Grafik

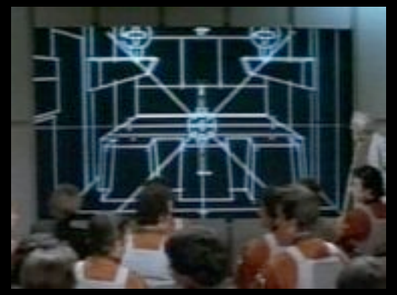


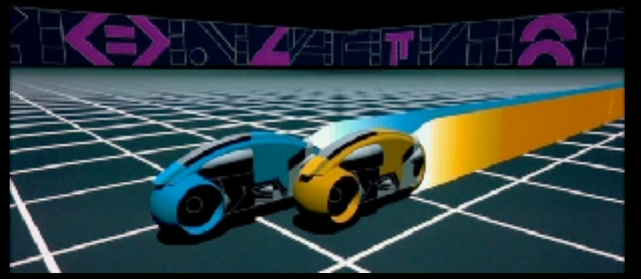
3D CG im Film

Futureworld	1976
Star Wars	1977
Tron	1982
Young Sherlock Holmes	1985
Abyss	1989
Terminator 2	1991
Toy Story	1995
Final Fantasy	2001
Avatar	2009













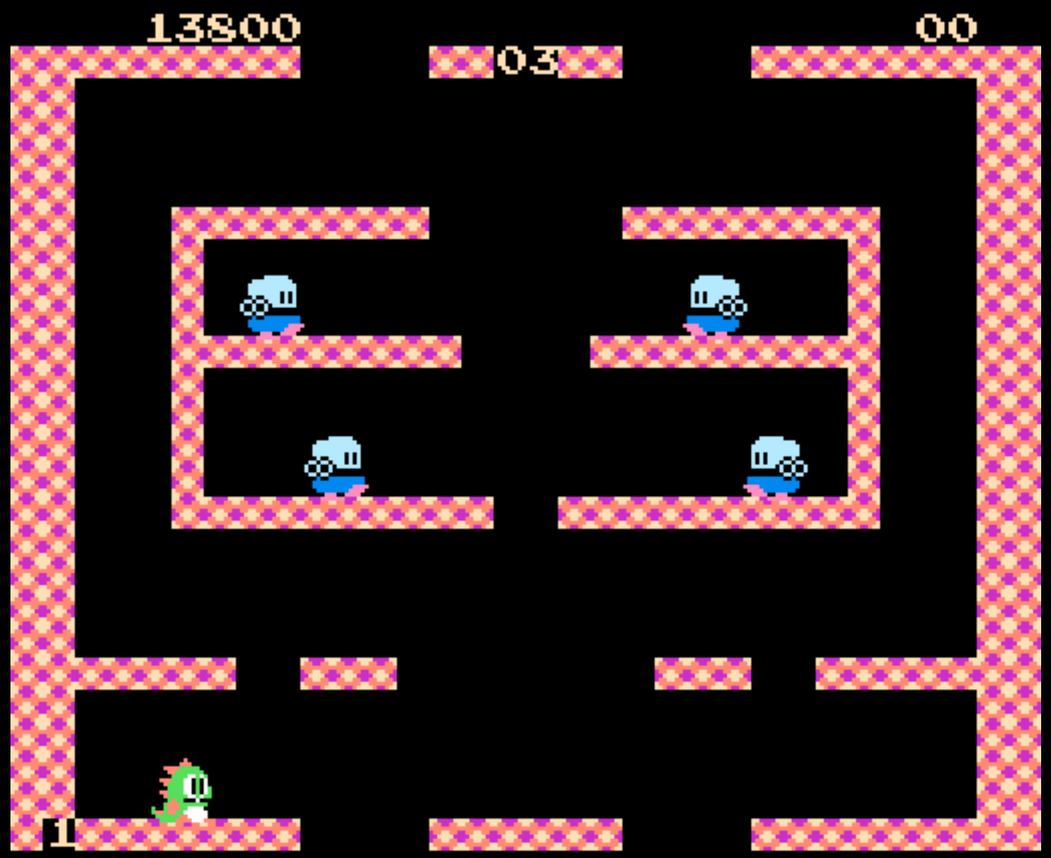






