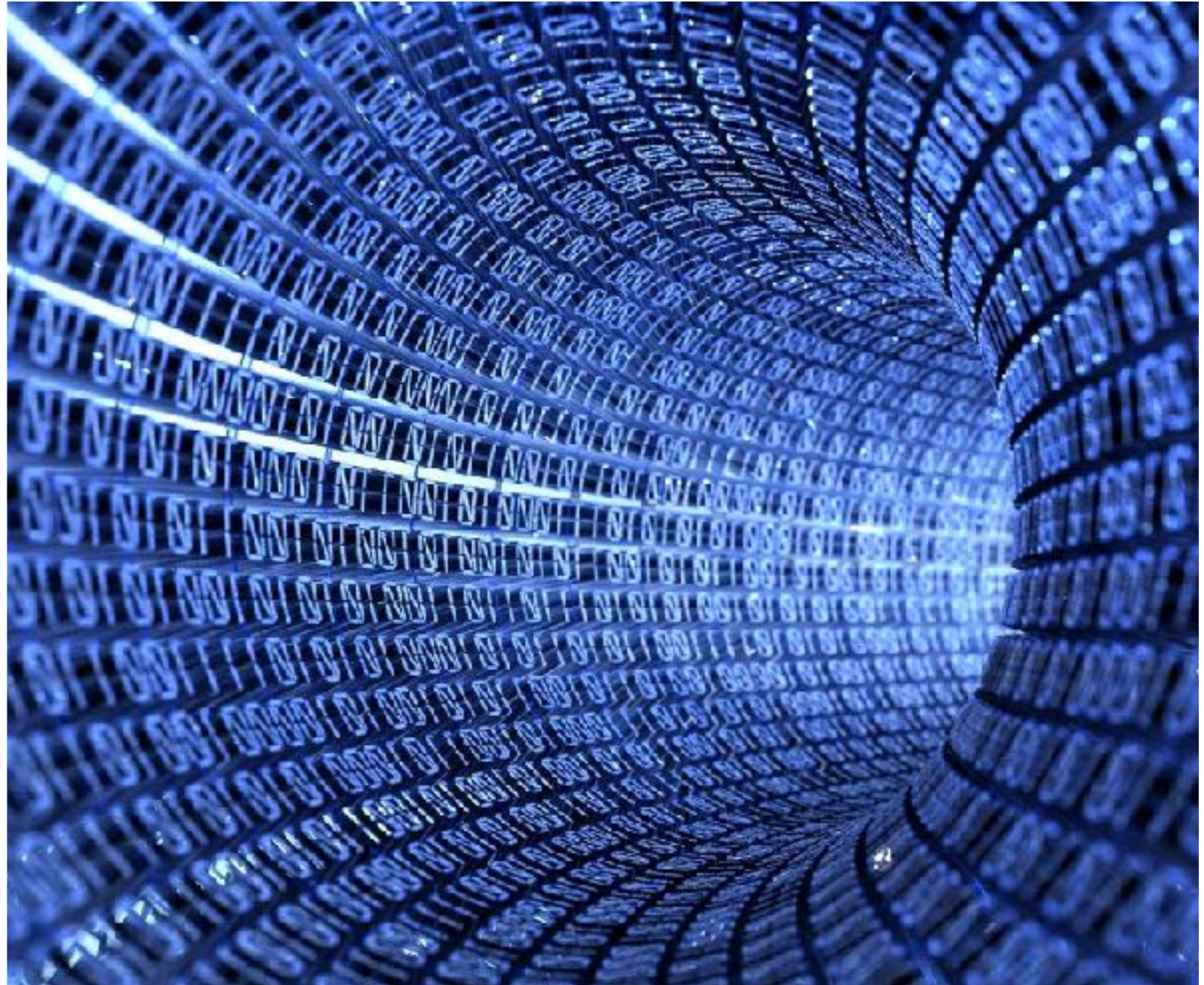
# Digital Technology

- Computers
- Computer Networks
- Mobile phones
- eBooks
- Podcasts
- Music
- Movies



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# some consequences of digital technology

- easy to copy
- easy to transmit (error correction)
- question identity
- question reality
- digital is “less natural” (e.g. writing)

# New “questions”

- ownership
- authenticity



# Postmodernism

From Wikipedia:

«[...] postmodernism is generally defined by an attitude of skepticism, irony, or rejection toward the meta-narratives and ideologies of modernism, often calling into question various assumptions of Enlightenment rationality.

Consequently, common targets of postmodern critique include universalist notions of **objective reality**, morality, **truth**, **human nature**, reason, language, and social progress.»

# Postmodernism

From Wikipedia (criticism):

«Postmodernism, the school of 'thought' that proclaimed '**There are no truths**, only interpretations' [...] [creating a] distrust of the very idea of **truth** and their disrespect for **evidence**, settling for 'conversations' in which nobody is wrong and nothing can be confirmed [...]» - Daniel Dennett

