

2022년 2학기 2주차 가상현실

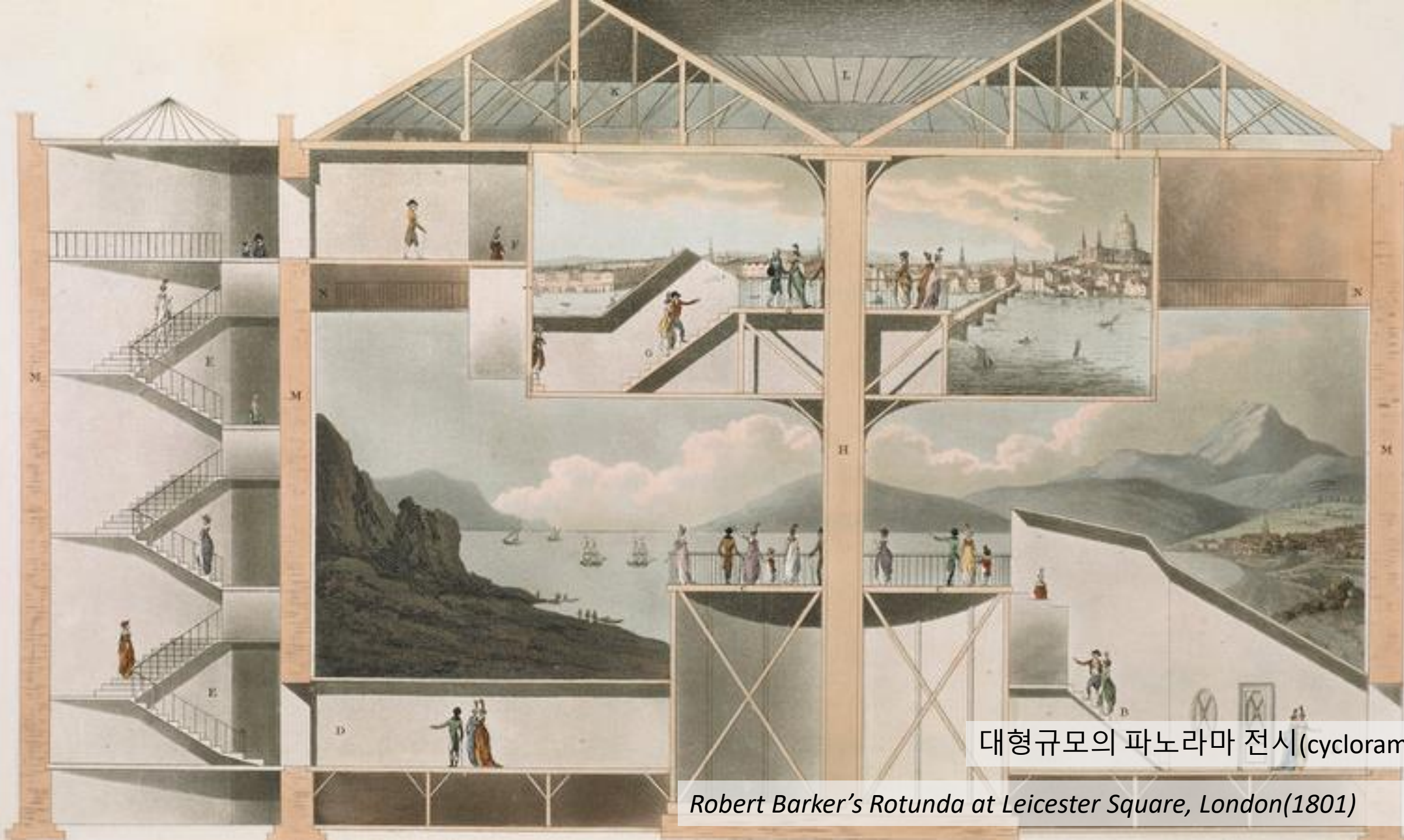
성신여대 AI융합학부
강사 이대영

강의 일정

주 별 수 업 내 용			
주/회차	수업내용	수업방법	교재진도/과제
1주 1회차	오리엔테이션	대면	
2주 2회차	가상현실의 구분과 역사	대면	
3주 3회차	가상공간과 구현에 대한 기술적 이해	대면	
4주 4회차	실제 가상현실콘텐츠의 활용사례	대면	
5주 5회차	사례분석을 통한 콘텐츠 구현을 위한 디자인 학습	대면	
6주 6회차	가상현실 콘텐츠 기획	대면	
7주 7회차	실제 제작을 위한 게임엔진 소개와 기본이용능력 학습	대면	
8주 8회차	이론 기반 서술형 시험	대면	