Dimensionen

2D

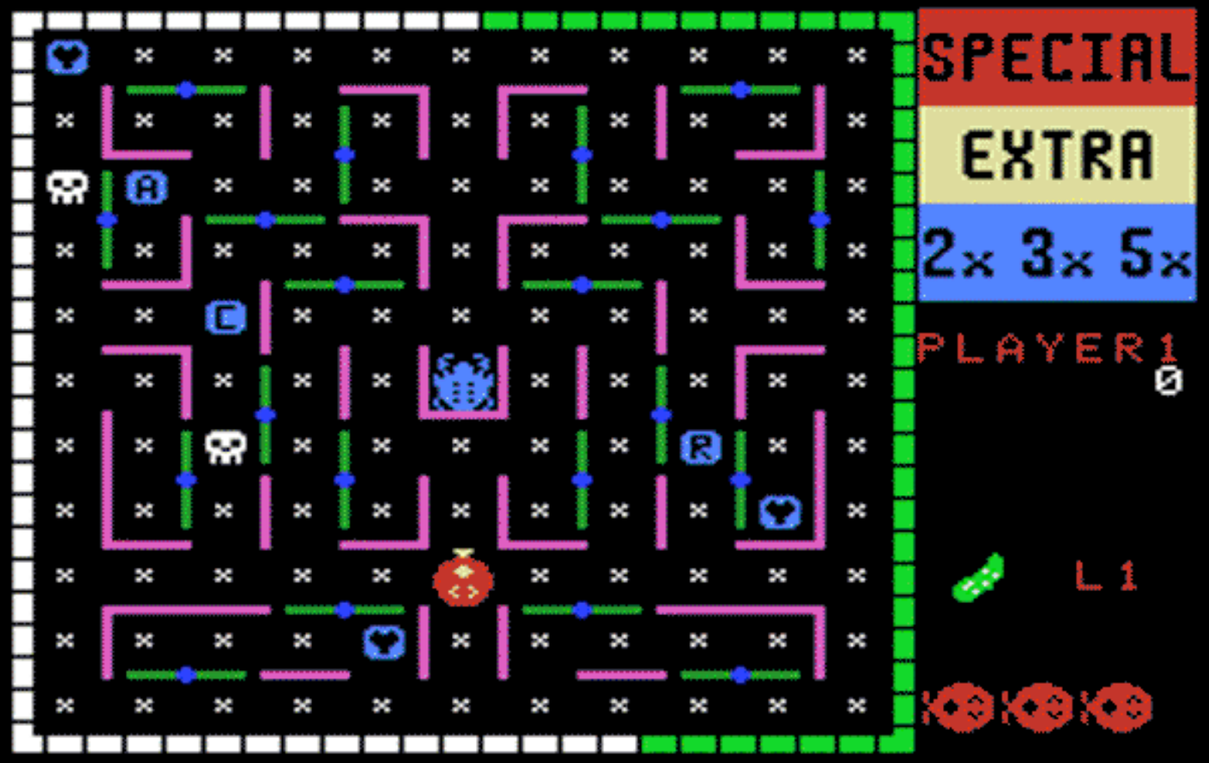


Bubble Bobble, 1986

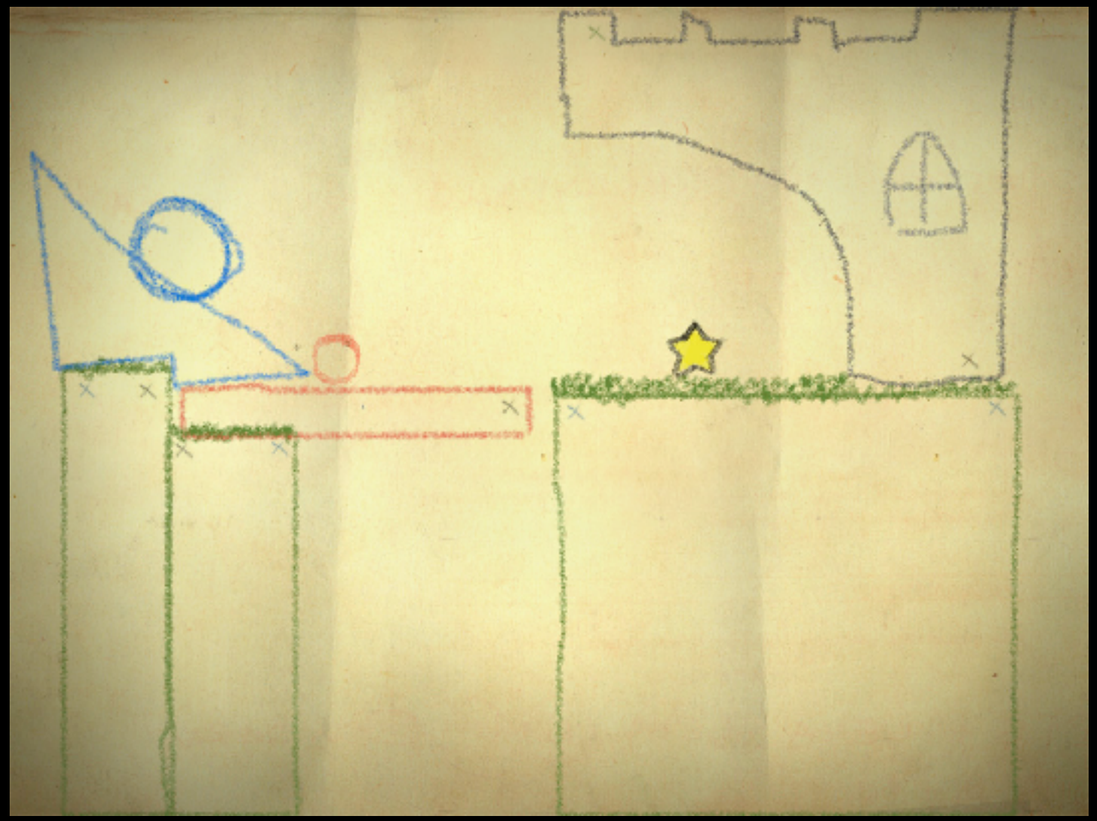


Scramble, 1981

Fixed Screen

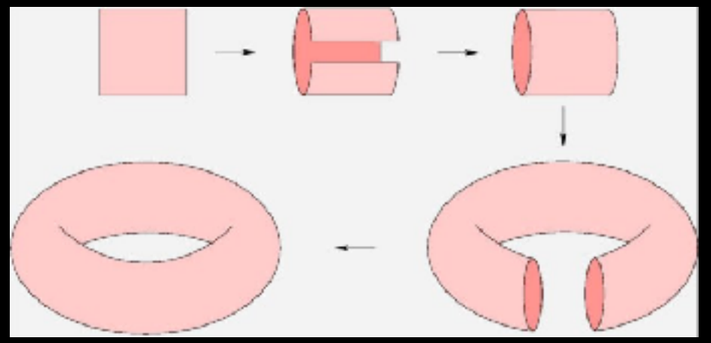


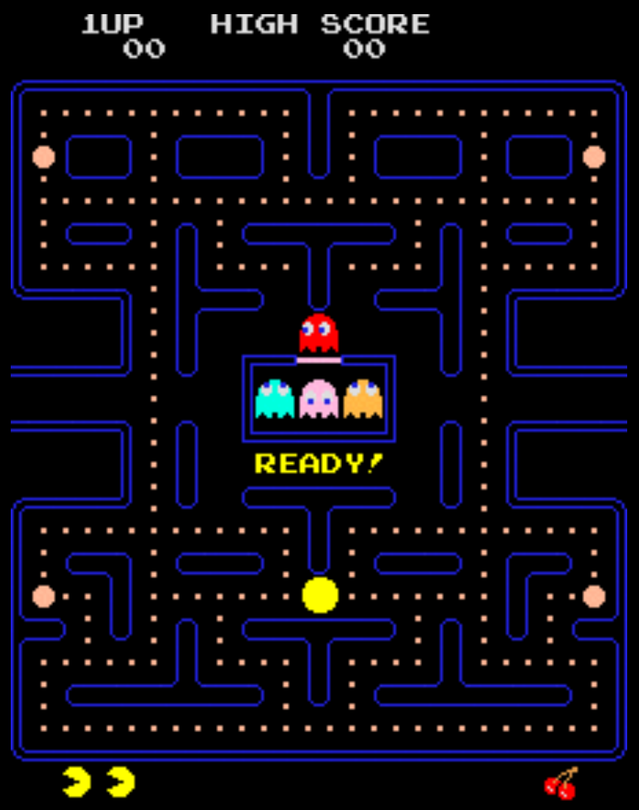
Lady Bug, 1981



Crayon Physics Deluxe, 2009

Wrap Around (Flat Torus)