# **Social Cycle Theory**

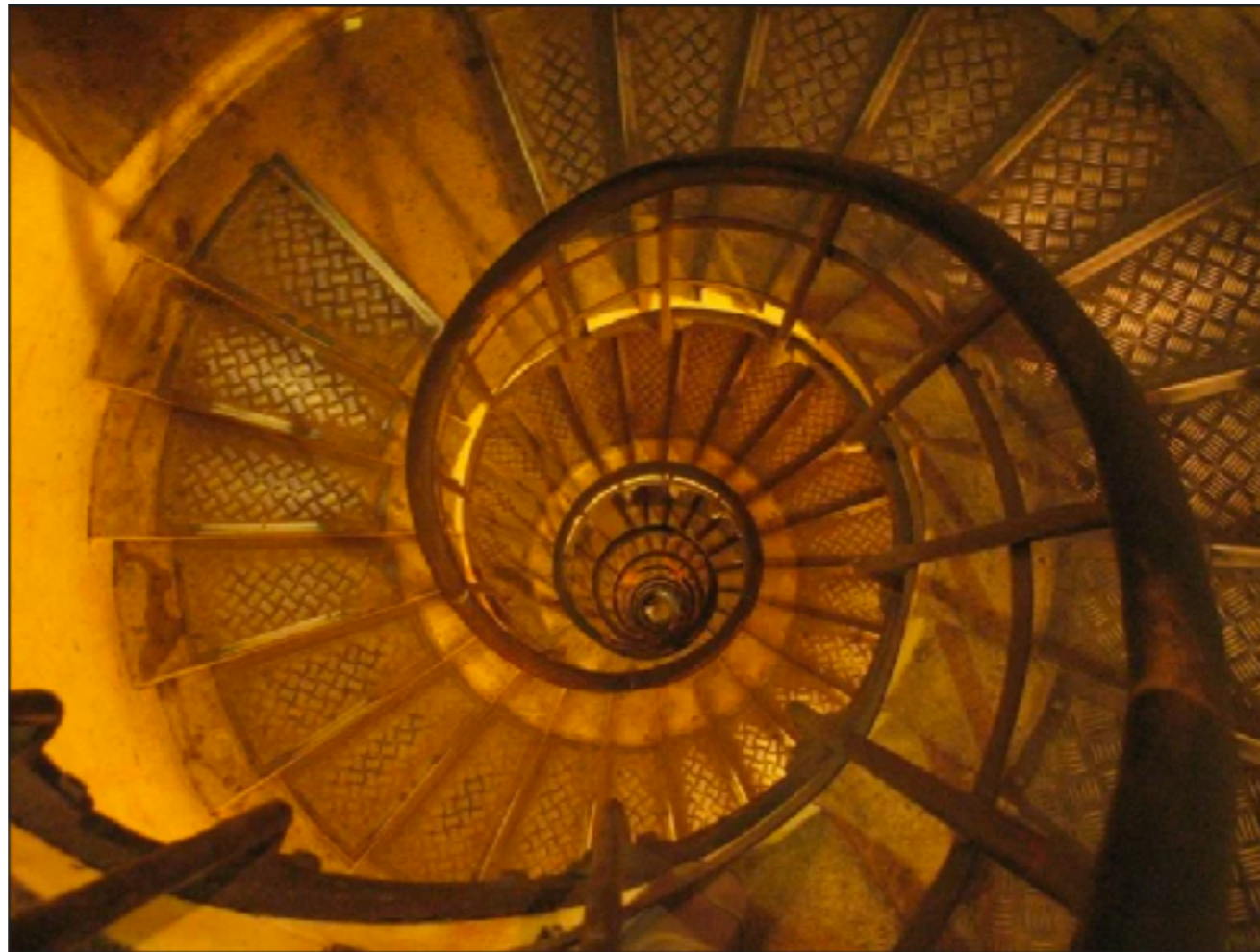
# History as a linear progression

- some history model represent history as a linear progress



# Cycles in history

- some scholars have individuated a **cyclic nature** of history



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Sima Qian

Born c. 145 or 135 BC

Died c. 86 BC



# Cycles in history

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Gianbattista Vico

Born 23 June 1668

Died 23 January 1744

# Cycles in history

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Joseph Alois Schumpeter

Born 8 February 1883

Died 8 January 1950

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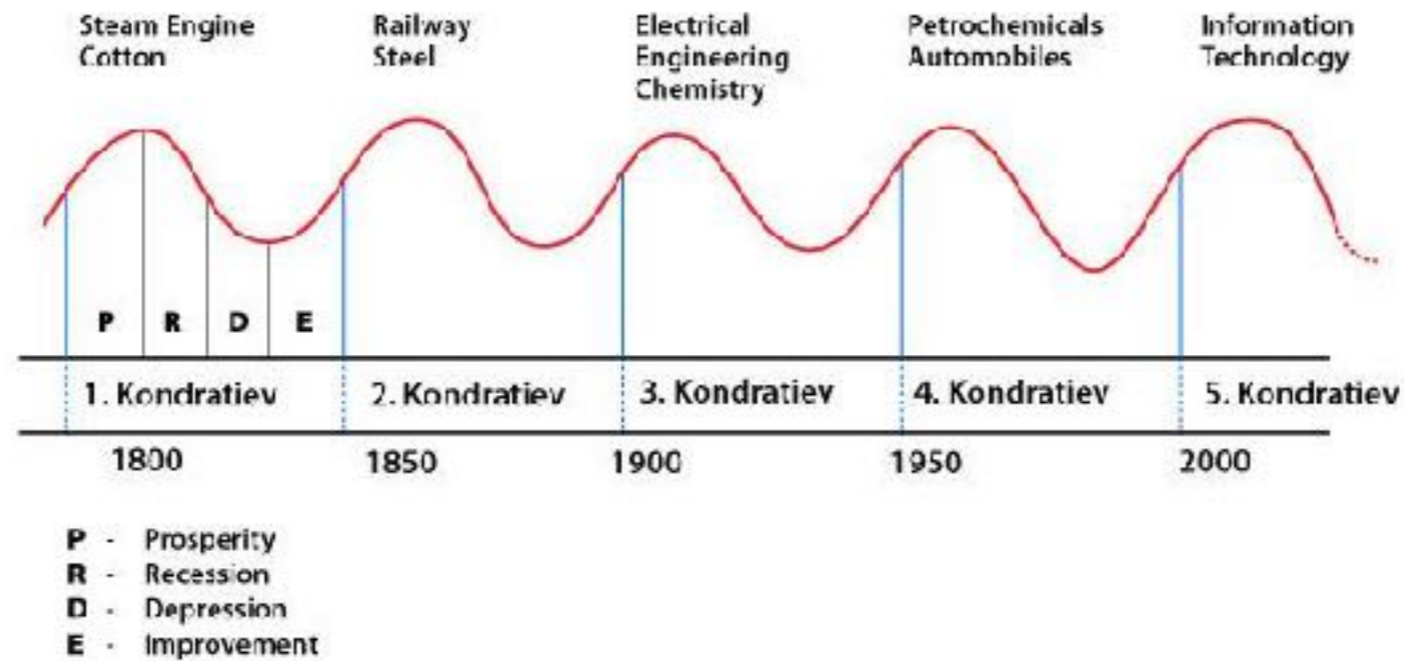


