



RV - AULA 02 - PSI3502/2018

História da RV e usos atuais



Objetivos

Examinar as raízes históricas dos conceitos que levaram ao desenvolvimento da RV.

Examinar o estado atual da RV, focando nas aplicações de ambientes virtuais, especialmente na área militar, saúde e entretenimento.

History of VR



<https://archaeology-travel.com/news/altamira-cave-re-open-for-visitors/>



Human mind and senses

VR as a concept is possible due to certain properties of the human brain and sensory system.

VR aims to create the impression of presence in a virtual environment.

The human mind is capable of symbolic thinking.



Human mind and senses

The visual system operates by analyzing properties of the light reflected off the surface of objects in our environment.

We see our 3D world as a projection of the light on a two-dimensional surface on the retina in the eye.

Ancient origins

Ancient origins of immersion.

The Altamira Cave.

Psychedelic experience in Central Asia and Siberia.

Classic theater and theatrical performances.



Realism in Visual Arts

Classical art.

Renaissance Art:
perspective.

Donato Bramante - San Satiro Church
- Milan, Italy



Matteo Fini

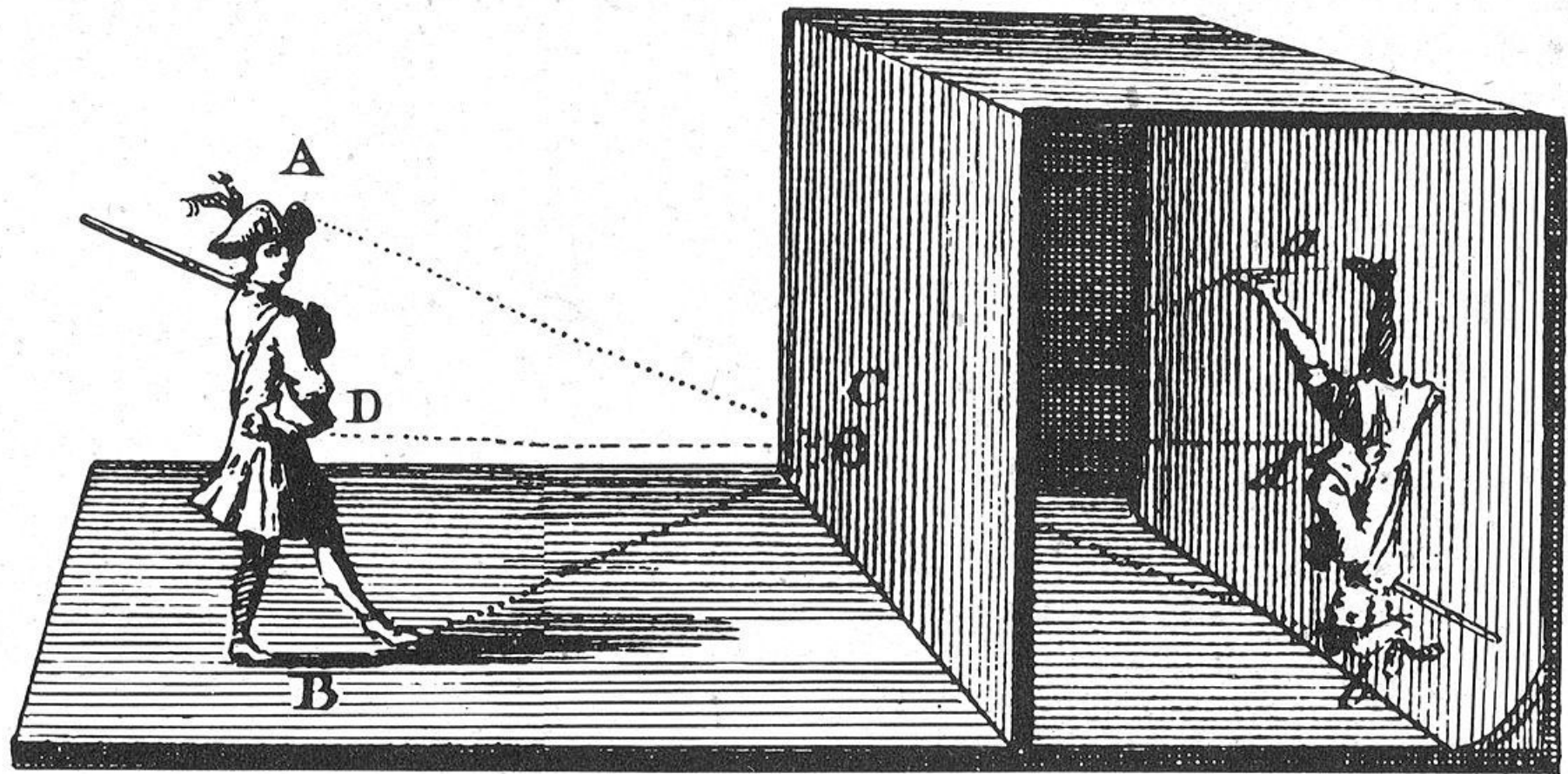
Development of Photography