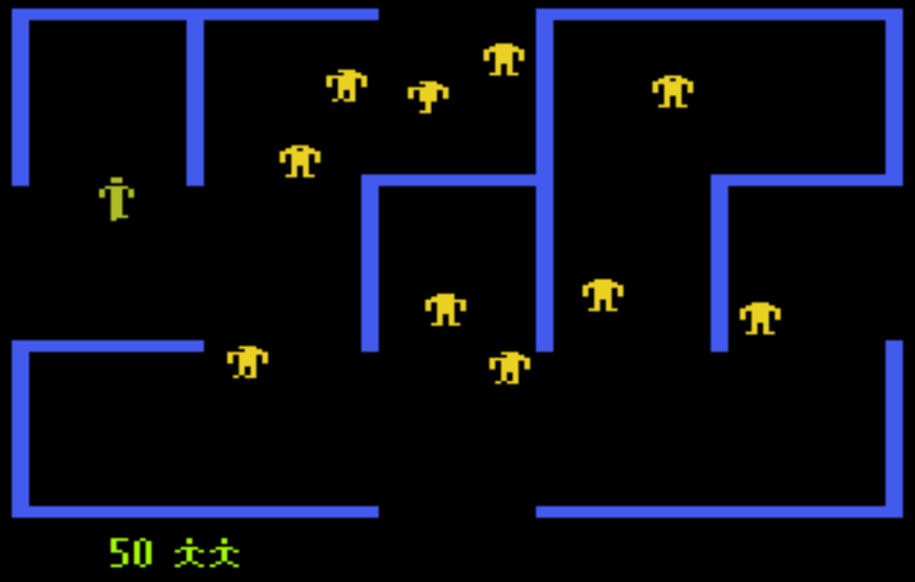


Pac Man, 1980



Asteroids, 1979

Flip-Screen



Berzerk, 1980



Legend of Zelda, 1986

Vertical / Horizontal Scroll



1943, 1987



Great Giana Sisters, 1987

XY-Scroll



Paradroid, 1985



Fancy Pants Adventures, 2006

Z-Scroll



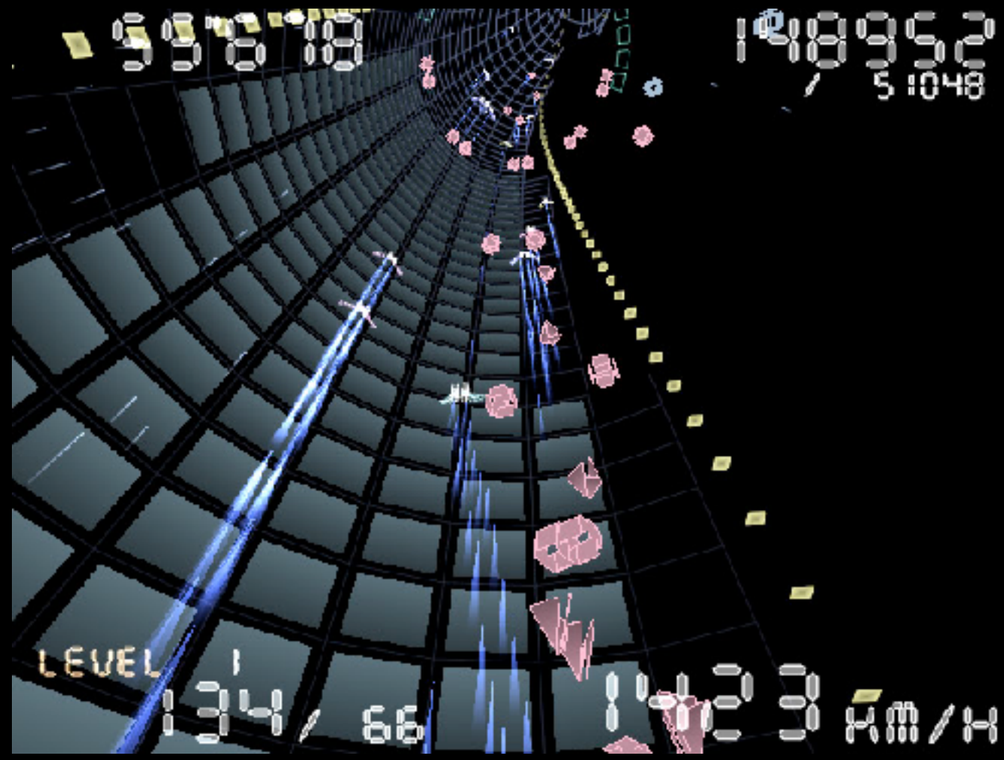


F1 World Grand Prix, 1998

Rail / Tube-Scroller



Space Harrier, 1985



Torus Trooper, 2005

2.5 D



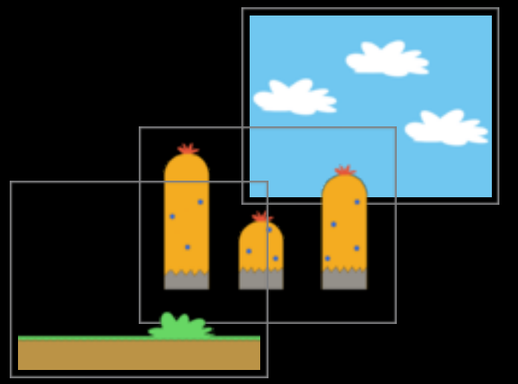
Street Fighter IV, 2008

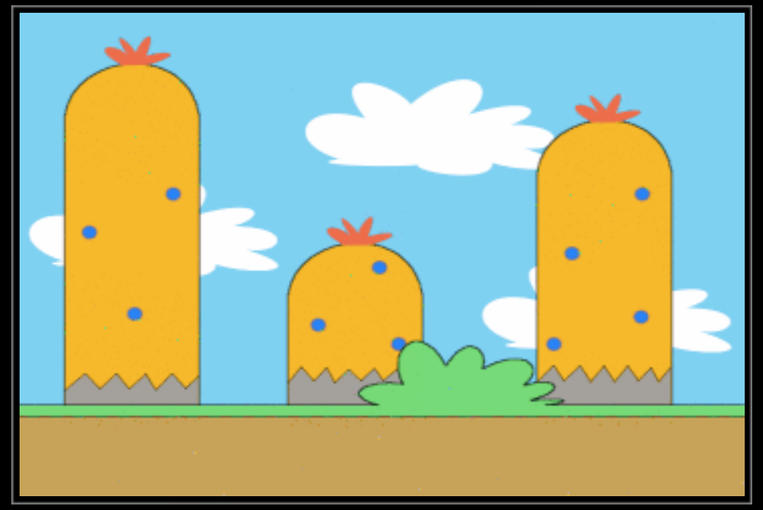


Gradius V, 2004

Parallax Scrolling

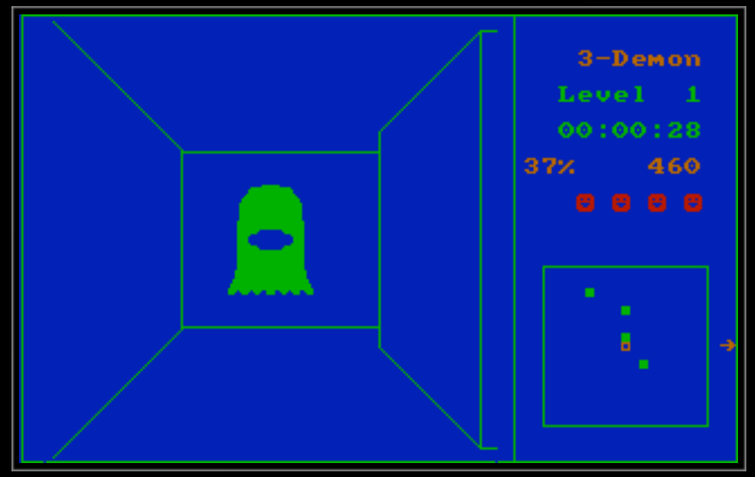






Moon Patrol, 1982

Sprite Scaling



3-Demon, 1983

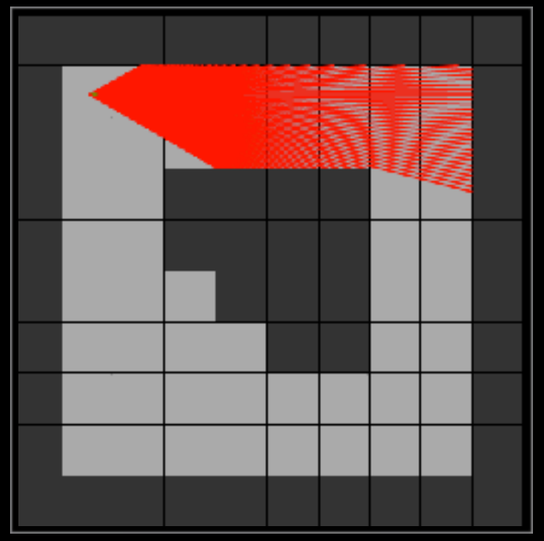


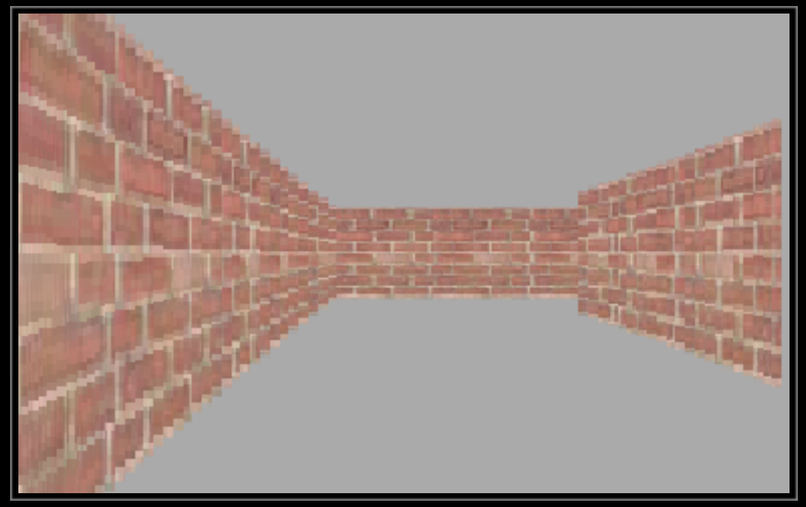