Nikolai Dmitriyevich Kondratiev  
(Никола́й Дми́триевич Кондра́тьев)  
Born 4 March 1892  
Died 17 September 1938

# Kondratiev cycles

## Kondratiev Waves

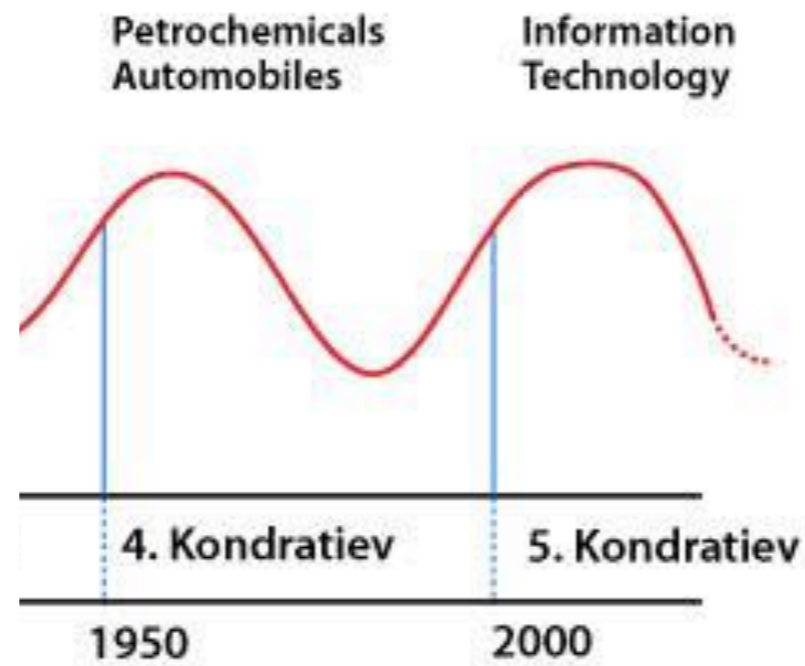
A schematic drawing showing the "World Economy" over time according to the Kondratiev theory



# Kondratiev cycles

- The Industrial Revolution—1771
- The Age of Steam and Railways—1829
- The Age of Steel and Heavy Engineering—1875
- The Age of Oil, Electricity, the Automobile and Mass Production—1908
- The Age of Information and Telecommunications—1971

# Information cycle



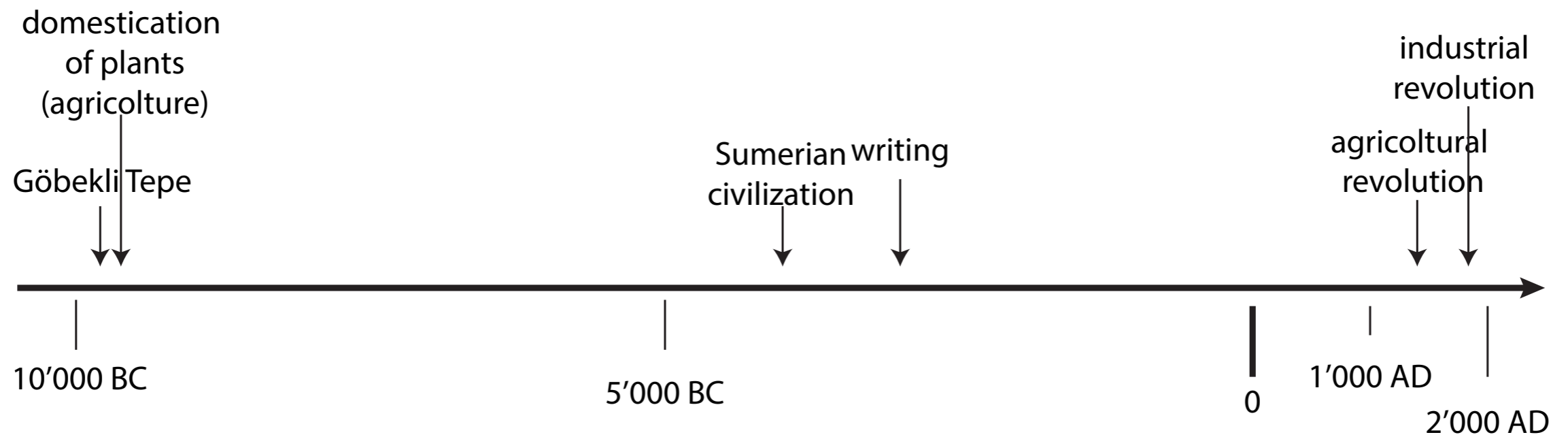
# **Historic perspective: A timeline of the Digital Revolution**

# Timeline

- 1947 - the transistor was invented
- 1969-1971 - the microprocessor was created
- 1969 - ARPANET (then became the internet) was created
- 1978 - Space Invaders (videogame) was created
- 1983 - the first mobile phone
- 1990 - HDTV first broadcast (World Cup)
- 1993 - the first web browser with images
- 2005 - the population of the Internet reached 1 billion
- 2007 - Apple Inc. introduced the iPhone
- 2012 - the population of the Internet reached 2 billions
- 2015 - tablets and smartphones exceed personal computers in Internet usage
- 2017 - almost half of the world's population is connected