가상현실의 역사

가상현실의 구분과 역사



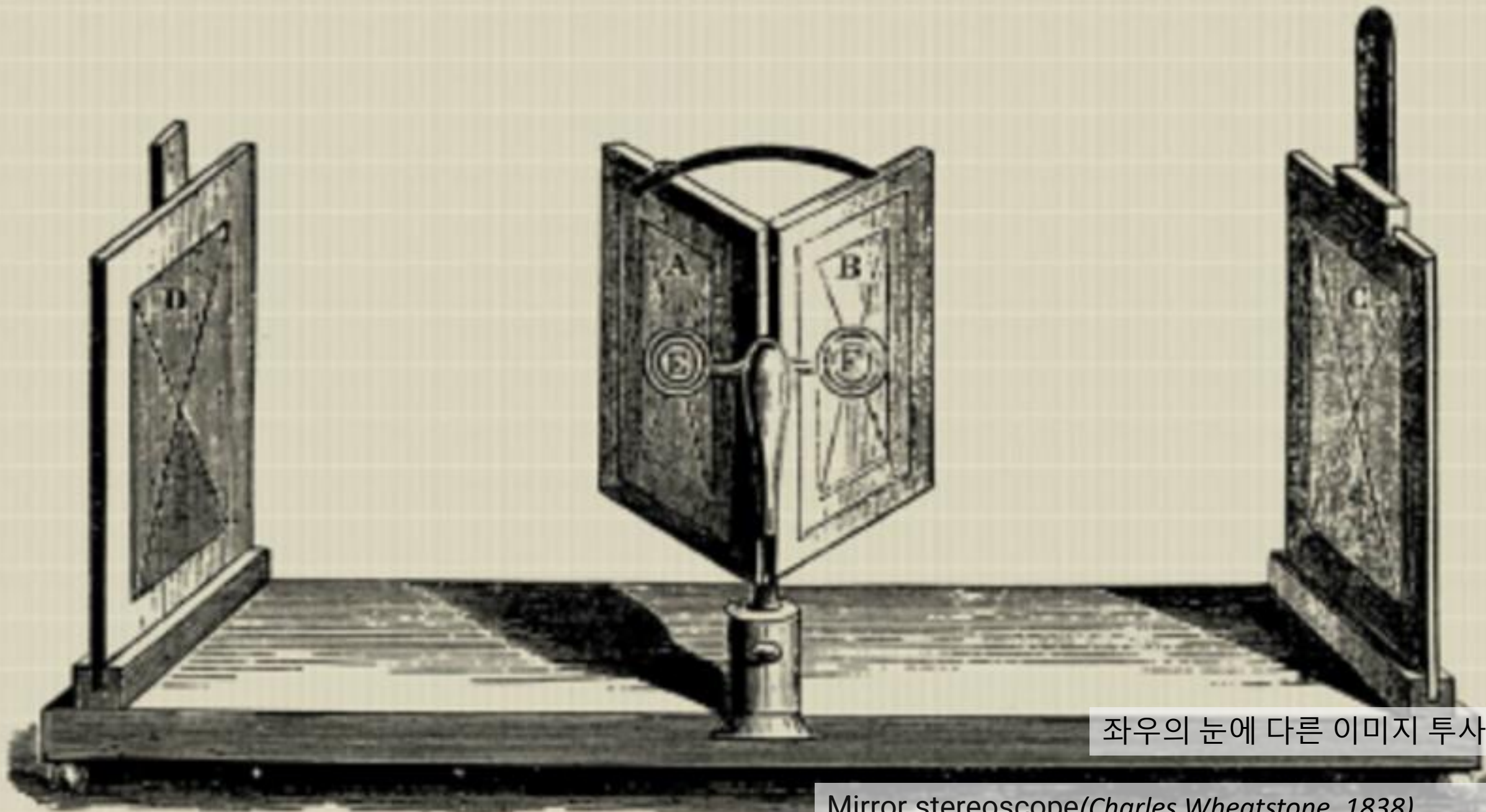
대형규모의 파노라마 전시(cycloramas)

Robert Barker's Rotunda at Leicester Square, London(1801)



대형규모의 파노라마 전시(cycloramas)

<https://www.studiobinder.com/blog/cyclorama-wall-definition/>



좌우의 눈에 다른 이미지 투사

Mirror stereoscope(*Charles Wheatstone, 1838*)



최초의 비행시뮬레이터(동체 회전경험)

Link Trainer The First Flight Simulator(1929)



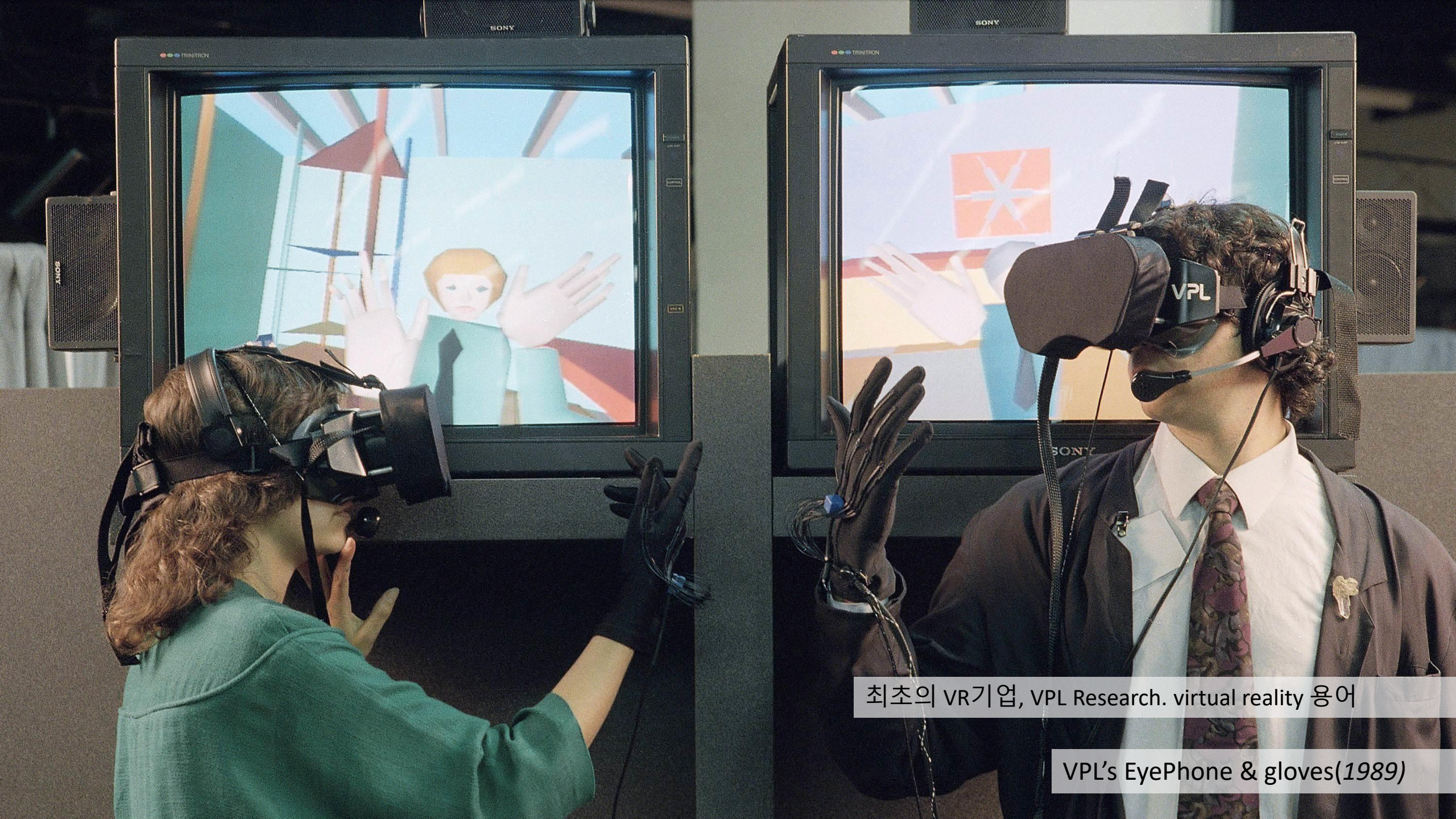
입체 컬러 디스플레이+ 팬+냄새 방출기+스테레오 사운드+모션 의자를 통한 영화 감상

Sensorama by Morton Heilig(1962)



3D프로그래밍된 공간의 구현, 헤드모션의 인식

Sword of Damocles by Ivan Sutherland (1968)