Space Harrier, 1985



Ego Shooter: Aliens, 1986

Ray Casting





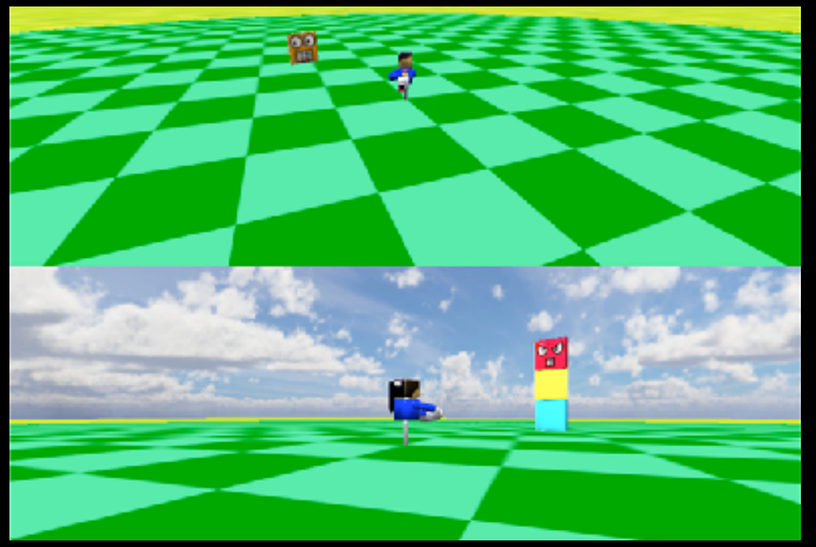


id: Doom, 1993

3D



First-Person
System Shock, 1994



Second-Person
Second-Person-Shooter Zato, 2011

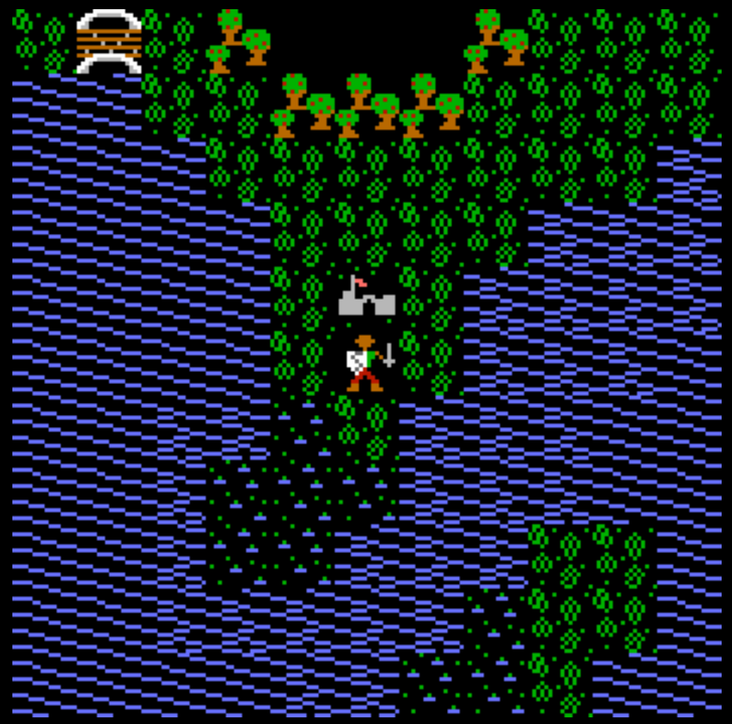


Third-Person
Crash Bandicoot, 1996

Aufbau

Tile-based Environments

Gekachelte Umgebungen



Ultima I, 1980 (1986)



Tomb Raider, 1996

Continous Environments



Broken Sword, 1996



Tomb Raider, 2013

Projektionen

Zentralperspektive



Doom, 1993



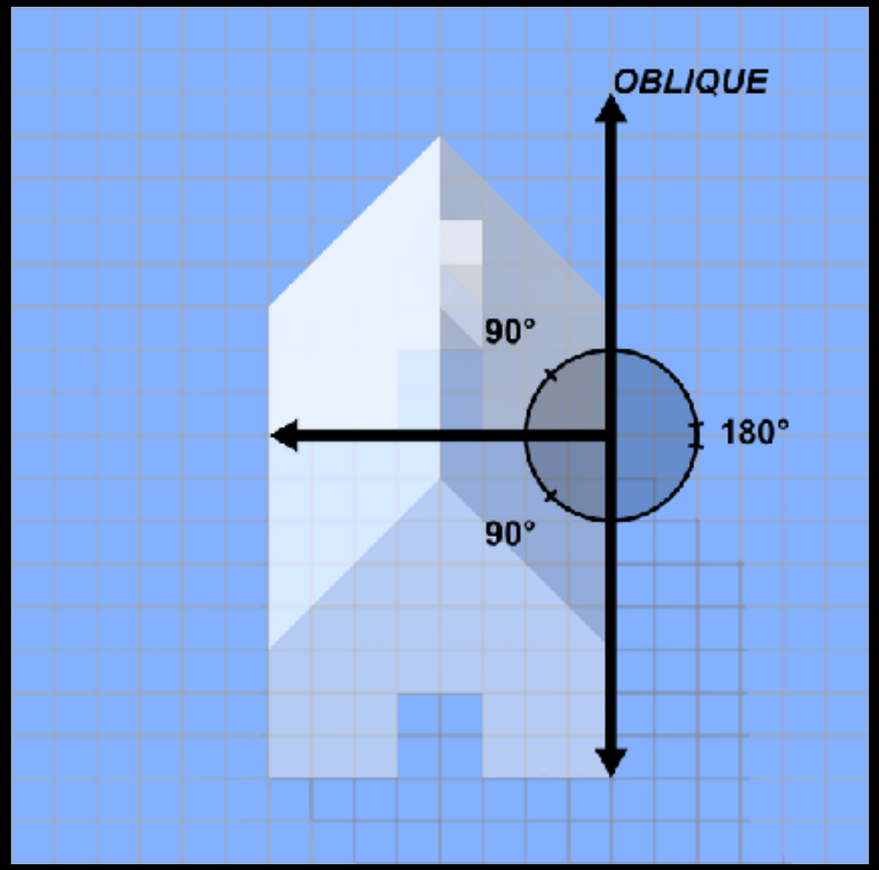
Half Life 2, 2004



Vogelperspektive (3-Punkt-Perspektive)

Torchlight, 2009

Schrägriss

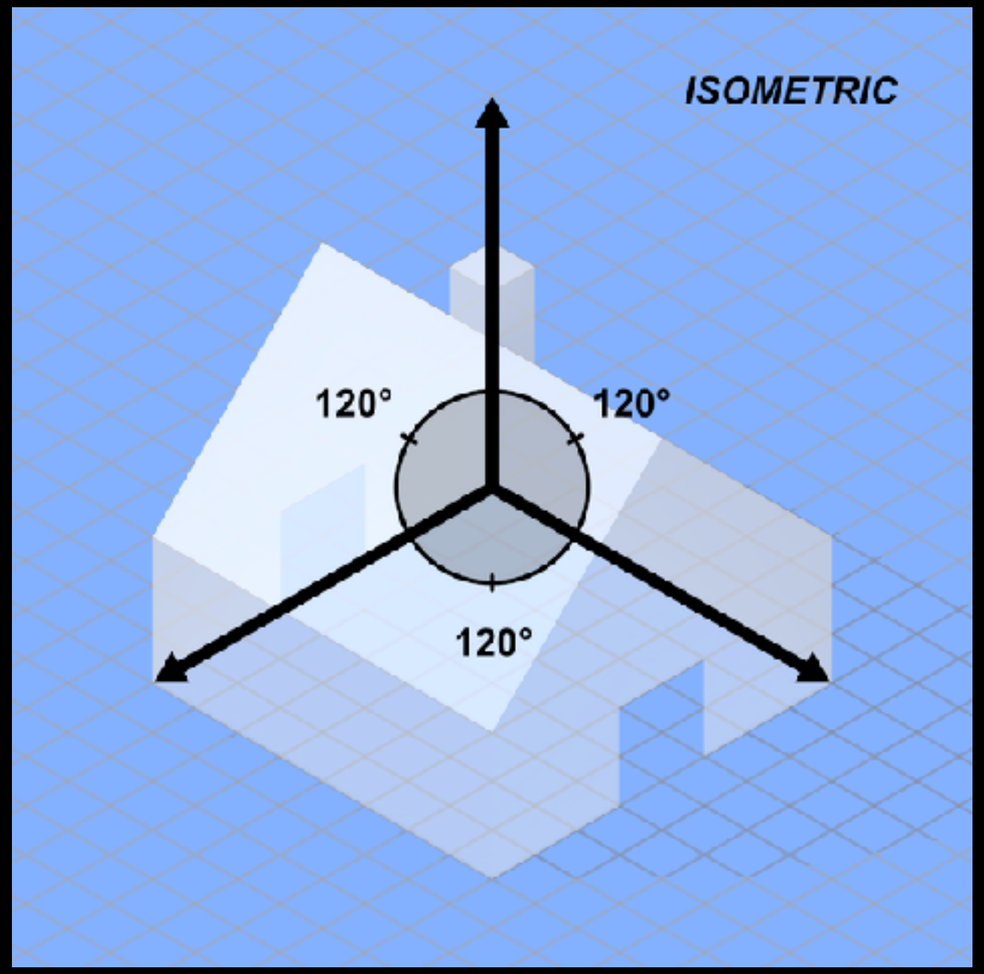




Chrono Trigger, 1995

Isometrische Projektion

Drei identische Winkel (120°)