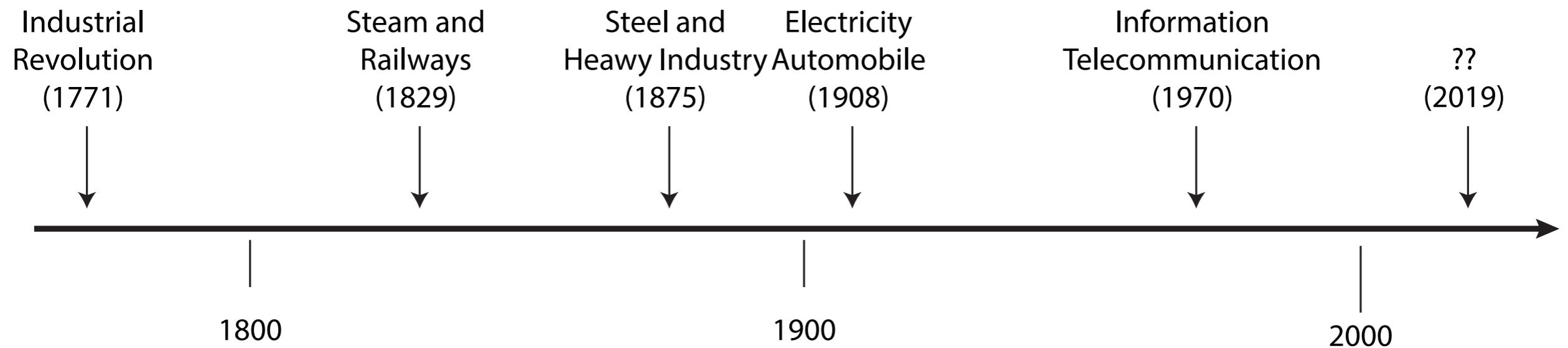


# History timeline



# Recent History timeline

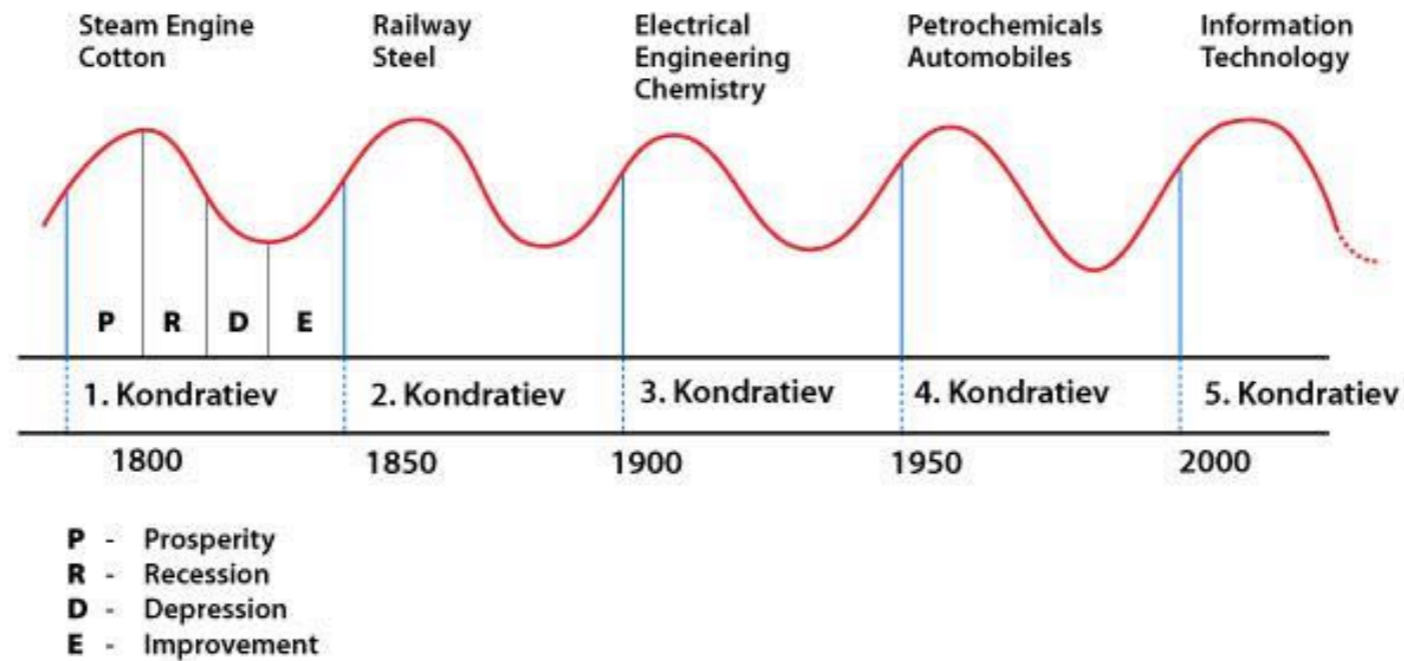
## Kondratiev cycles



# Kondratiev cycles

## Kondratiev Waves

A schematic drawing showing the "World Economy" over time according to the Kondratiev theory



**some relevant events**

# Relevant events

- 1969 DARPA starts to work on data transmission technologies



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- 1970 the UNIX operating system is written



# Relevant events

- 1969 DARPA starts to work on data transmission technologies
- 1970 the UNIX operating system is written
- 1975 Microsoft is founded