최초의 VR기업, VPL Research. virtual reality 용어

VPL's EyePhone & gloves(1989)



Cave automatic virtual environment(1992)

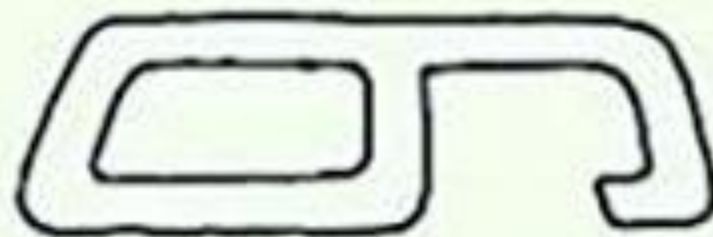


Oculus rift DK1(2012)

가상현실의 원리/개념

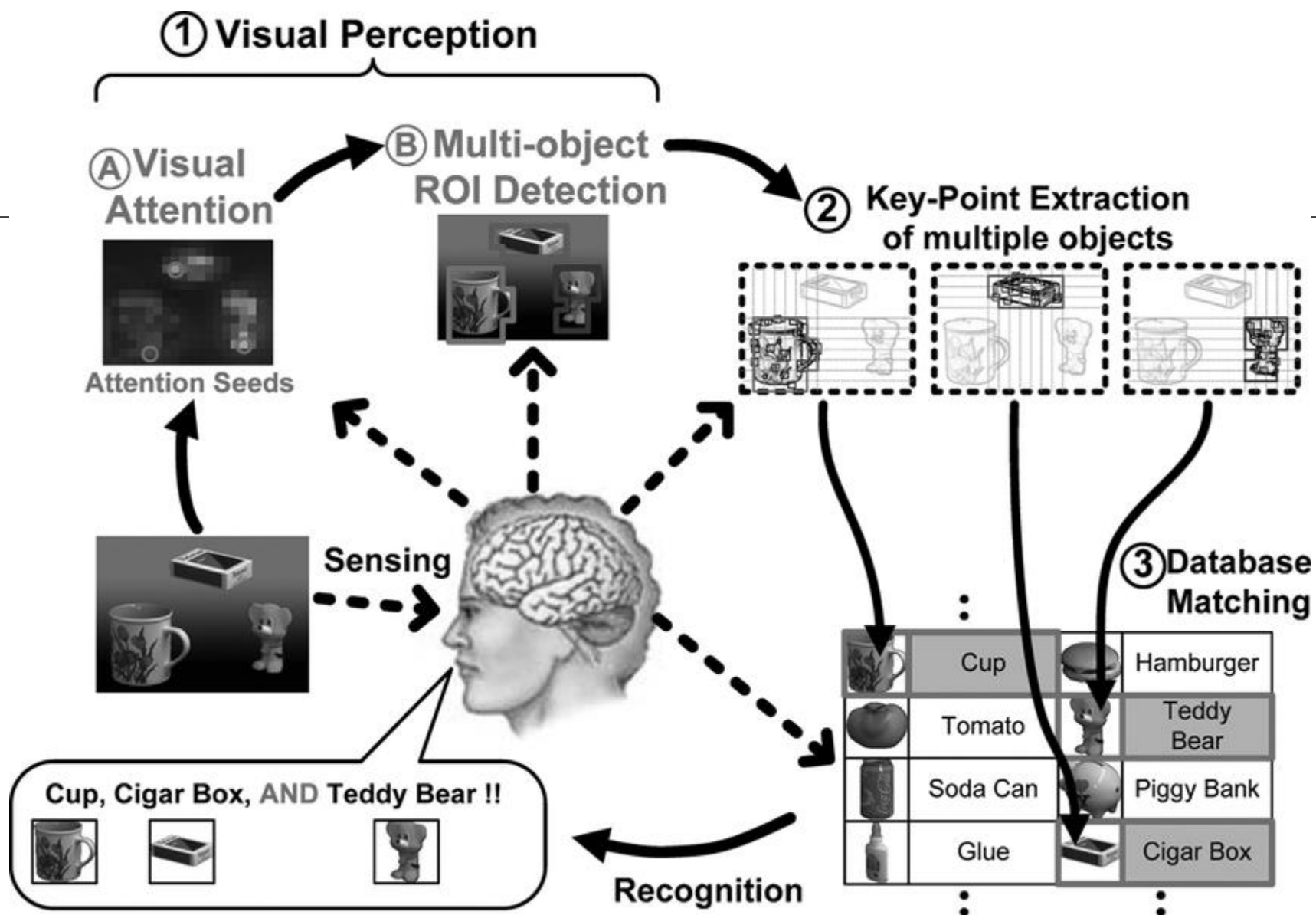
가상현실의 구분과 역사

SIX



NINE





Architecture: Building for interrelated spatial and social cognition