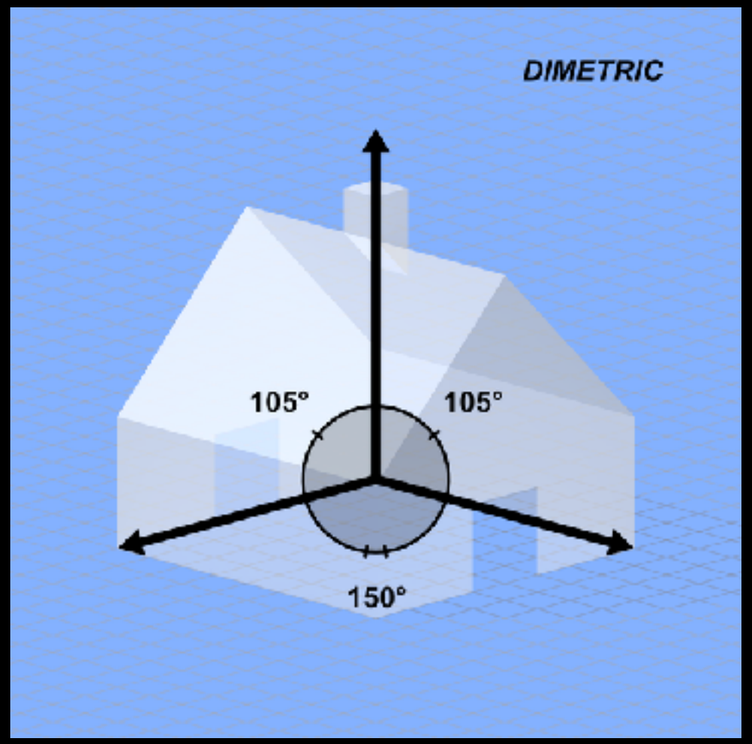




Sim City 2000, 1993

Dimetrische Projektion

Zwei identische Winkel

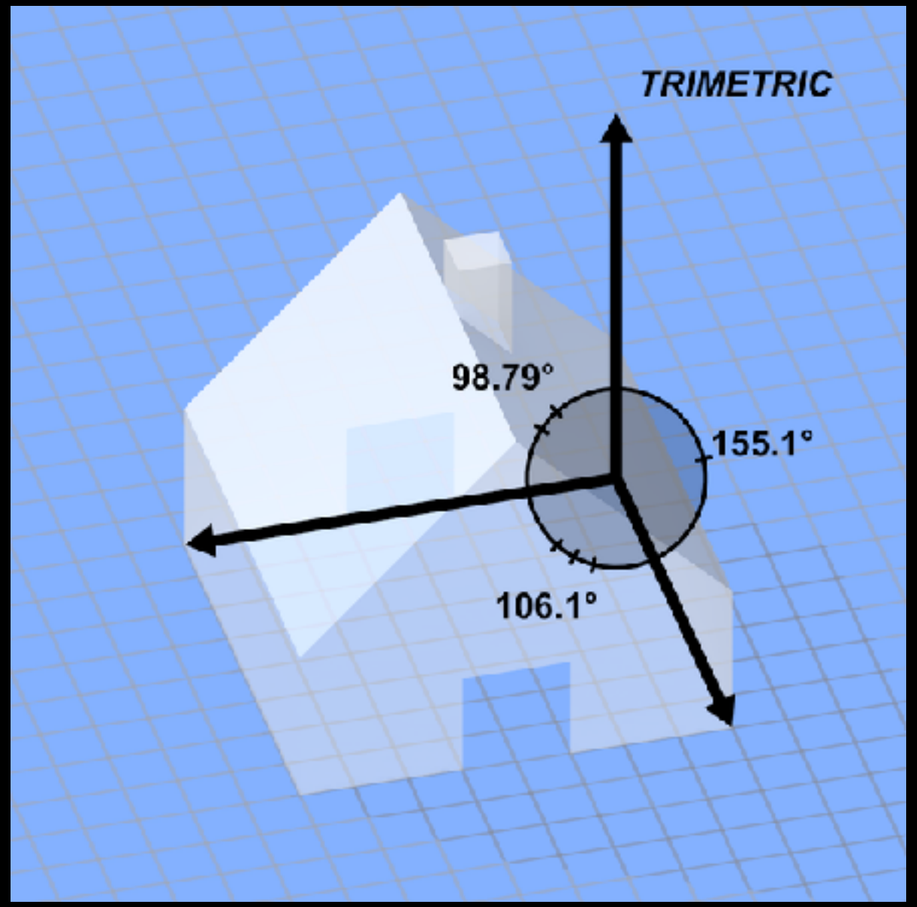




Ant Attack, 1983

Trimetrische Projektion

Drei verschiedene Winkel

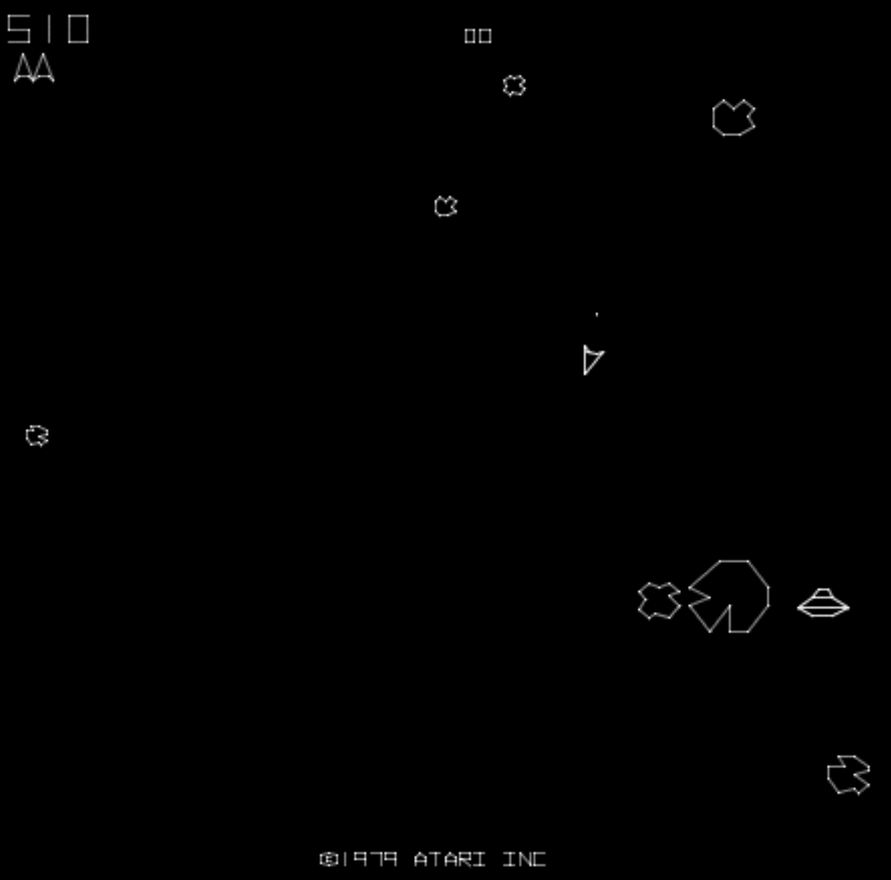




Fallout, 1997

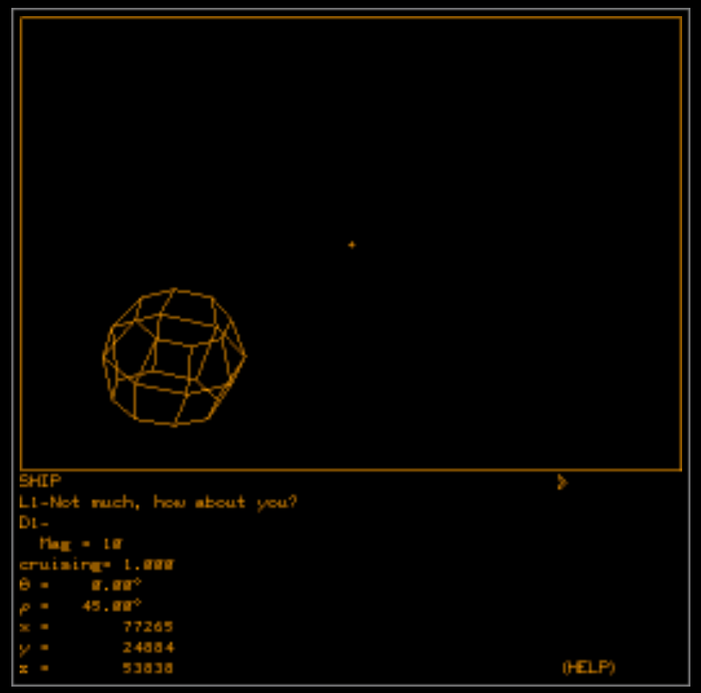
Rendering

2D Vector Graphic

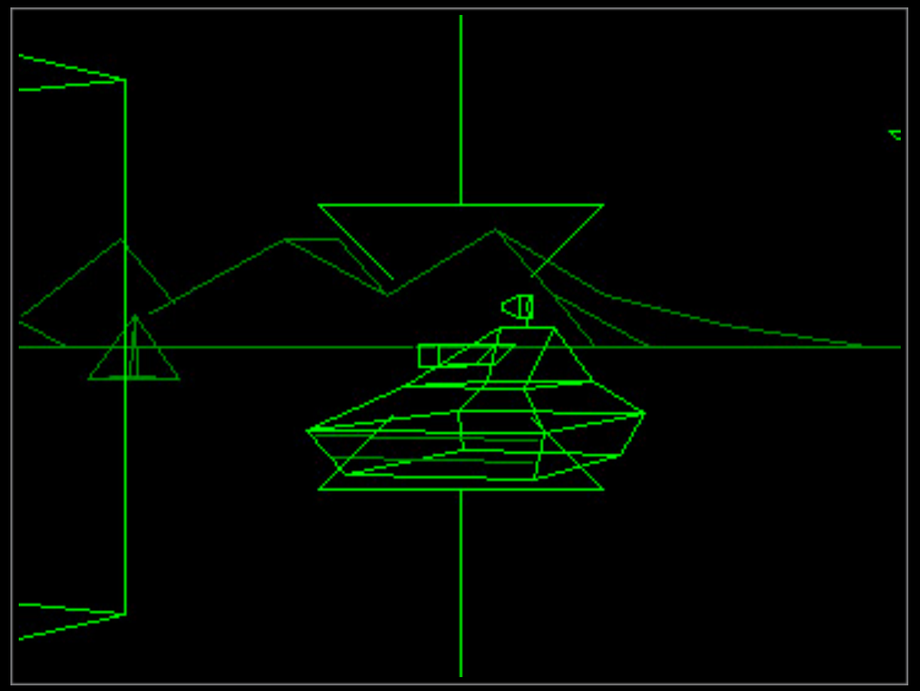


Atari: Asteroids, 1979

3D-Wireframes



Vektorgrafik: Spasim, 1974



Vektorgrafik: Battlezone, 1980

3D-Vektorgrafik Hidden Surface



Maze War, 1974



Elite, 1984

Filled Polygons
Flat Shading / Lambertian Shading