MICRO  
SOFT  
1975

MICROSOFT  
1980

MICROSOFT  
1982

Microsoft®  
1987



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**War Games (1983)**

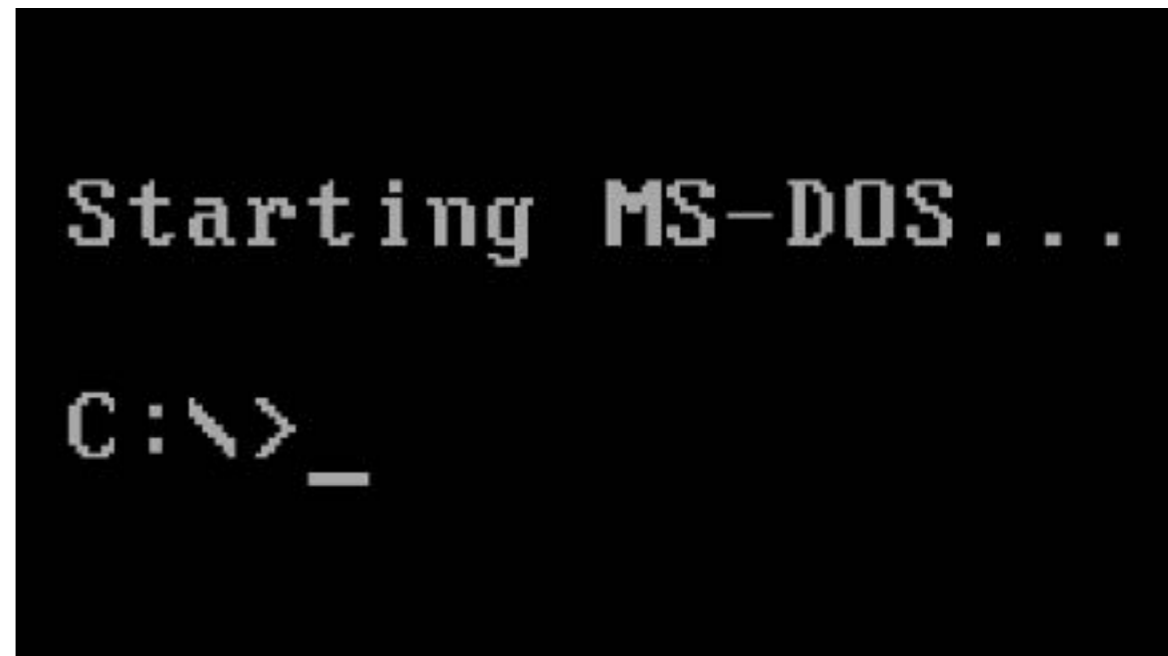
# Relevant events

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- 1979 Walkman



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- 1981 MS/DOS operating system



