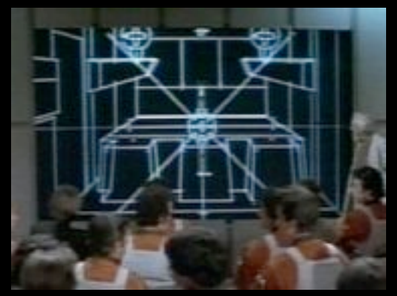
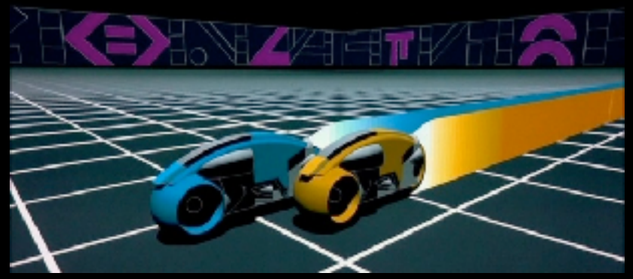
Grafik

3D CG im Film

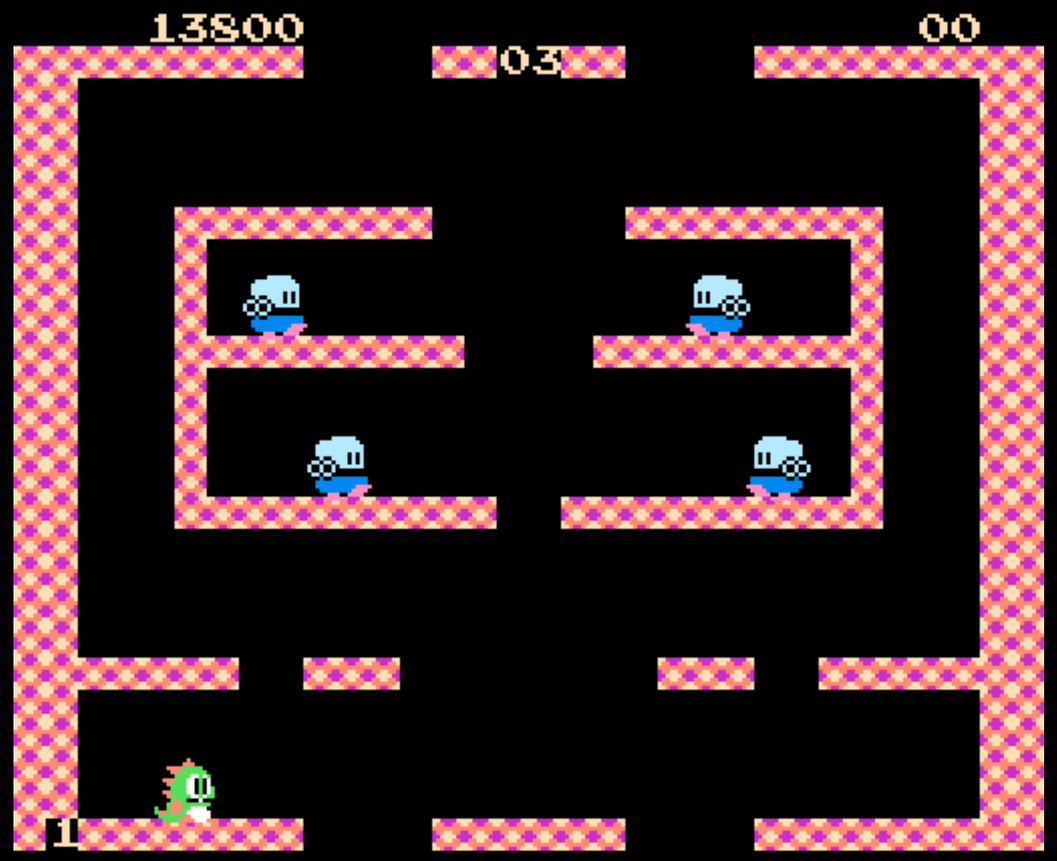
Futureworld	1976
Star Wars	1977
Tron	1982
Young Sherlock Holmes	1985
Abyss	1989
Terminator 2	1991
Toy Story	1995
Final Fantasy	2001
Avatar	2009