- Personality
- Individual Differences

Who: Social Cognition

Reference Frames

- Egocentric
- Allocentric

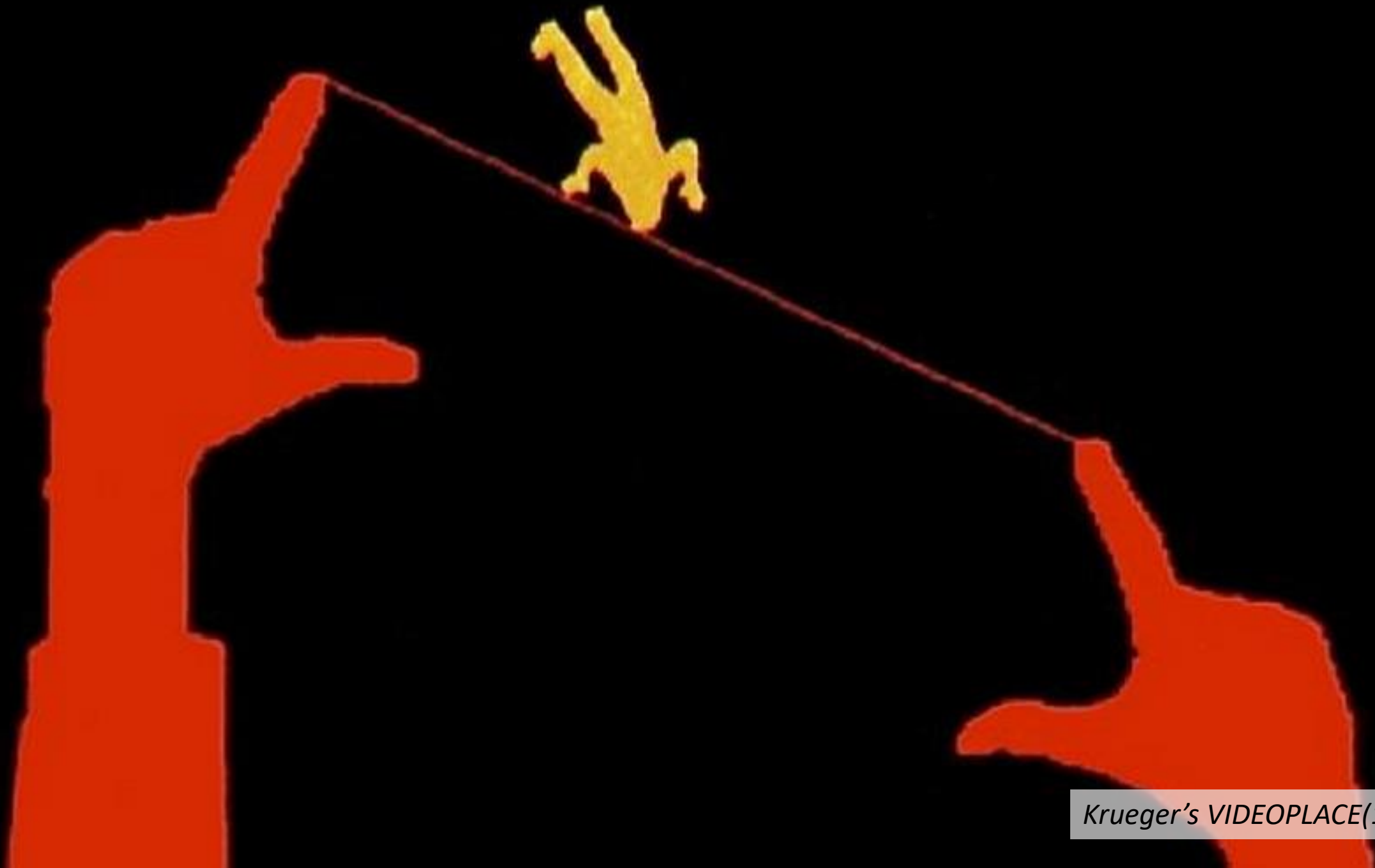
- Self mapping
- Navigation

Where: Spatial Cognition

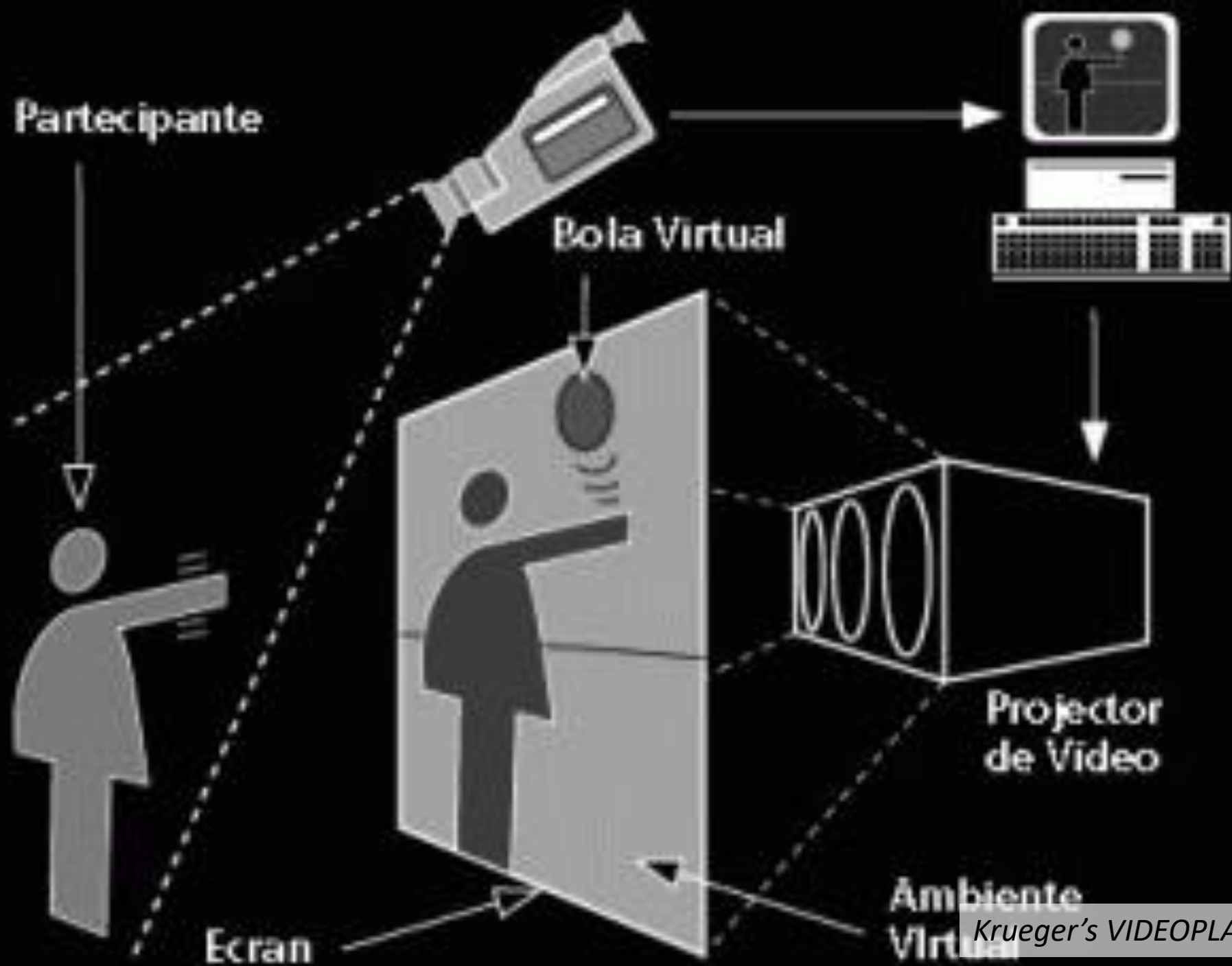
Evolution: Ultimate link between social and spatial cognition



IMAX(1970)