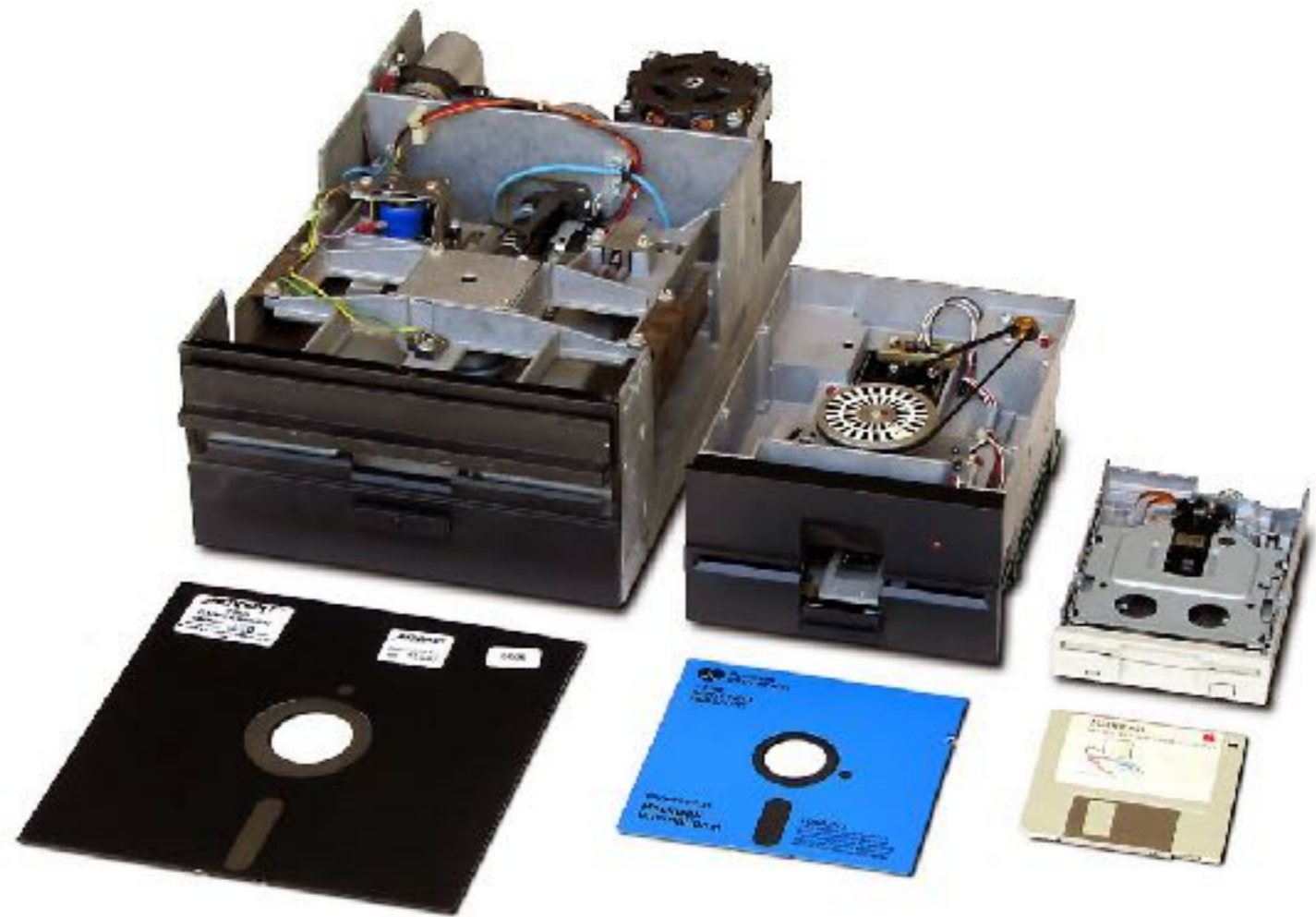
# Relevant events

- 1981 3 1/2 floppy disk



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- 1983 first mobile phone



Motorola DynaTAC 8000x



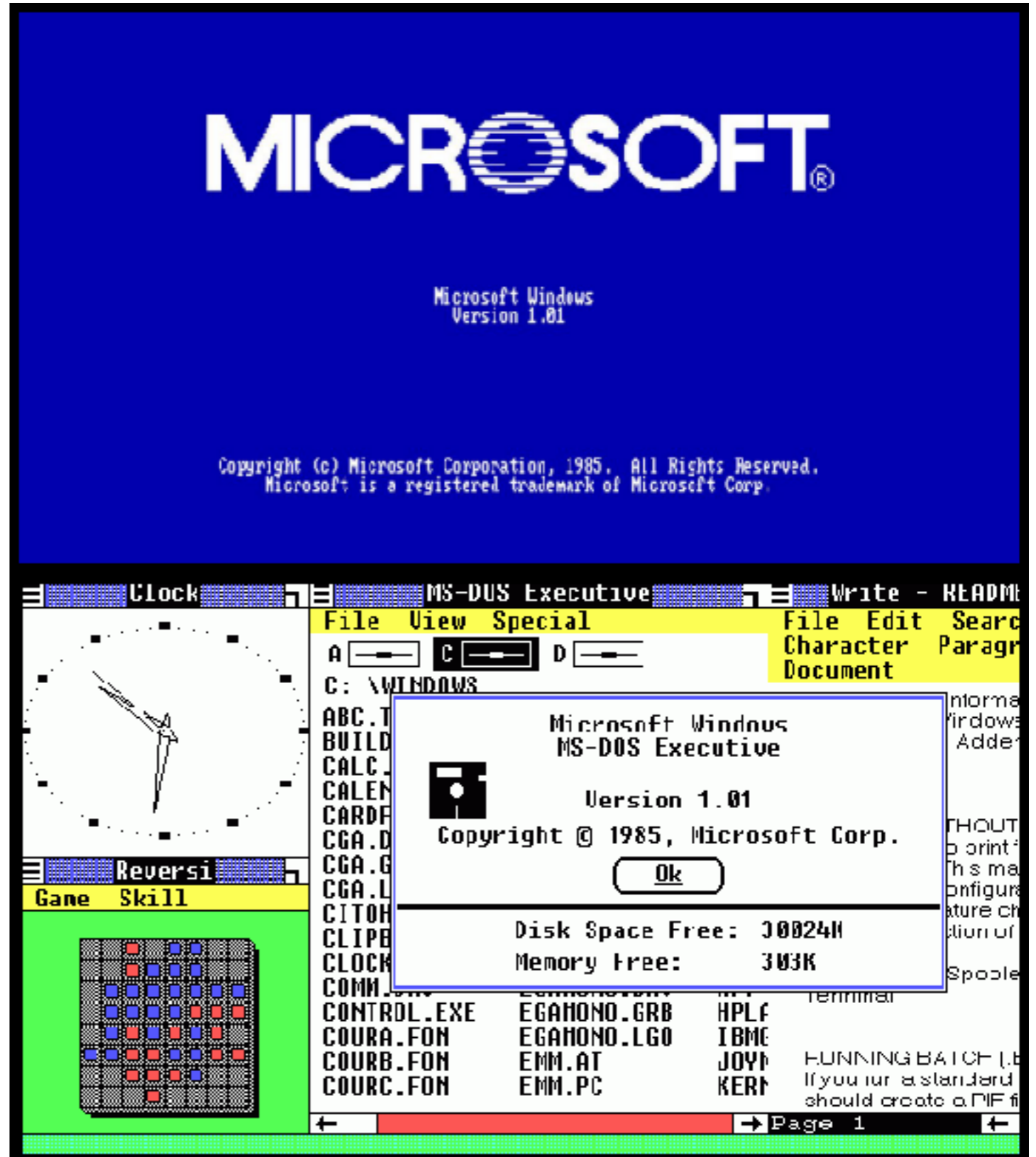


BRITISH  
PATHÉ



# Relevant events

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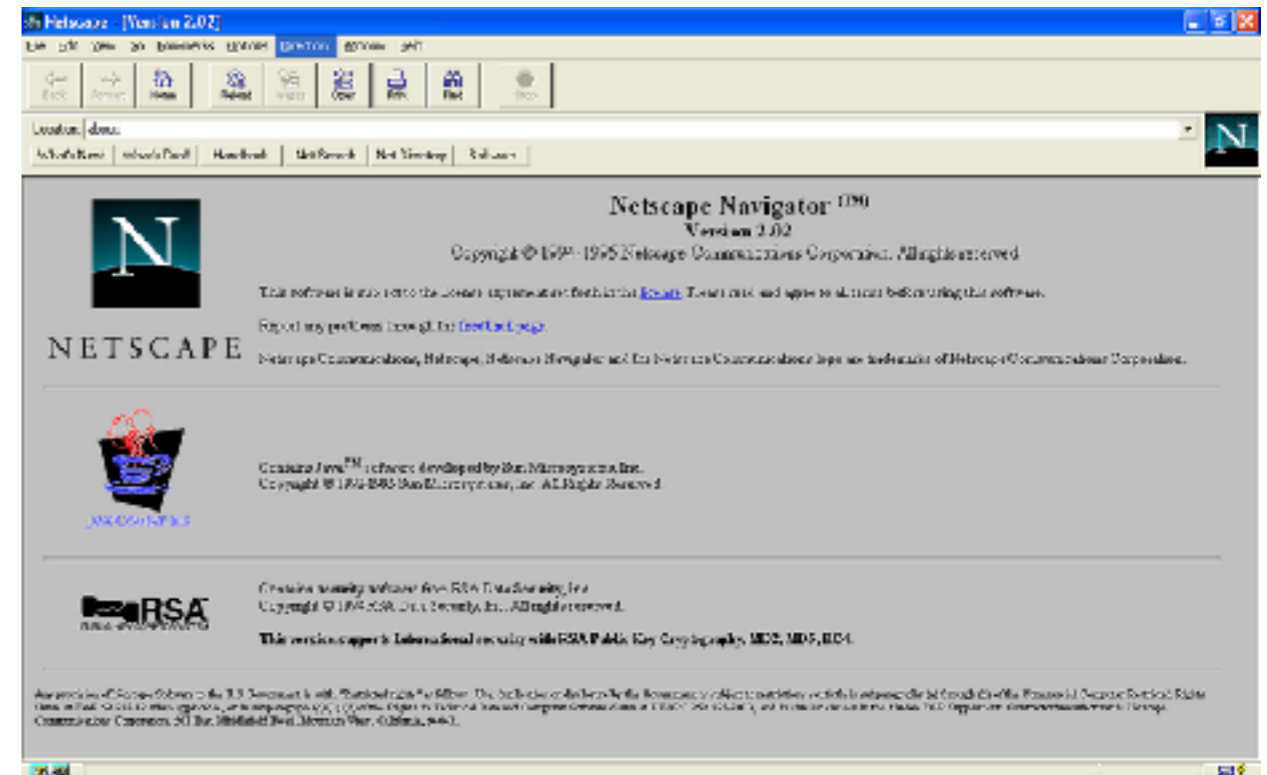
# Relevant events

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- 1983 first mobile phone
- 1985 Windows 1.0
- 1989 World Wide Web  
(hypertext HTML language)

```
1 <!DOCTYPE html>
2 <html>
3   <head>
4     <title>Example</title>
5     <link rel="stylesheet" href="styl
6   </head>
7   <body>
8     <h1>
9       <a href="/">Header</a>
10    </h1>
11    <nav>
12      <a href="one/">One</a>
13      <a href="two/">Two</a>
14      <a href="three/">Three</a>
15    </nav>
```

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- 1989 World Wide Web (hypertext HTML language)
- 1990 Web Browser



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- 1993 Windows 3.1



# Relevant events

- 1998 Google

The word "Google" is displayed in its iconic multi-colored font. The letters are: G (blue), O (red), O (yellow), g (blue), l (green), e (red). The font is a sans-serif typeface with a slight shadow effect.