Renaissance: camera obscura into use as a painting aid.

Louis Daguerre.

Joseph Nicéphore Niépce, 1926-27





Moving Pictures

Zoetrope

Praxinoscope

Film projections



Stereo Vision

1838 - Sir Charles
Wheatstone: stereoscope



Head-Mounted Displays

WWI - periscope
attached to a helmet.

Morton Leonard Heilig.

1961 - HMD by Philco.

Ivan Sutherland and Bob
Sproull.



Flight Simulators

Blue Box-Link
flight simulator.



History of Computing



Antikythera mechanism: clockwork device constructed in an ancient Greek colony of Syracuse on Sicily

Blaise Pascal (1624) and Charles Babbage (1822)

Middle of 20th century: John von Neumann and Alan Turing



History of Computing

In the 1950s: invention of the transistor, which permitted miniaturization of electronic circuits and resulted in the first microprocessors in 1971

1999: Introduction of the first modern Graphics Processing Unit (GPU)

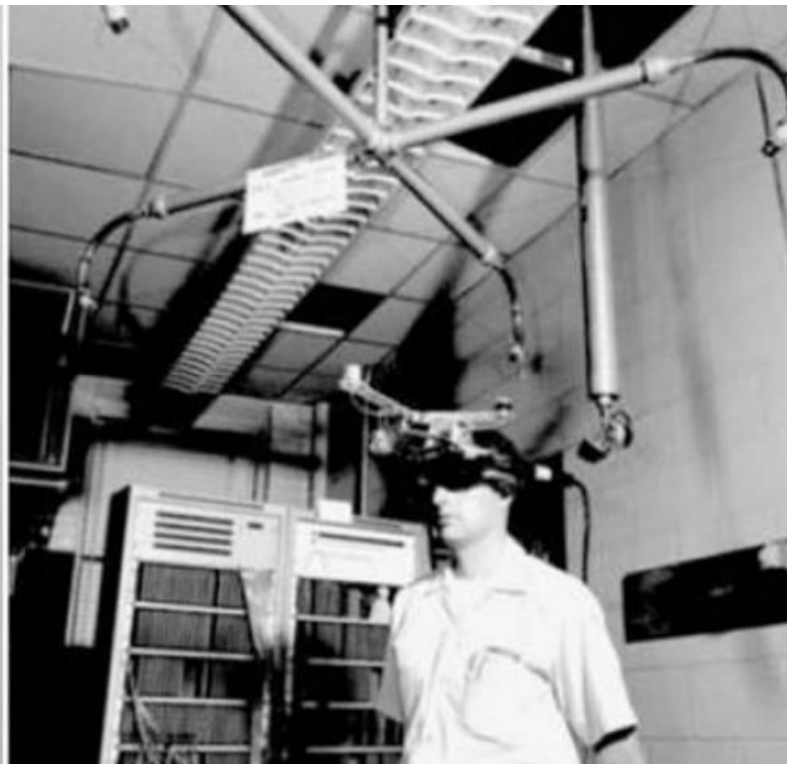


History of Human Computer Interaction

1960s: Ivan Sutherland - Sketchpad offered the first complete Graphics User Interface (GUI)

Sketchpad inspired the development of NLS or “oN-Line System” by Douglas Engelbert

Ivan Sutherland and Bob Sproull: Sword of Damocles



<https://www.vrroom.buzz/vr-news/guide-vr/sword-damocles-1st-head-mounted-display>