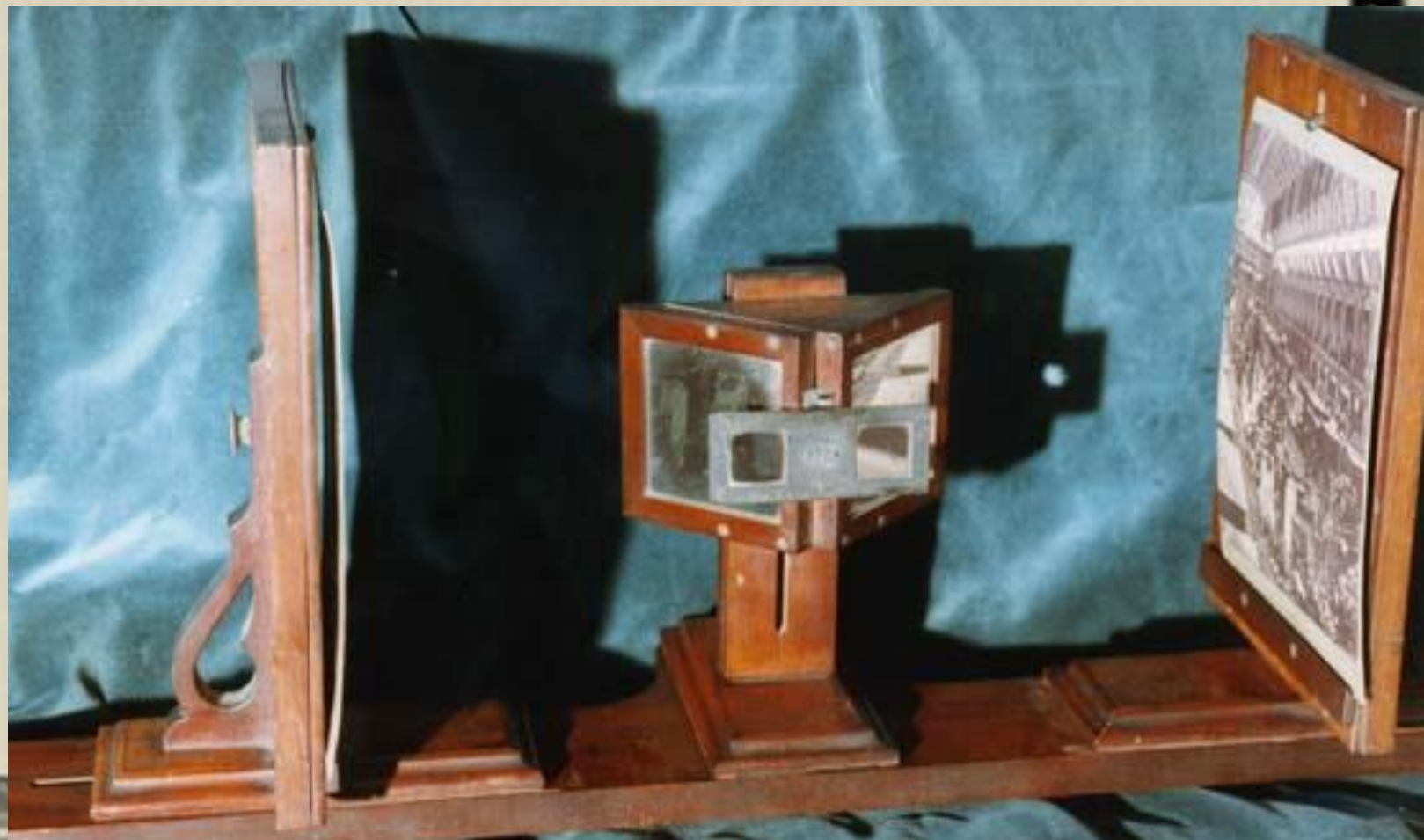
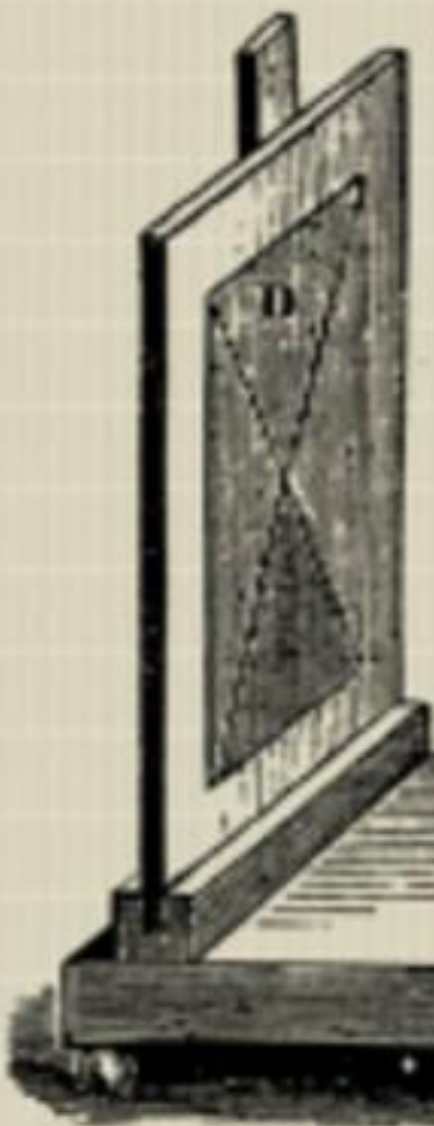
Krueger's VIDEOPLACE(1975)



Krueger's VIDEOPLACE(1975)



Mirror stereoscope(*Charles Wheatstone, 1838*)



<https://kingscollections.org/exhibitions/archives/wheatstone/optics/stereoscope>