Dimensionen

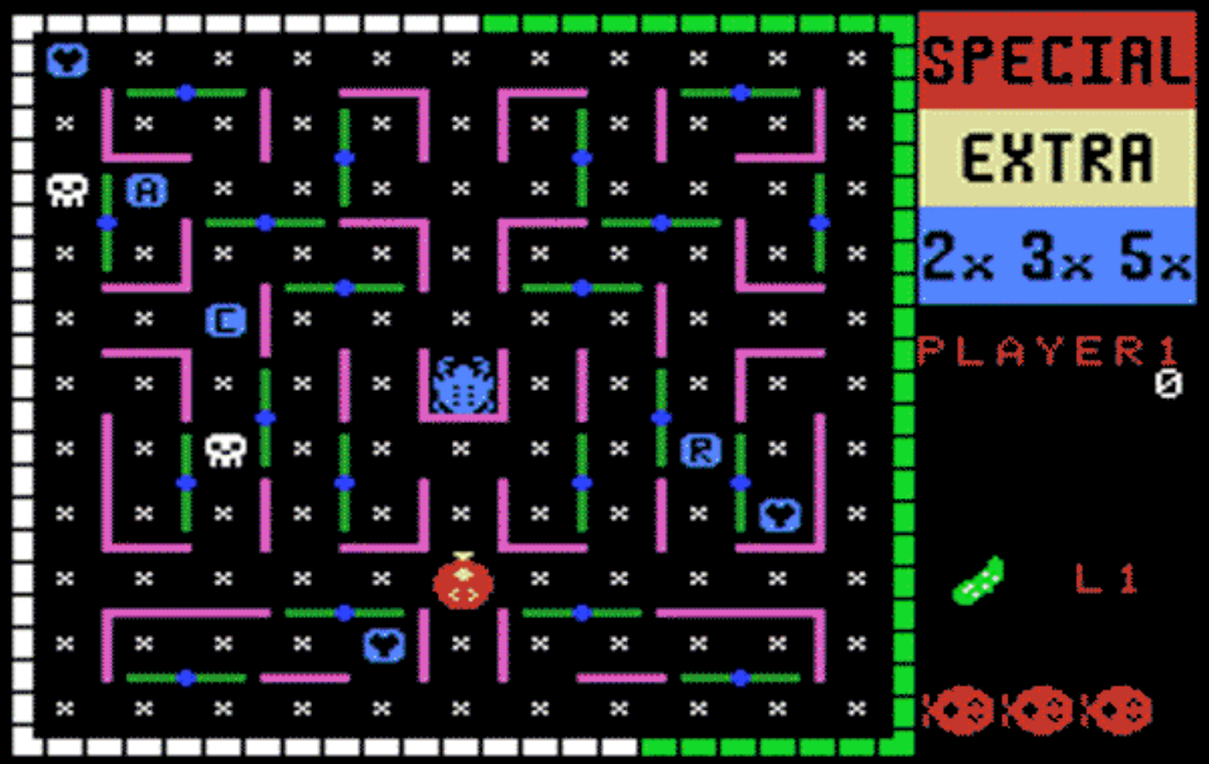
2D



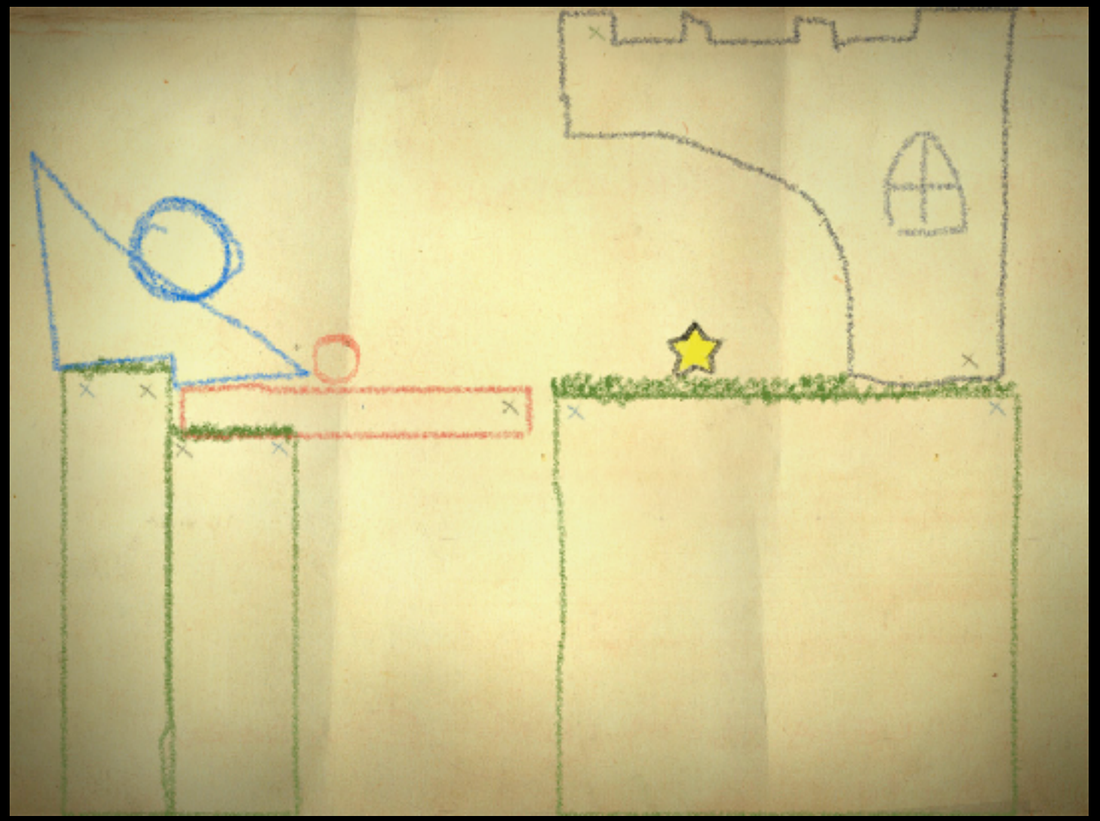
Bubble Bobble, 1986

Scramble, 1981

Fixed Screen

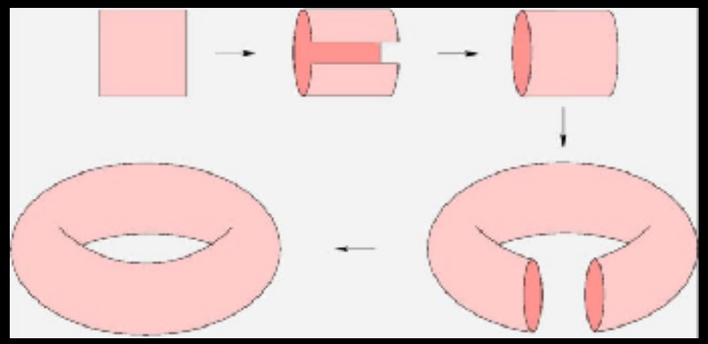


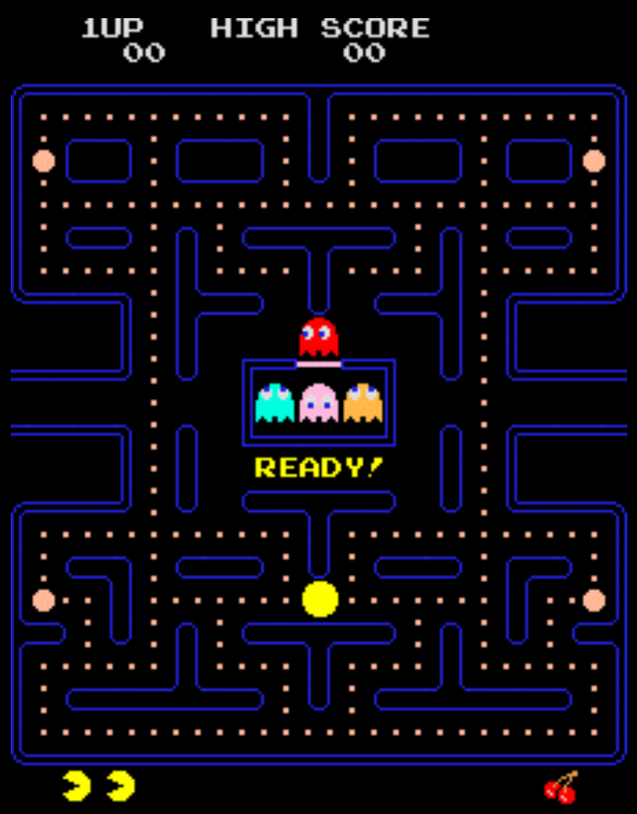
Lady Bug, 1981



Crayon Physics Deluxe, 2009

Wrap Around (Flat Torus)