History of Virtual Reality

“la réalité virtuelle” - “The Theatre and Its Double” by Antonin Artaud, 1938

Early 1950s: Morton Leonard Heilig - the “Experience Theater”

1957: Sensorama

Introducing . . .

sensorama

The Revolutionary Motion Picture System that takes you into another world with

- 3-D
- WIDE VISION
- MOTION
- COLOR
- STEREO-SOUND
- AROMAS
- WIND
- VIBRATIONS



Patented

SENSORAMA, INC., 855 GALLOWAY ST., PACIFIC PALISADES, CALIF. 90272
TEL. (213) 459-2162



History of Virtual Reality

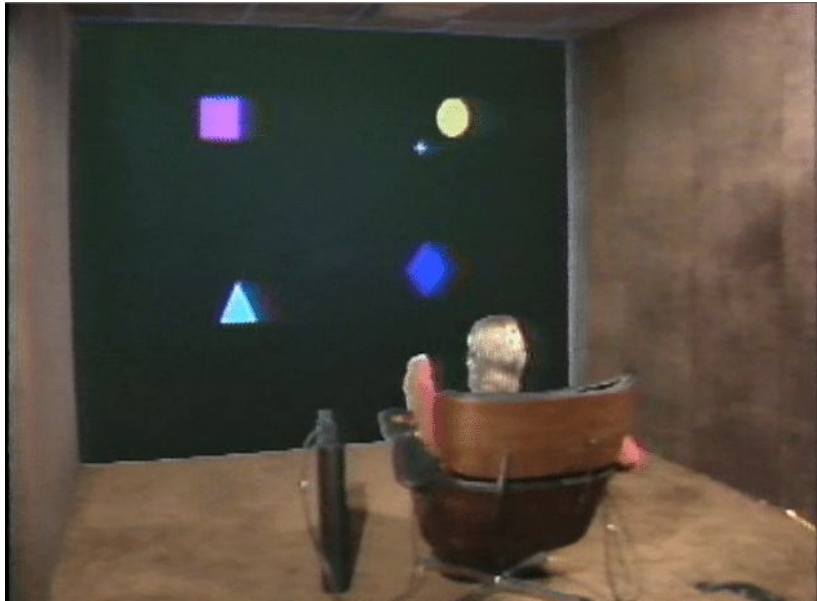
Aspen Movie Map: included immersion **and** interaction

1970s: Videospace at University of Connecticut - Myron Krueger

1980: Put-That-There by Richard Bolt

1984: Author William Gibson coined the term “cyberspace”. The term “virtual reality” was used in its present meaning for the first time by Jaron Lanier in 1989.

History of Virtual Reality



https://www.researchgate.net/figure/Bolts-Put-that-ther-e-seminal-multimodal-interface_fig3_49251571



<http://median.newmediacaucus.org/art-infrastructures-in-formation/inhuman-vision/>



History of Virtual Reality

1992: the first CAVE was created at University of Illinois

1994: VRML (Virtual Reality Modeling/Markup Language) was standardized by W3C.

2003: Second Life

VE Today

AAA games, Google Street View, MMO games

WiiMote, Microsoft Kinect

Blender, Autodesk

Oculus Rift



<https://www.techradar.com/news/wearables/htc-vive-vs-oculus-rift-1301375>



Applications of VE and fields influenced by VR

Military:
training/simulators

Healthcare

Entertainment

Augmented Reality

Virtual tools

Education



Referências

D. C. Englebart, R. W. Watson, J. C. Norton, “The Augmented Knowledge Workshop”, *Proceedings of the National Computer Conference and Exposition (AFIPS)*, June 4-8, 1973, pp. 9-12.

R. S. Kalawsky, *The Science of Virtual Reality and Virtual Environments: A Technical, Scientific and Engineering Reference on Virtual Environments*, Addison-Wesley, Wokingham, England, Reading, Mass., 1993.

J. Lanier, F. Biocca. “An Insider’s View of the Future of Virtual Reality”, *Journal of Communication*, Vol. 42, No. 4, 1992, pp. 150-172.

I. Sutherland, “A Head-Mounted Three-Dimensional Display”, *Proc. of AFIPS* 68, 1968, PP. 757-764.