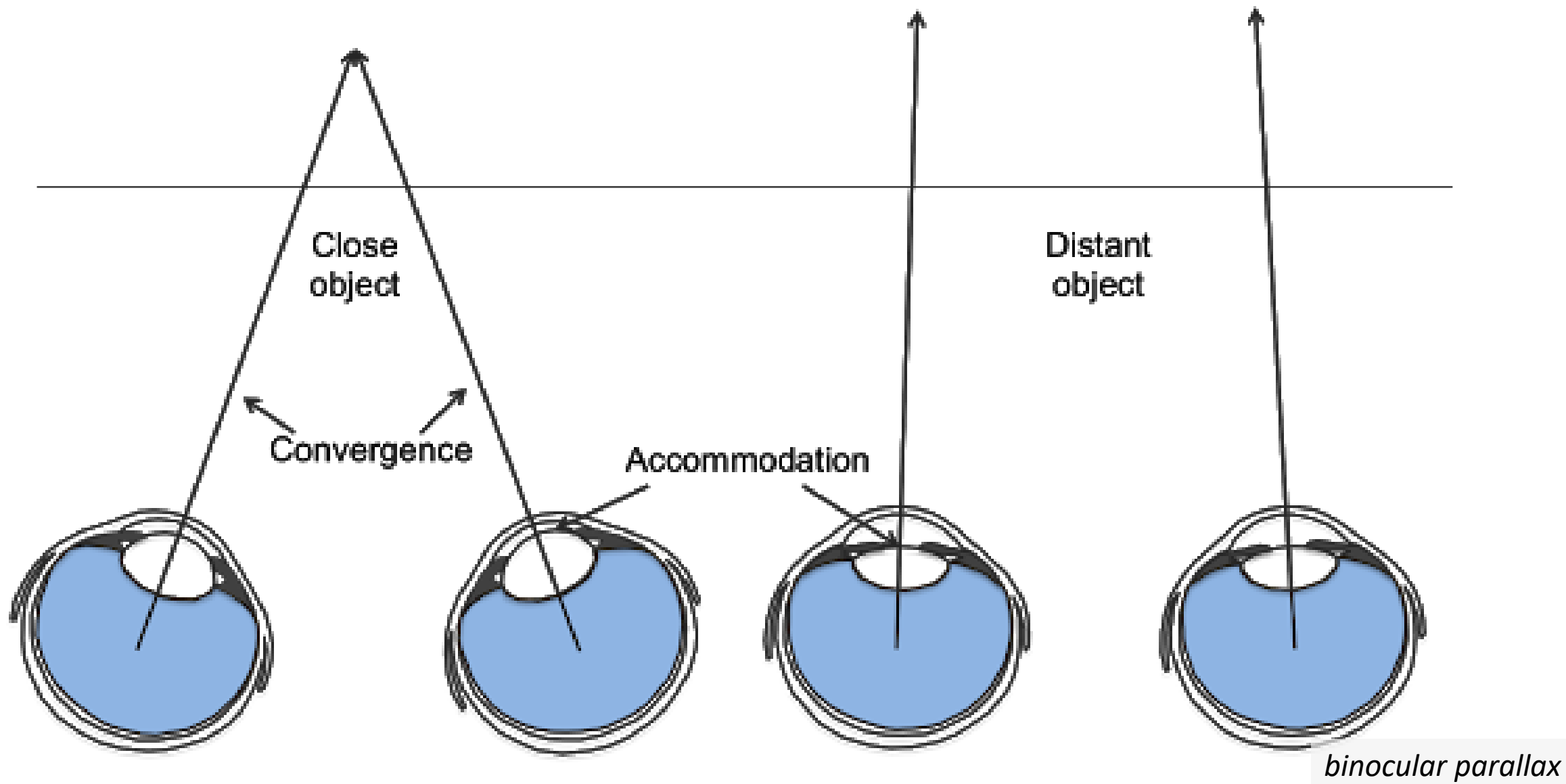
Mirror stereoscope(*Charles Wheatstone, 1838*)



Stereoscopic photograph of Charles Wheatstone with his wife and children, by Antoine Claudet, c1851-1852.

<https://kingscollections.org/exhibitions/archives/wheatstone/optics/stereoscope>

Mirror stereoscope(*Charles Wheatstone, 1838*)



ENVIRONMENT

MIXED REALITY (MR)

ENVIRONMENT

Tangible User Interfaces (TUI)

A TUI uses real physical objects to both represent and interact with computer-generated information (Ishii & Ullmer, 2001).

Augmented Reality (AR)

AR 'adds' computer-generated information to the real world (Azuma, et al. 2001).

Augmented Virtuality (AV)

AV 'adds' real information to a computer-generated environment (Regenbrecht, et al. 2004).

Virtual Reality (VR)

VR refers to completely computer-generated environments (Ni, Schmidt, Staadt, Livingston, Ball, & May, 2006; Burdea & Coffet 2003)

Projection Augmented models (PA model) are a type of Spatial AR display, and are closely related to TUIs

Spatial AR

Spatial AR displays project computer-generated information directly into a user's environment (Bimber & Raskar, 2005).

'See-through' AR (either optical or video)

A user wears a head-mounted display, through which they can see the real world with computer-generated information superimposed on top (Cakmakci, Ha & Rolland, 2005; Billinghurst, Grasset & Looser, 2005).

Semi-immersive VR

A semi-immersive VR display fills a limited area of a user's field-of-view.

Immersive VR

Immersive VR, which uses either a head-mounted-display or a projection-based system, completely fills the user's field-of-view.



Using physical objects to create a virtual model (Ichida, Itoh, & Kitamura, 2004). As a user adds a physical 'ActiveCube' to the construction, the equivalent virtual model is automatically updated.



The 'Bubble Cosmos' - 'Emerging Technology' at SIGGRAPH06. The paths of the smoke-filled bubbles are tracked, and an image is projected into



See-through AR: the butterfly is computer-generated, and everything else is real (Fischer, Bartz & Straßer, 2006; Kölsch, Bane, Höllerer, & Turk, 2006).