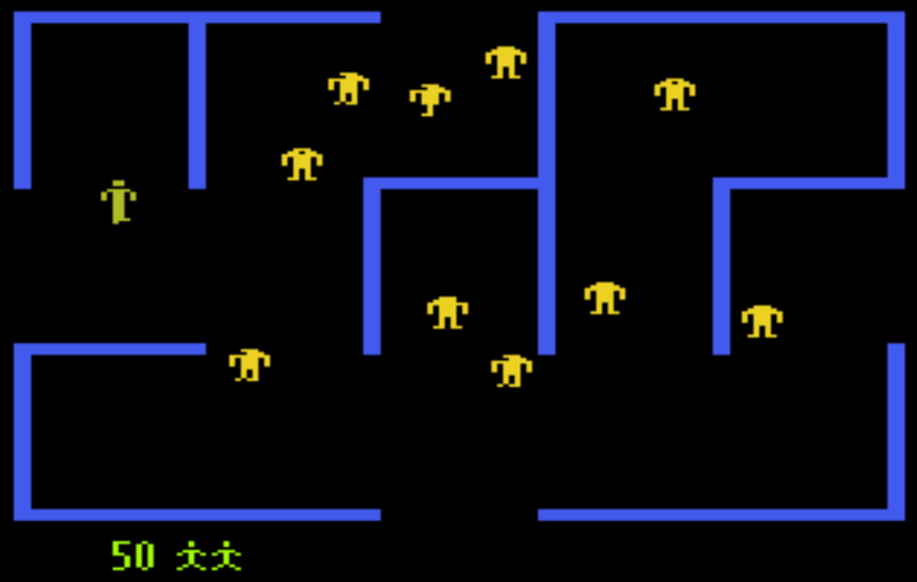




Pac Man, 1980

Asteroids, 1979

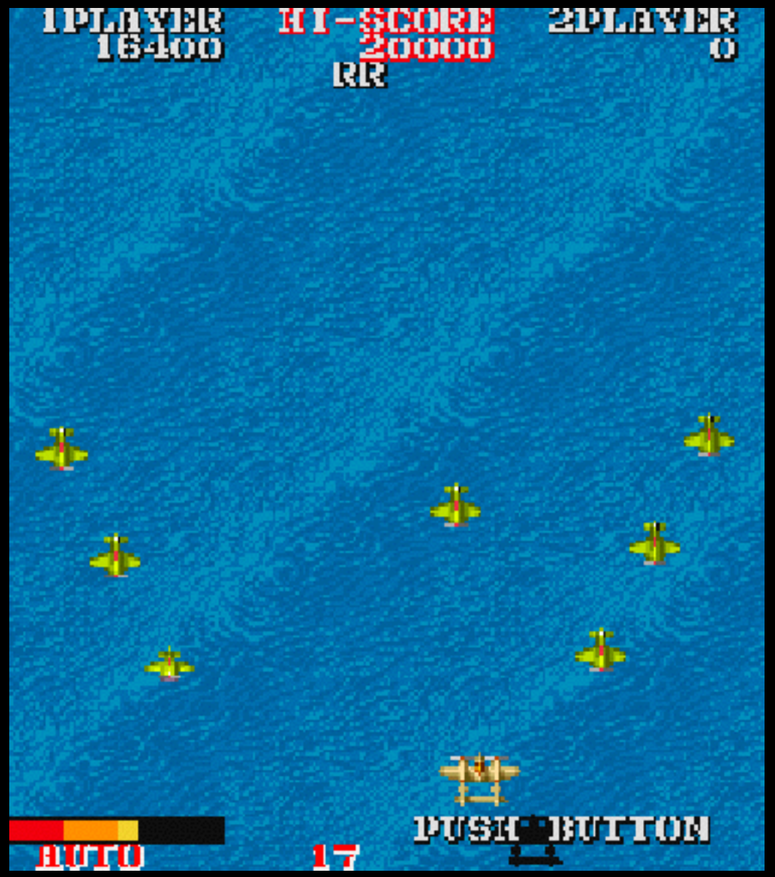
Flip-Screen



Berzerk, 1980

Legend of Zelda, 1986

Vertical / Horizontal Scroll



1943, 1987

Great Giana Sisters, 1987

XY-Scroll

Paradroid, 1985

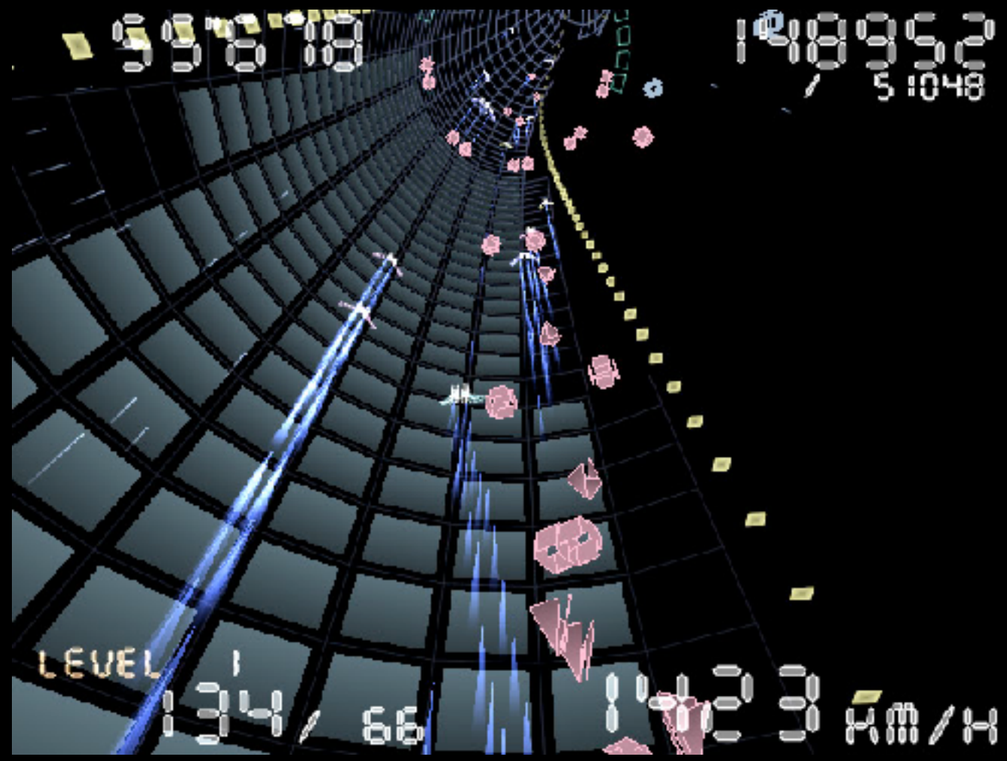
Fancy Pants Adventures, 2006

Z-Scroll

F1 World Grand Prix, 1998

Rail / Tube-Scroller

Space Harrier, 1985



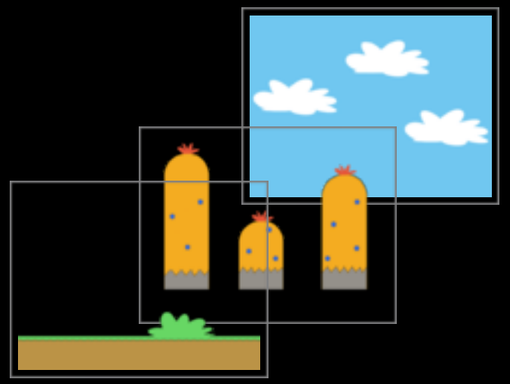
Torus Trooper, 2005

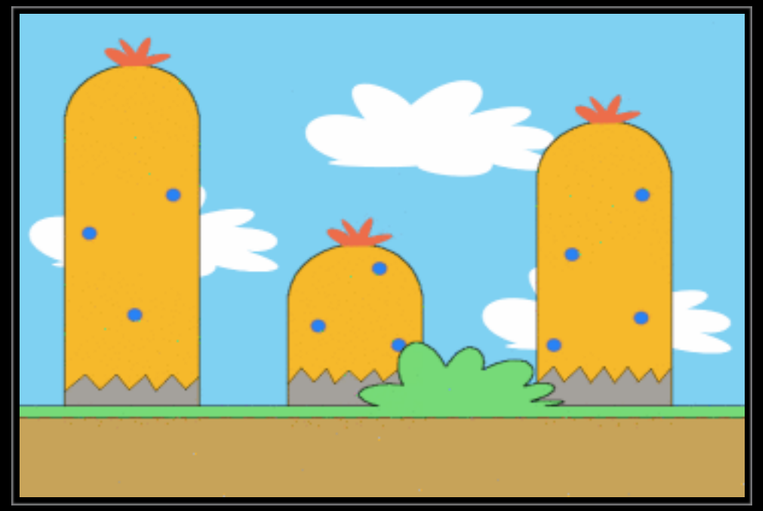