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Julian Assange, "When Google Met WikiLeaks", OR Books (2016)



# Relevant events

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- 2001 Wikipedia
- 2003 Skype



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## iPhone



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- 2006 iPhone
- 2009 WhatsApp



**WhatsApp**

# Relevant events

- 2010 30% of world population have access to the internet





# Relevant events

- 2010 30% of world population have access to the internet
- 2015 Windows 10
- 2017 55% of world population have access to the internet



# Digital Culture

# Background ideas

- Information age
  - and its consequences
- from atoms to bits
- from reality to representation of reality
  - (postmodernity)

# Some key concepts

- What is **real**? is matter more real than information?
- What is **identity**? what makes “you” really you?
- When we embrace a **new technology**, what we “trade” for it?
  - What are the long-term **consequences**?
  - The advantages are in the interest of who?

# Atoms and bits

- Nicholas Negroponte (architect) founder and chairman Emeritus of MIT Media Lab.
- Also founded the One Laptop per Child Association (OLPC)
- In 1992 first investor **Wired Magazine**. From 1993 to 1998 had a monthly column in the magazine. Basic theme: "**Move bits, not atoms.**"
- Bestselling book **Being Digital** (1995).
  - forecasts on how the interactive world, the entertainment world and the information world would eventually merge.
  - belief that computers would make life better for everyone.
- Critics: failing to consider the historical, political and cultural realities with which new technologies should be viewed.
- Predicted wireless technologies.





Working The Edge

**Nicholas Negroponte**

Chairman Emeritus

**MIT Media Lab**

VIDEO PROVIDED BY UNIVERSITY OF PHOENIX LECTURE SERIES

Programmer Richard Stallman's 25-year crusade to banish proprietary software from planet Earth hasn't had many victories. Most recently, One Laptop Per Child stabbed RMS in the face by replacing its Stallman-approved freeware with a Windows operating system. OLPC head Nicholas Negroponte, who originally backed a free-software configuration, believes it's a necessary compromise to sell the low-price laptops in a Windows-centric world. Stallman's response compares Negroponte to a drug dealer handing out free samples at the playground.



credit: <https://gawker.com>



**“The medium is the message.”**

*Marshall McLuhan*

*in: “Understanding Media: The Extensions of Man” (1964)*



# Science Fiction

and other cultural references

# Novels, fiction, books

- Edward Forster - “The machine stops” (1909)
- William Gibson - “Burning Chrome” (1982)
- William Gibson - “Neuromancer” (1984)
- Eric Raymond - “The Cathedral and the Bazaar” (1999)
- Donald Norman - The Design of Everyday Things (2002)
- Aaron Swartz - Wikimedia at the Crossroads (online essay) (2006)
- Evgeny Morozov - “The Net Delusion: The Dark Side of Internet Freedom” (2011)