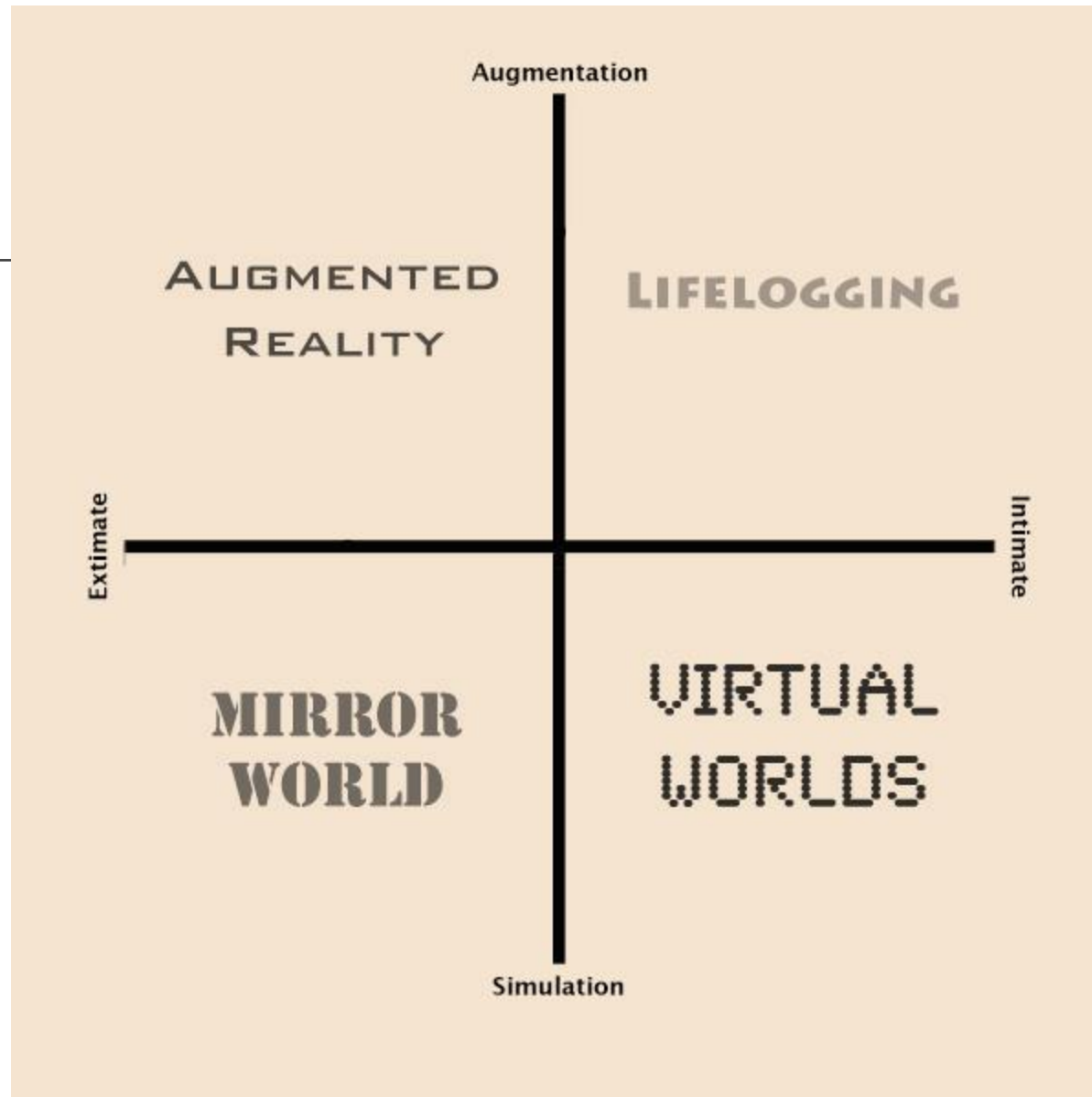


Semi-immersive VR using the Barco Baron workbench (Drettakis, Roussou, Tsingos, Reche & Gallo, 2004).



Projection-based immersive VR. The users are fully immersed in the 'CAVE' (FakeSpace, 2006; Cruz-Neira, Sandin & DeFanti, 1993).

Continuum of advanced computer interfaces, based on Milgram and Kishino (1994)

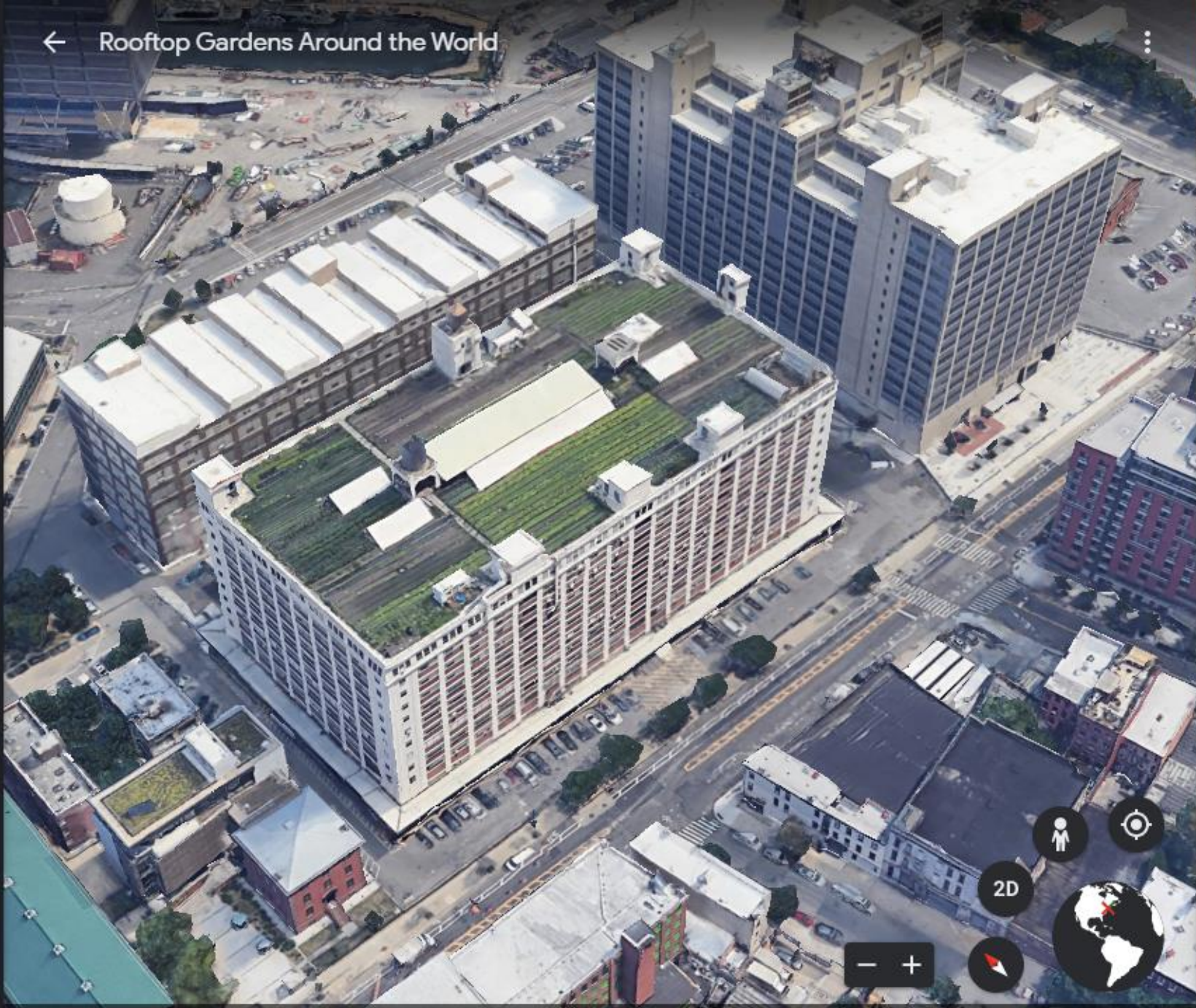
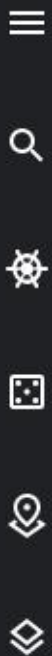


현대의 가상현실

가상현실의 구분과 역사



StoryAbout Ping: welcome to the library



Brooklyn Grange

Farm in Brooklyn, New York

Situated on top of the Brooklyn Navy Yard, this urban rooftop garden and its sister rooftop garden in Long Island City produce 50,000 pounds of organic produce per year for local restaurants and markets.