2.5 D

Street Fighter IV, 2008

Gradius V, 2004

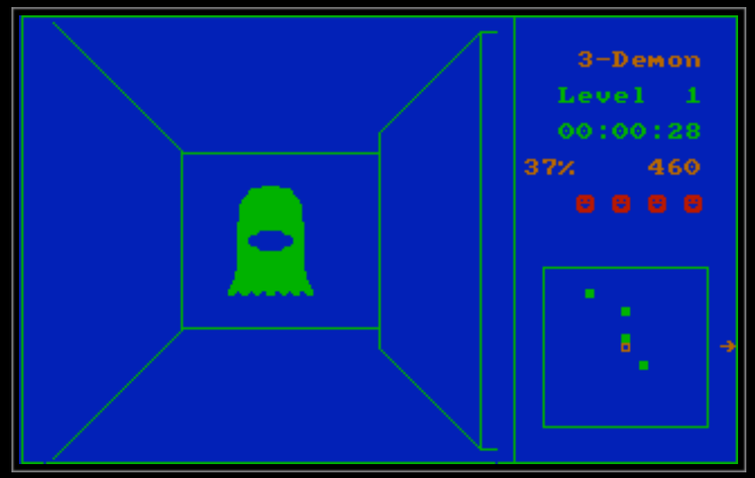
Parallax Scrolling





Moon Patrol, 1982

Sprite Scaling

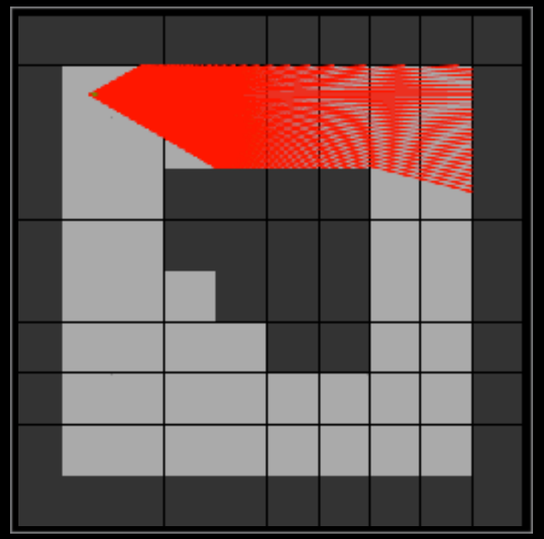


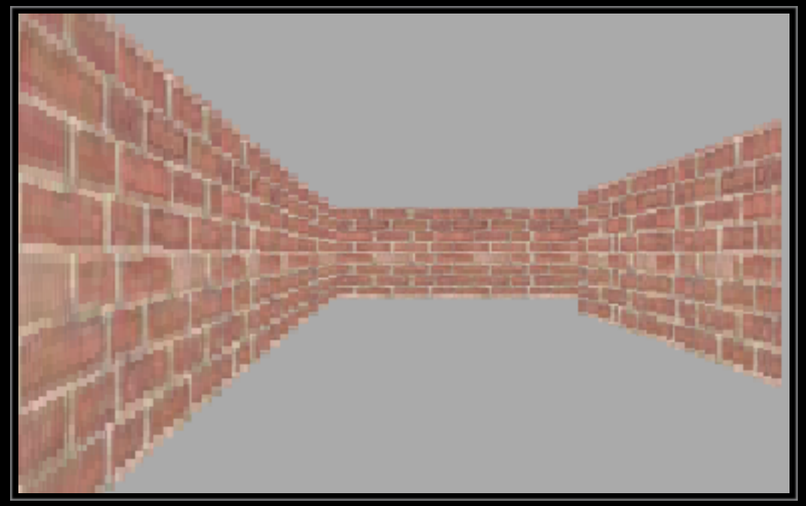
3-Demon, 1983

Space Harrier, 1985

Ego Shooter: Aliens, 1986

Ray Casting

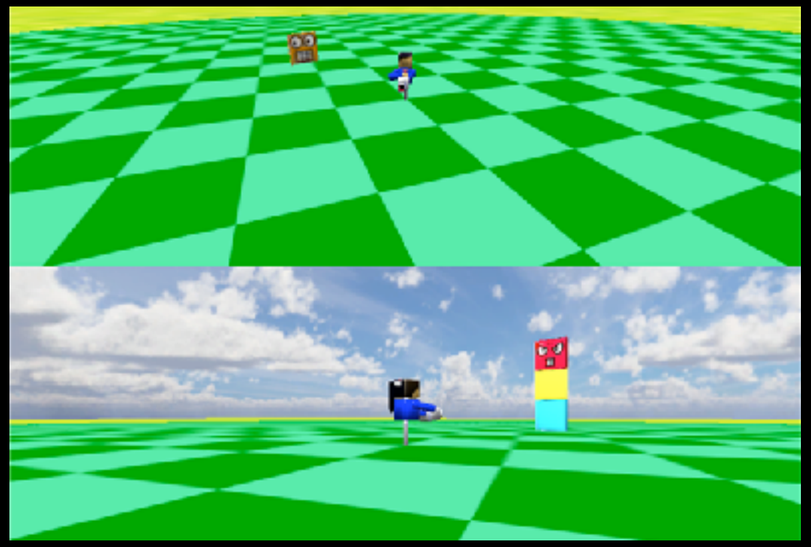




id: Doom, 1993

3D

First-Person
System Shock, 1994



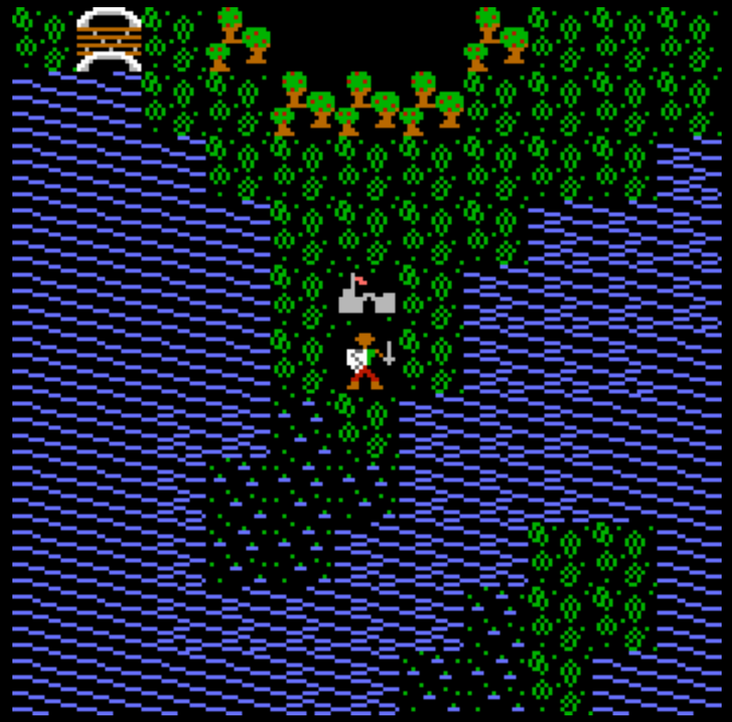
Second-Person
Second-Person-Shooter Zato, 2011