I, Robot, 1983

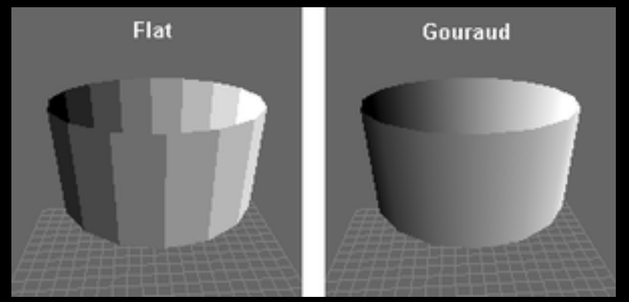


Multiplayer-Game: MIDI Maze, 1987

Gouraud Shading
Vertex Lighting



LucasArts: Star Wars TIE Fighter, 1994



Texture Mapping



Parallax: Descent, 1995

Realtime Lighting



Id: Quake, 1996

Pre-Computed Lighting

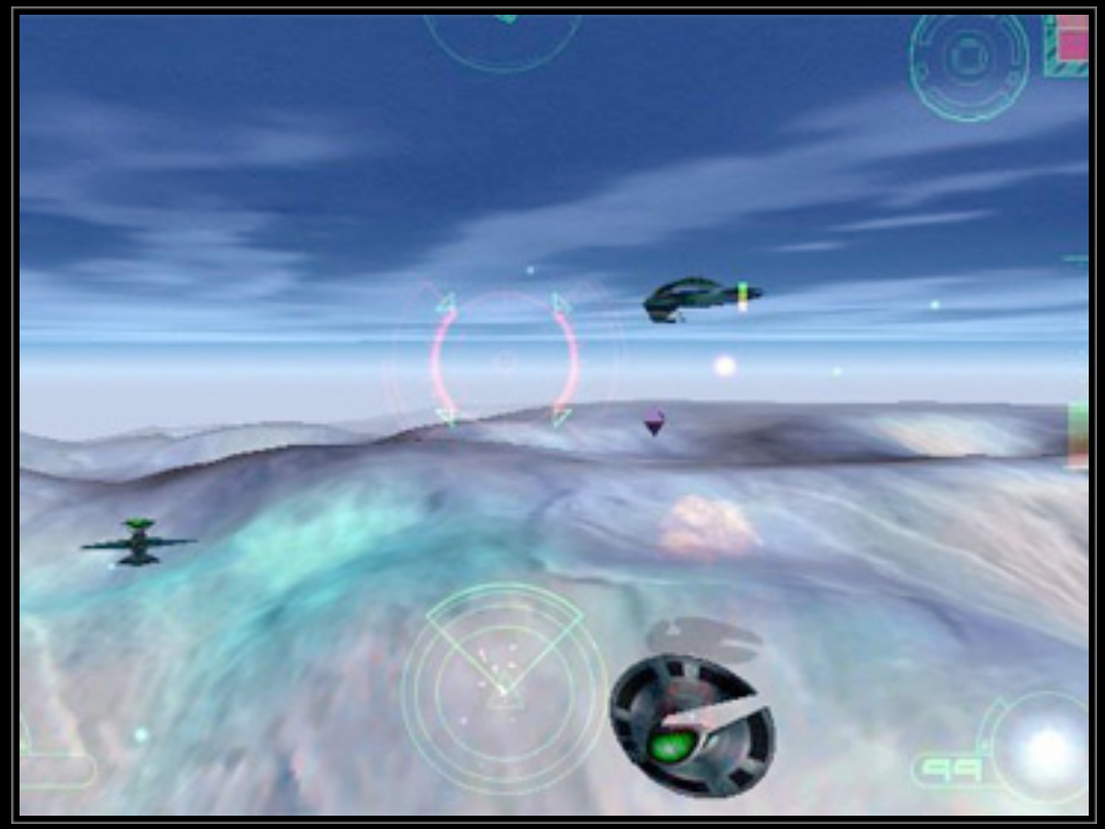




Id: Quake II, 1997

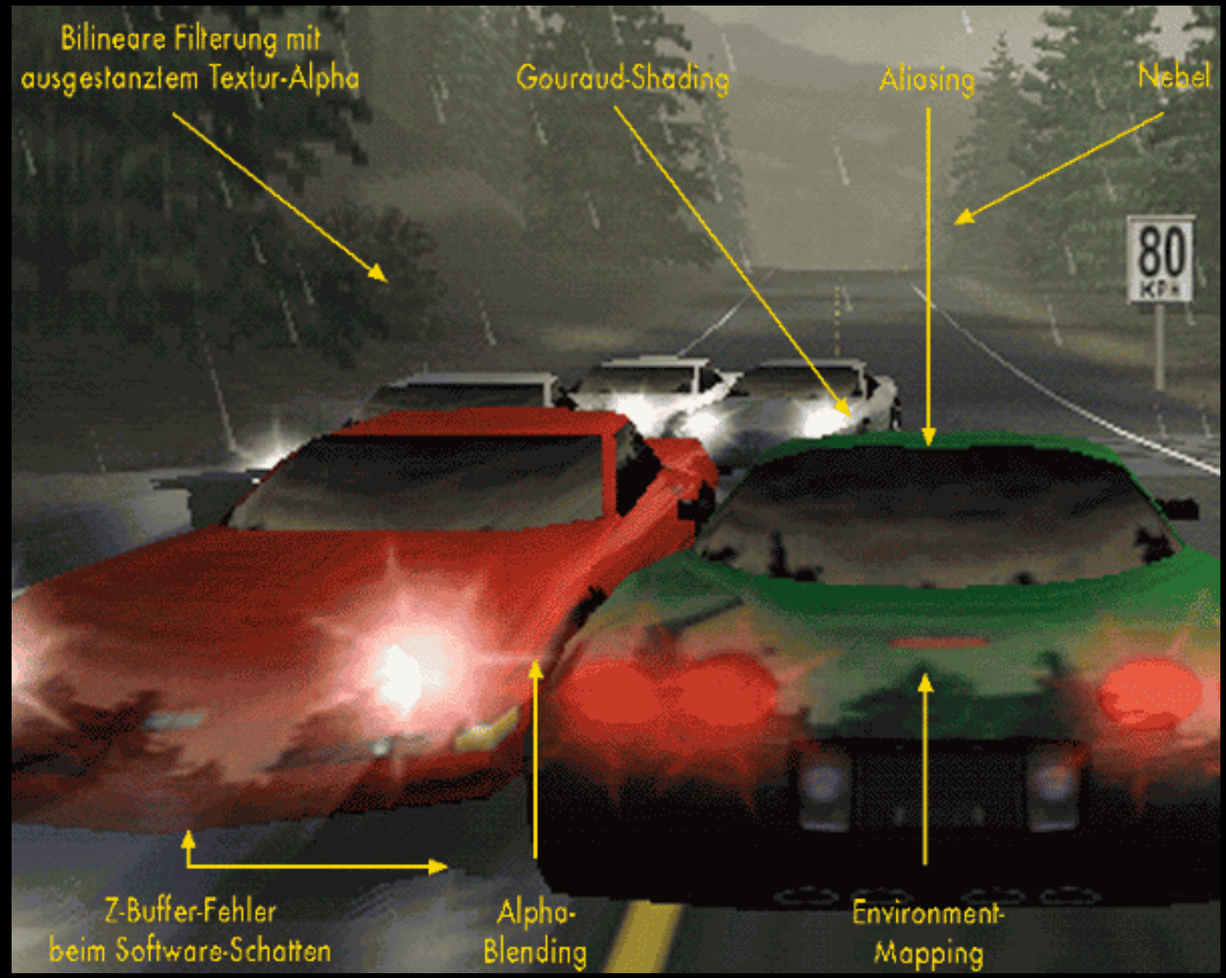
MIP Mapping





Rage: Incoming, 1998

Reflection



Need for Speed III, 1998







Anti Aliasing

Tomb Raider ohne und mit 3DFX

Phong Shading



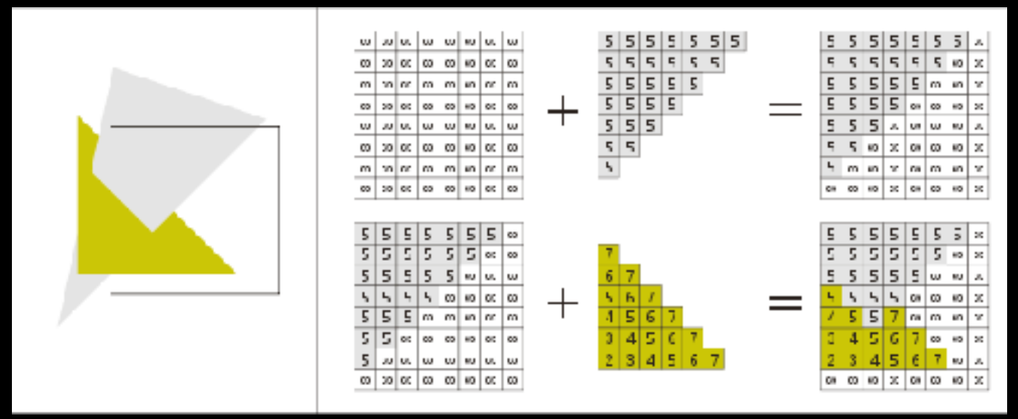
Space Channel 5, 1999

Parametric Surface



id: Quake III, 1999