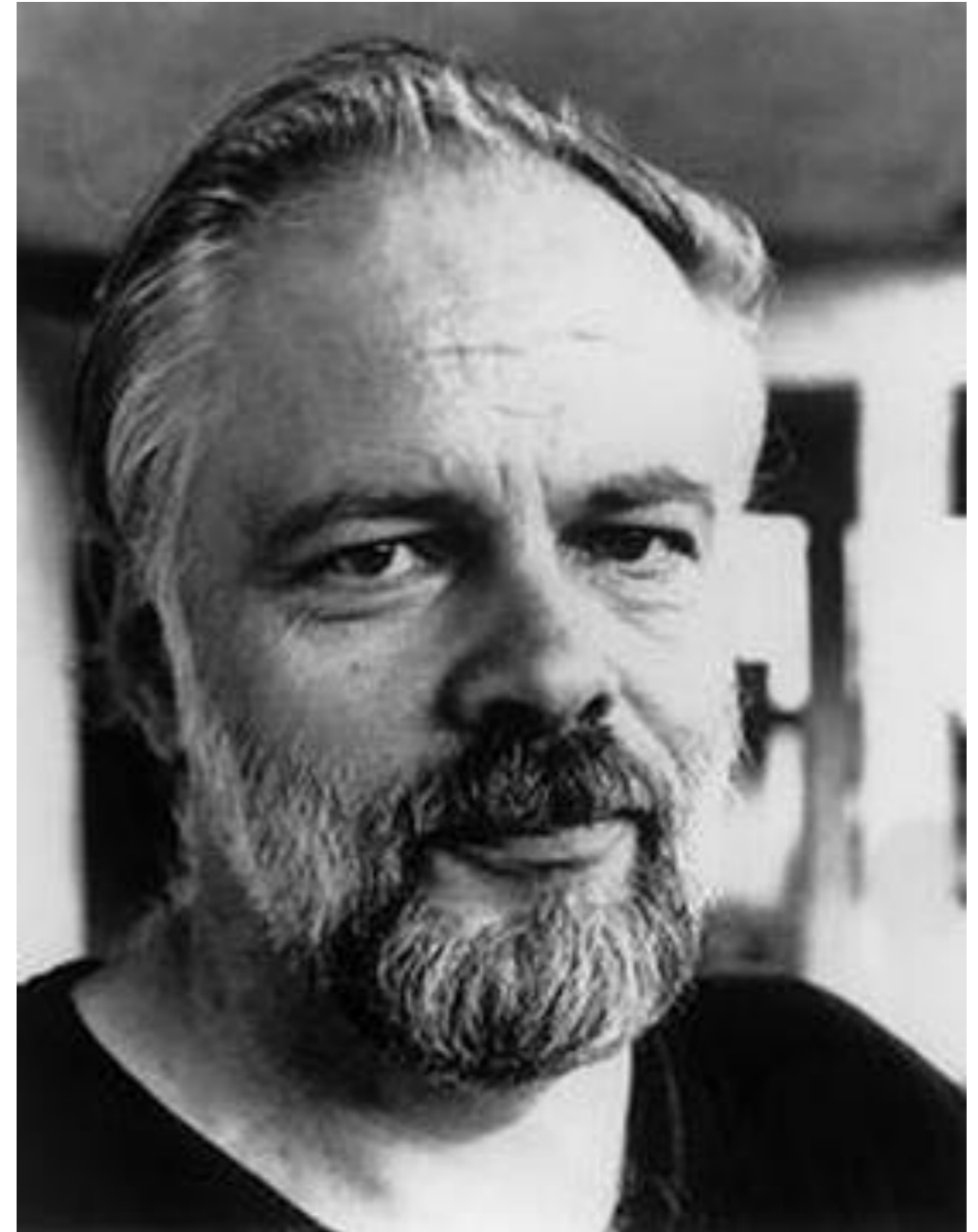
# films

- Tron (1982)
- Wargames (1983)
- Ghost in the Shell (1995)
- Pirates of silicon valley (1999)
- Swordfish (2001)
- The Social Network (2010)
- Blackhat (2015)
- Steve Jobs (2015)
- Snowden (2016)
- The Circle (2017)

# Philip K. Dick

## Themes

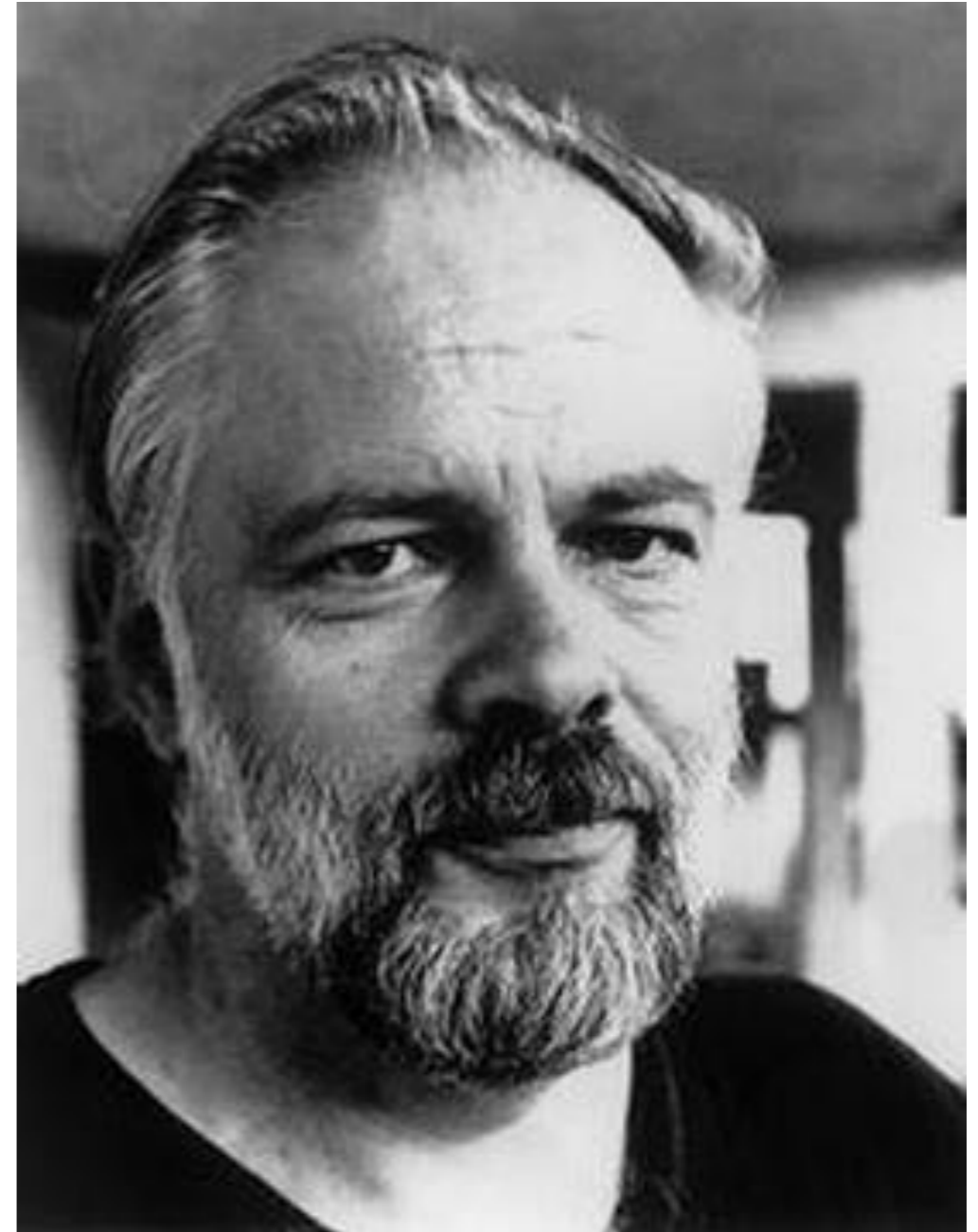
- The fragile nature of what is real
- The construction of personal identity
- The everyday world is actually an illusion assembled by powerful external entities
- "What constitutes the authentic human being?"



# Philip K. Dick

## Works

- “Do Androids Dream of Electric Sheep?”. (film: Blade Runner)
- “We Can Remember It for You Wholesale”. (short story) (film: Total Recall)
- “The Minority Report” (short story)
- “Flow My Tears, the Policeman Said,”



# What is reality?

- «Reality is that which, when you stop believing in it, doesn't go away.» - Philip K. Dick
- examples where he touches upon this concept:
  - “*We Can Remember It for You Wholesale*” (short story) (film adaptation: *Total Recall* (1990) (2012))
  - “*Flow My Tears, the Policeman Said*” (novel) (1974)