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

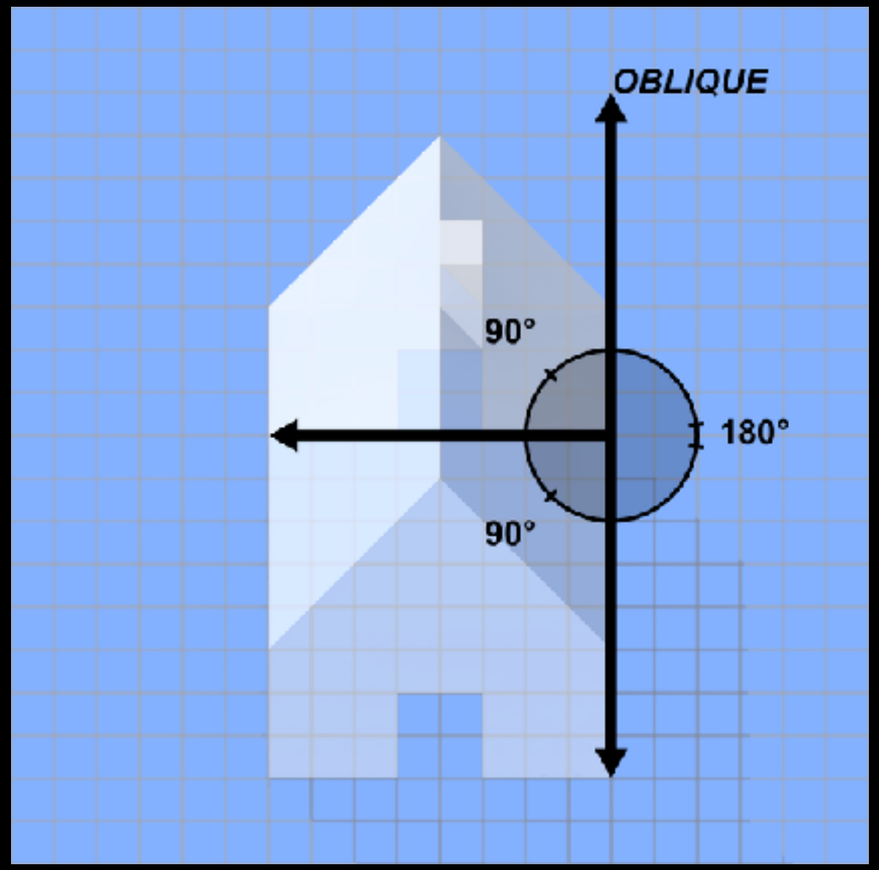
Doom, 1993

Half Life 2, 2004

Vogelperspektive (3-Punkt-Perspektive)

Torchlight, 2009

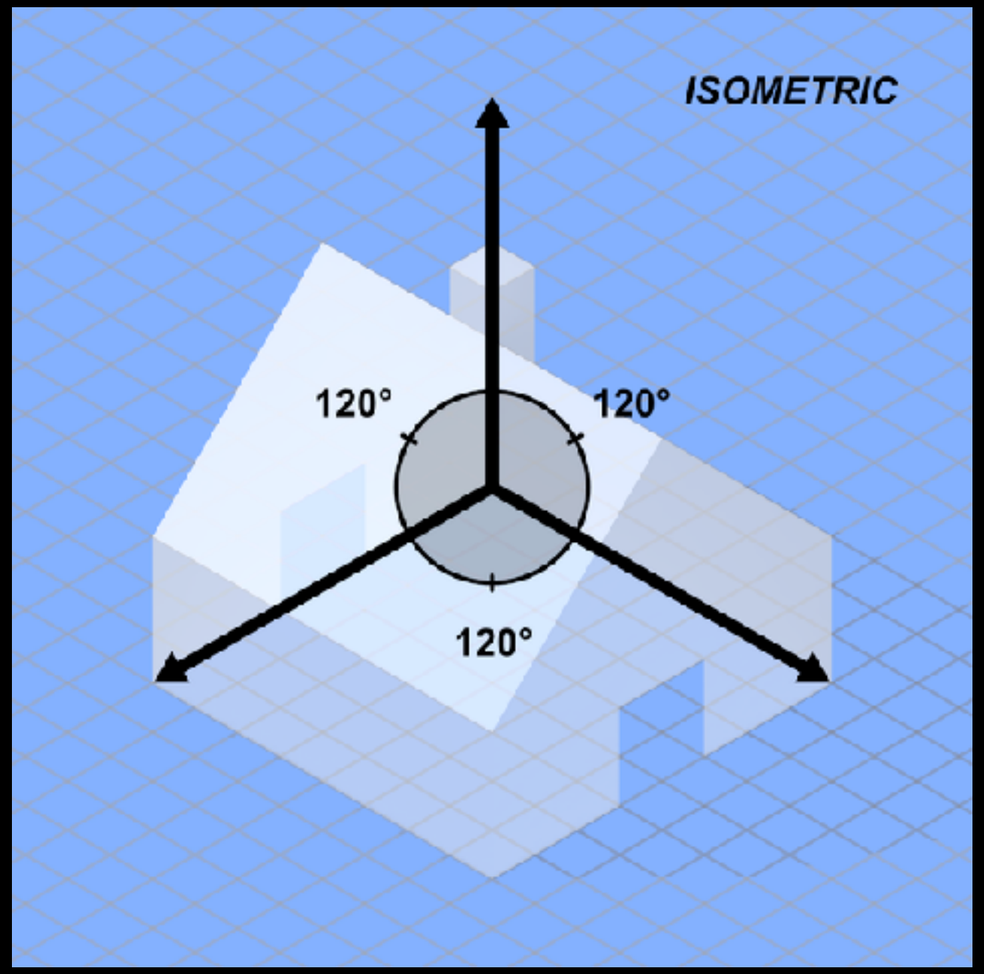
Schrägriss



Chrono Trigger, 1995

Isometrische Projektion

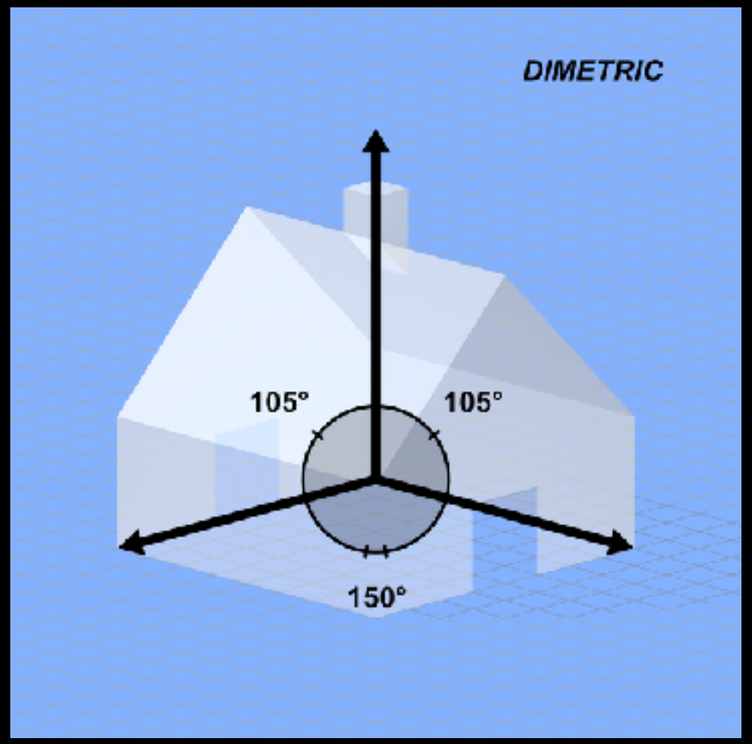
Drei identische Winkel (120°)