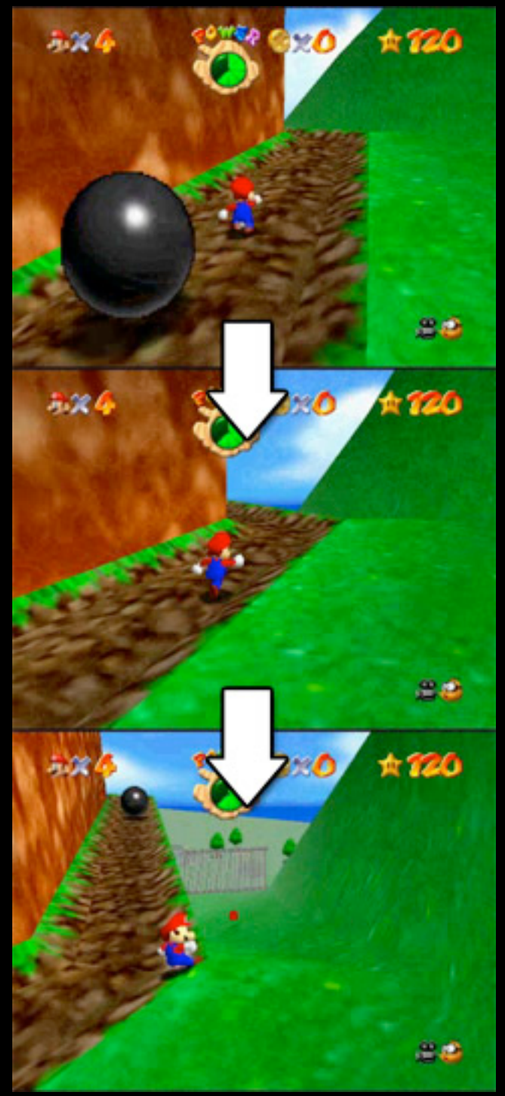
Z-Buffer





Nintendo: Super Mario 64, 1996

Virtual Camera System



Super Mario 64, 1996



Virtua Fighter, 1993

Realtime Shadow



Realtime Shadow: Splinter Cell, 2002

Post Processing



Bloom: Prince of Persia: The Sands of Time, 2003



HDR Rendering: Half Life 2, 2004

Ambient Occlusion

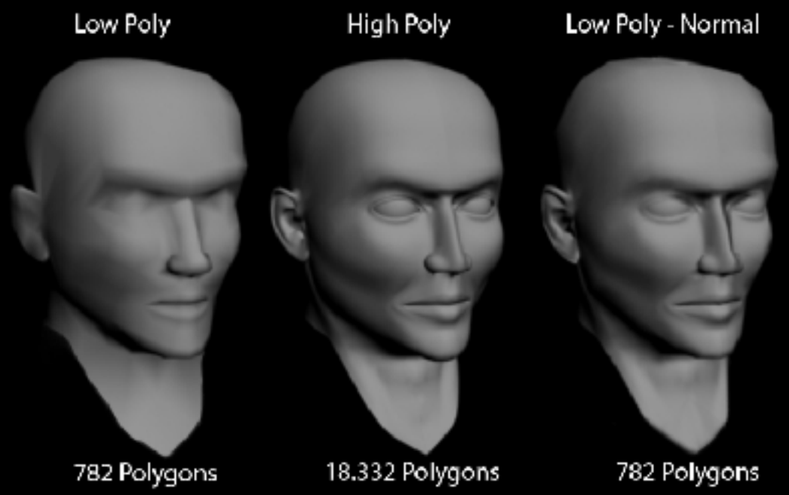




Valve: Half Life 2, 2004

Normal Mapping





id: Doom 3, 2004



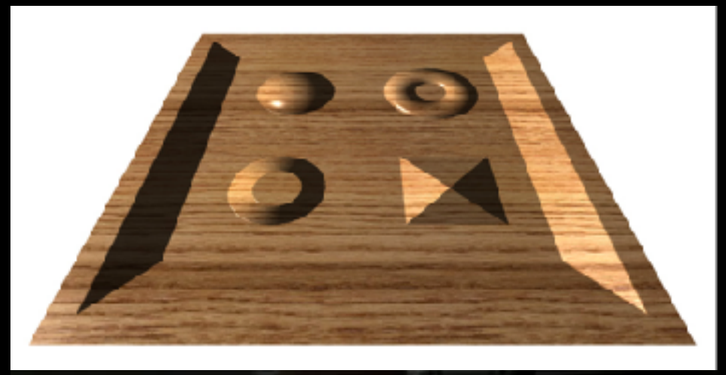
Parallax Mapping





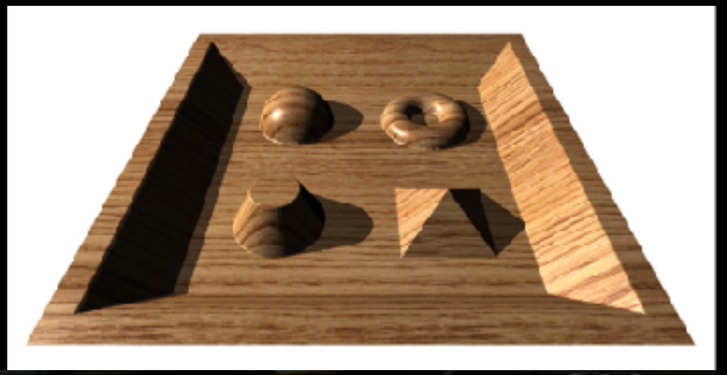
Oblivion, 2006

Relief Mapping





30fps



30fps

id: Doom 3