Local Guides say:

” Magical rooftop farm. Spent the afternoon in the sun planting basil and tasting honey. The staff are lovely and the views are stunning.

— Katie Glass



Border Memorial: Frontera de los Muertos, by John Craig Freeman(2012)



Memoto Lifelogging Camera(2012)

TITANIA

Diameter:	1577 km	EARTH
Mass:	0.0006 Earths	1692.6x
Volume:	< 0.0001 Earths	--
Orbit Radius*:	435910 km	--
Surface Gravity:	0.039 G	1000 G





Laparoscopic surgery with VR(2016)



#360video #VR360 #VR

Best VR 360 Video 4K Virtual Reality

조회수 92,211,483회 • 2017. 12. 22.

👍 53만

💬 6.4만

➦ 공유

📌 저장

⋮

360 Video(2017)



Tilt Brush

by Google



Tilt Brush(2016)



DERPYHOOVES
DERPYHOOVES

BROCHACHO

LYXIR

GARITO

ANDYNE
YEROCMAI 5D7E
YEROCMAI 5D7E
BLOOMPETERS

ERRE 869F

BLOOMPETERS

LYXIR

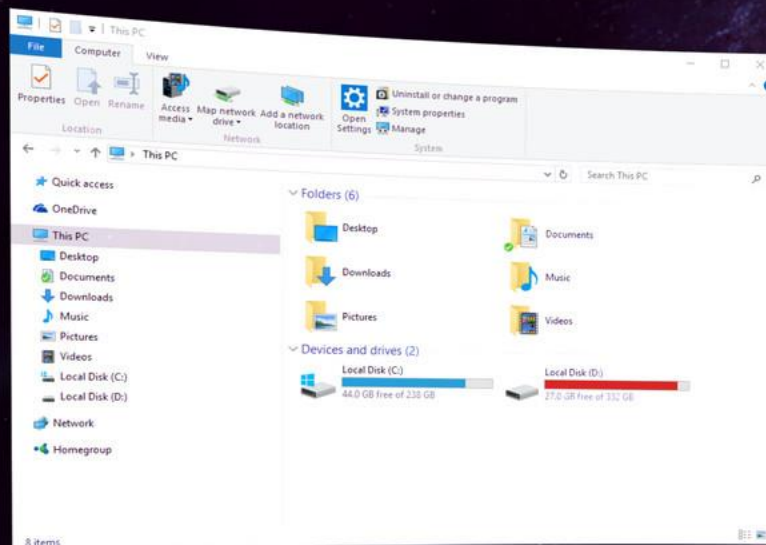
RICHTER D88A

PDMD18

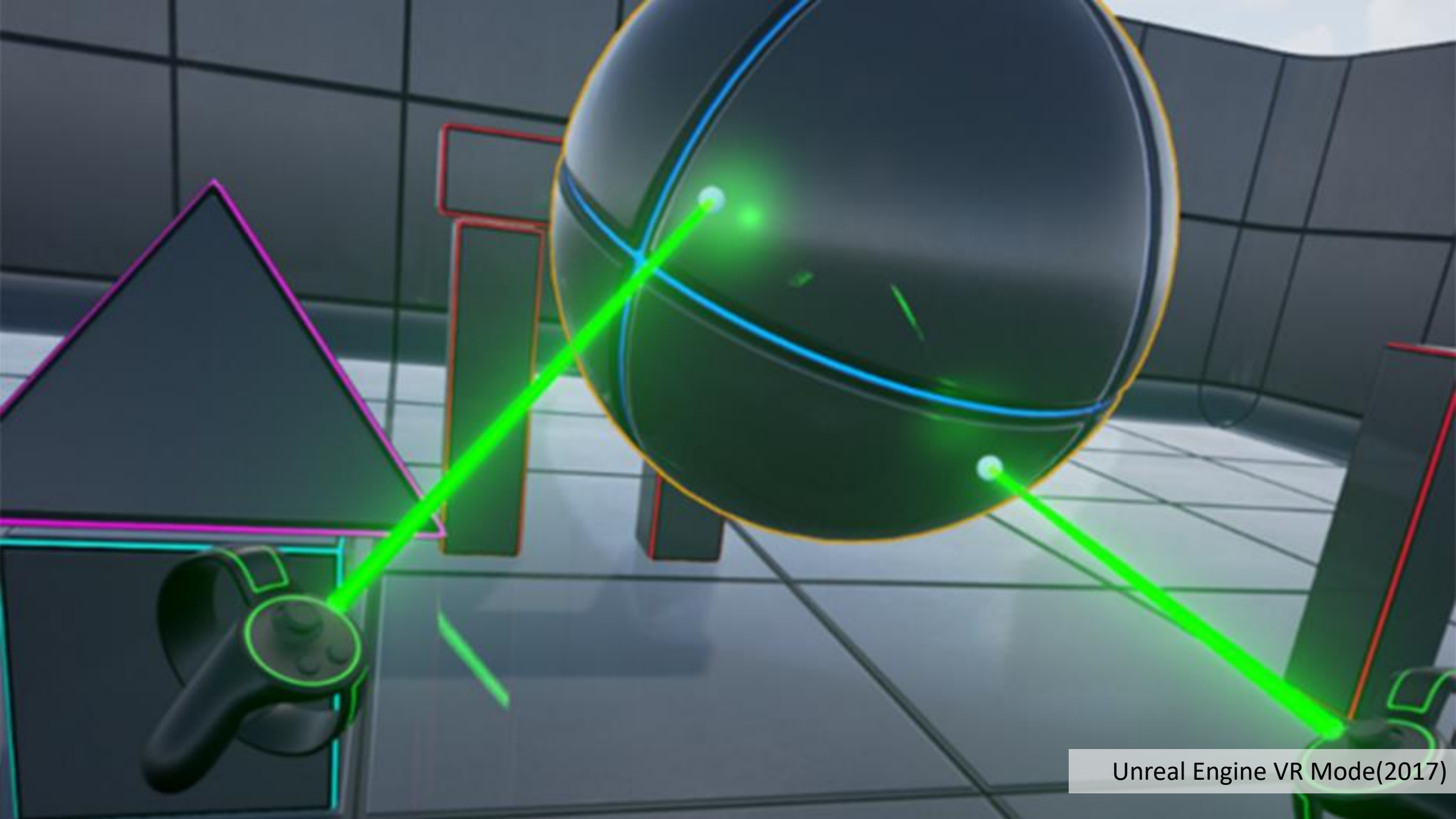
THEIMAGINARYBALL

PUFFET

THE ONE AND ONLY



Virtual Desktop(2016)



Unreal Engine VR Mode(2017)



Half-Life : Alyx(Valve, 2020)