Sim City 2000, 1993

Dimetrische Projektion

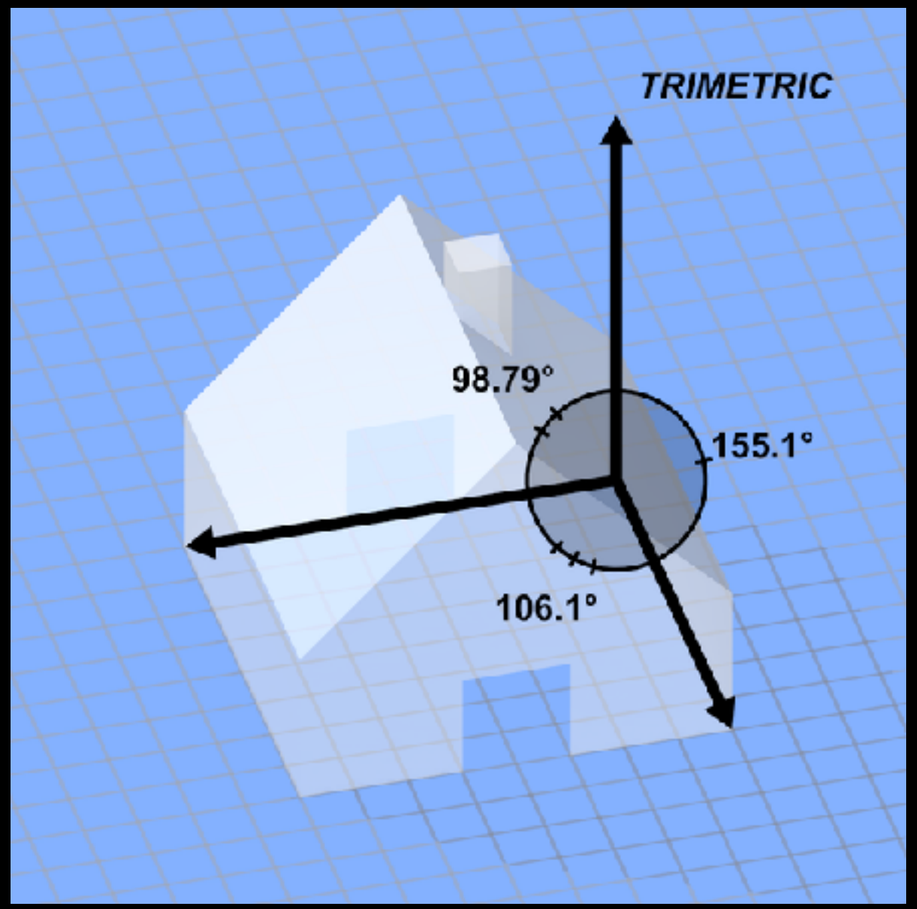
Zwei identische Winkel



Ant Attack, 1983

Trimetrische Projektion

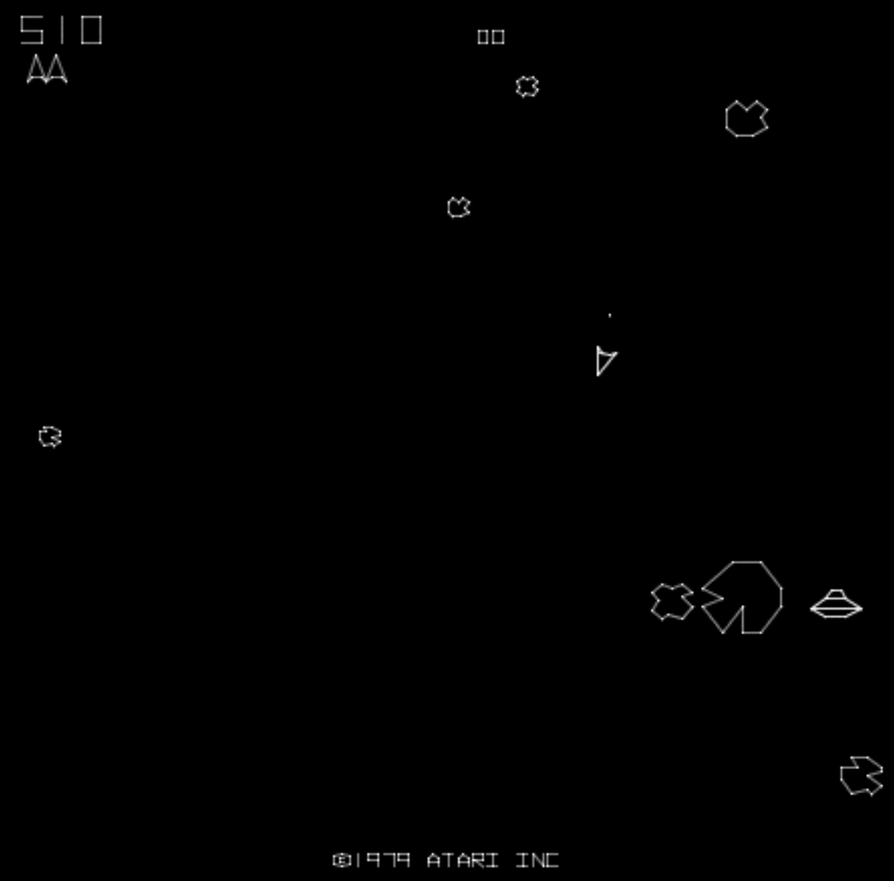
Drei verschiedene Winkel



Fallout, 1997

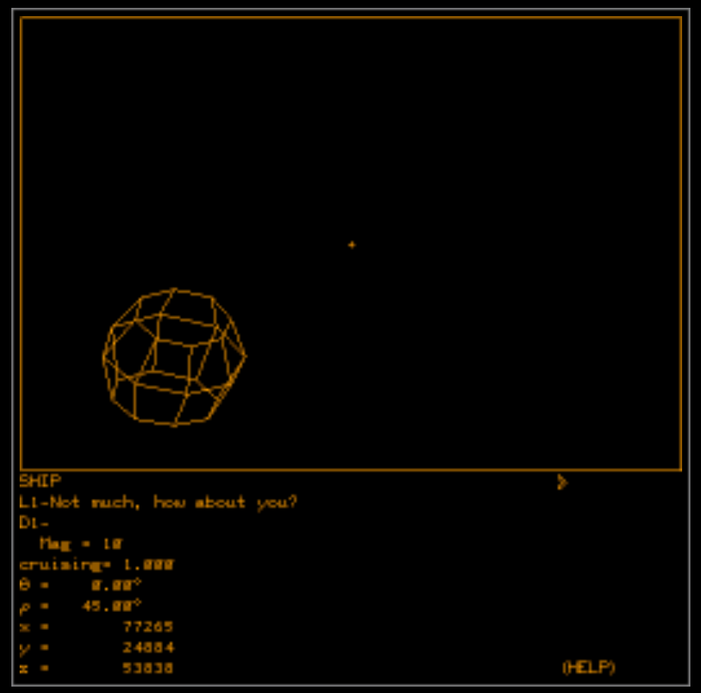
Rendering

2D Vector Graphic

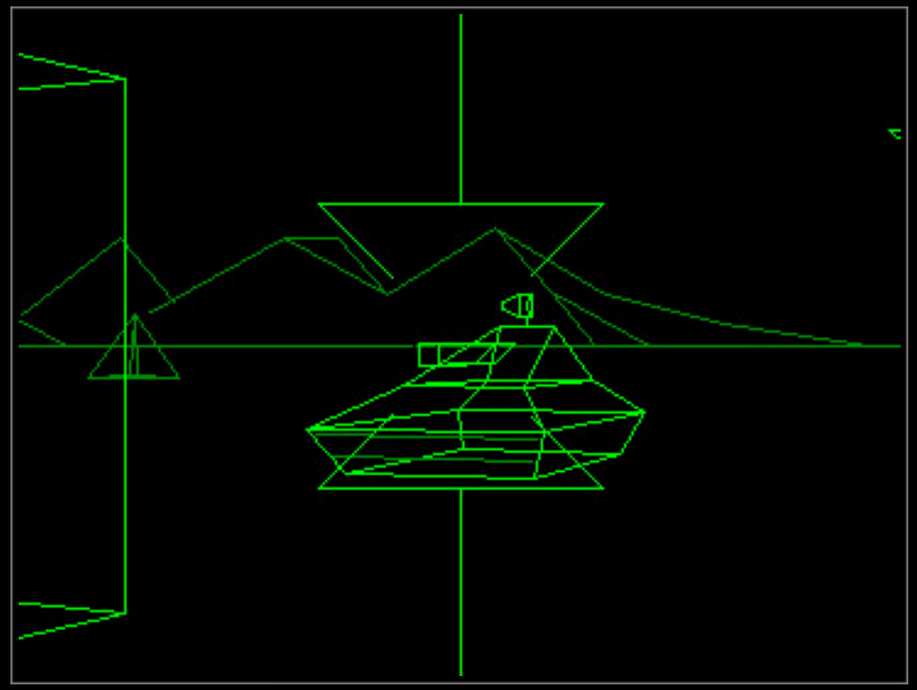


Atari: Asteroids, 1979

3D-Wireframes



Vektorgrafik: Spasim, 1974



Vektorgrafik: Battlezone, 1980