Doom 3 (bump/normal)

Doom 3 (relief/parallax mapping mod)

Impostors / Billboarding



Kameo, 2005

Global Illumination



Global Illumination: Halo III, 2007

Subsurface Scattering
Volumenstreuung





http://kotaku.com/5789088/world-exclusive-first-look-under-the-hood-of-the-next-unreal-engine

Unreal 3, 2011

Partikel



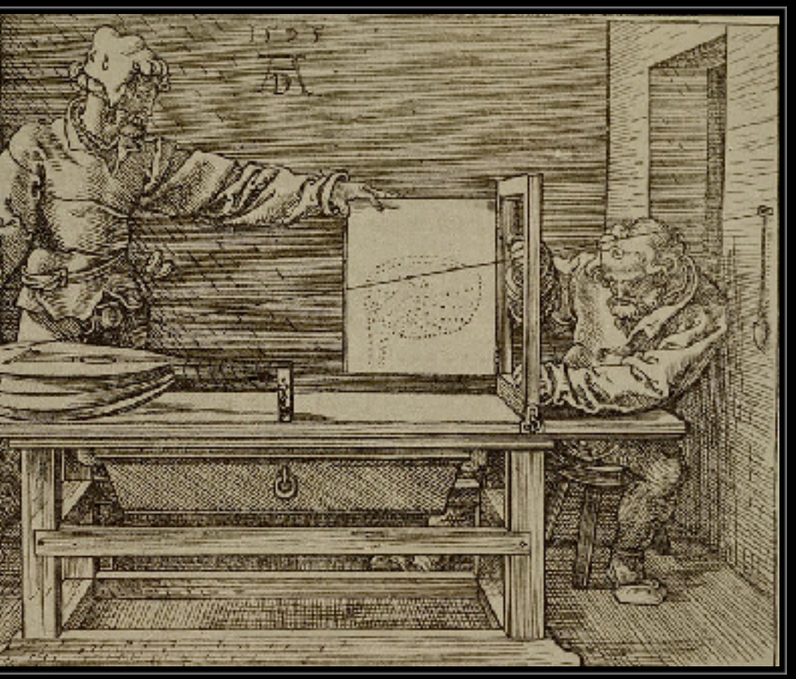
Unreal Engine 4
Elemental Demo

Non-Photorealistic Rendering
Toon Shading / Cel Shading

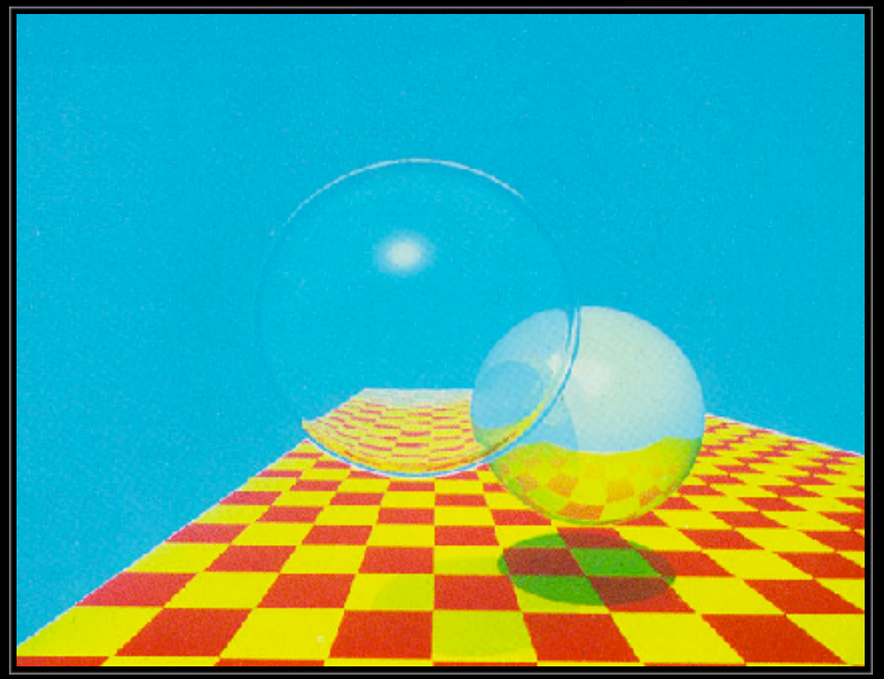


Okami, 2006

Ray-Tracing



Albrecht Dürer, 1538



Turner Whitted, 1980



Quake 4, raytraced, 2007



Echtzeit-Raytracing 2018