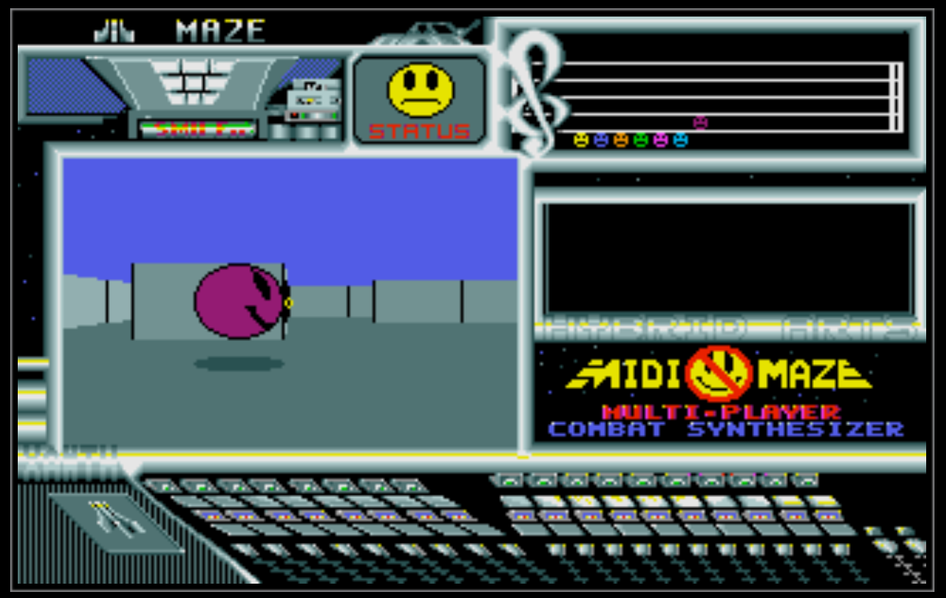
3D-Vektorgrafik Hidden Surface

Maze War, 1974

Elite, 1984

Filled Polygons
Flat Shading / Lambertian Shading

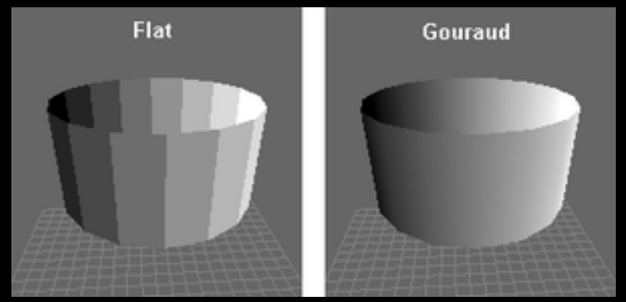
I, Robot, 1983



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

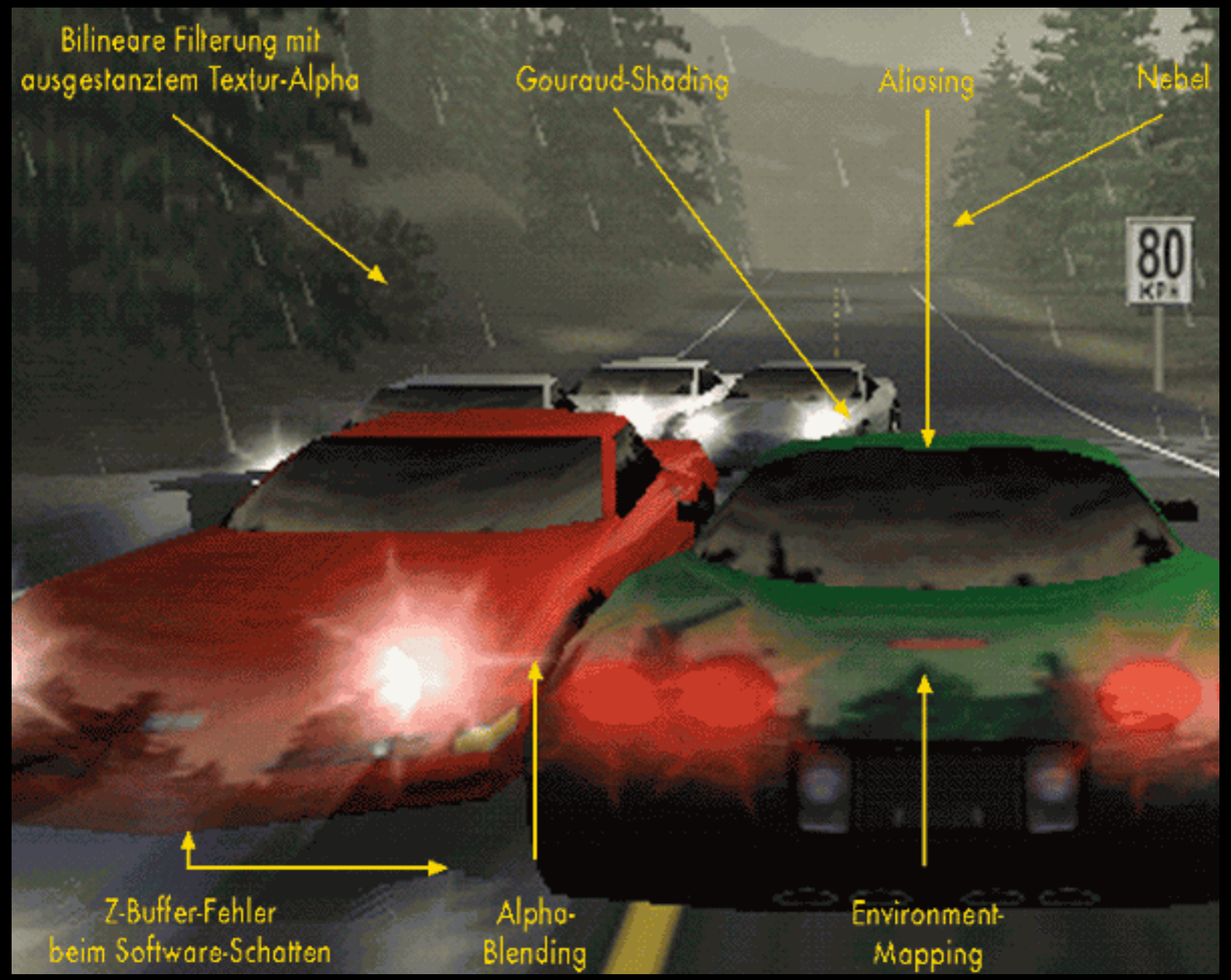
Pre-Computed Lighting

Id: Quake II, 1997

MIP Mapping

Rage: Incoming, 1998

Reflection



Need for Speed III, 1998

Anti Aliasing

Tomb Raider ohne und mit 3DFX

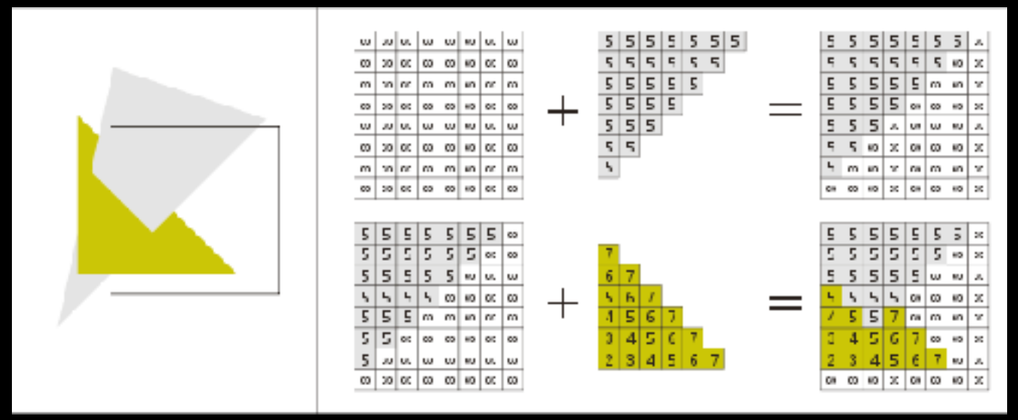
Phong Shading

Space Channel 5, 1999

Parametric Surface

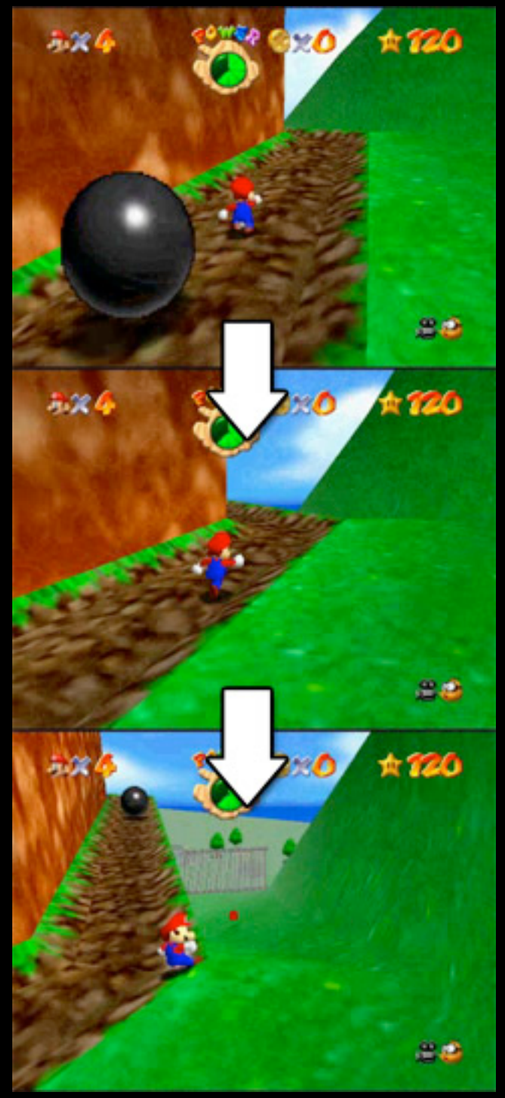
id: Quake III, 1999

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

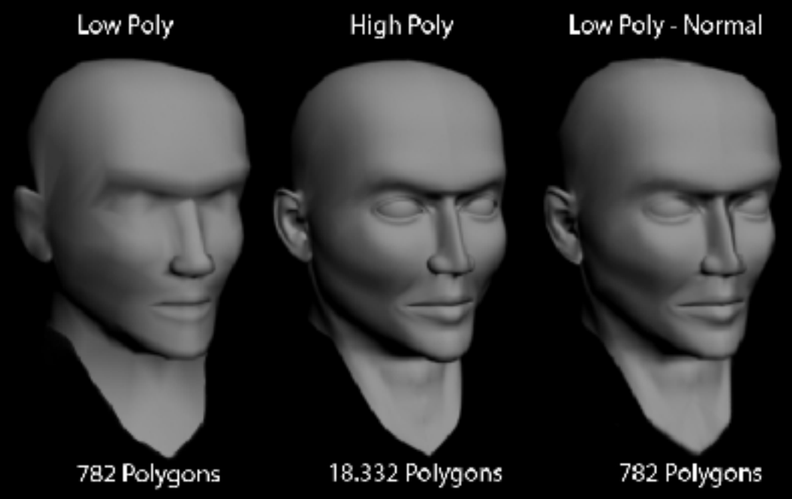
Bloom: Prince of Persia: The Sands of Time, 2003

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

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

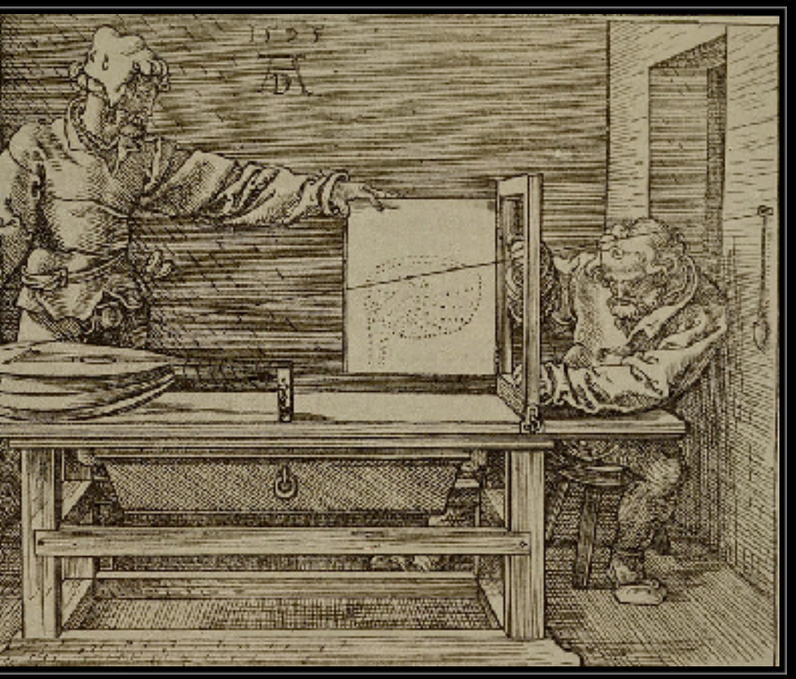
Partikel

Unreal Engine 4
Elemental Demo

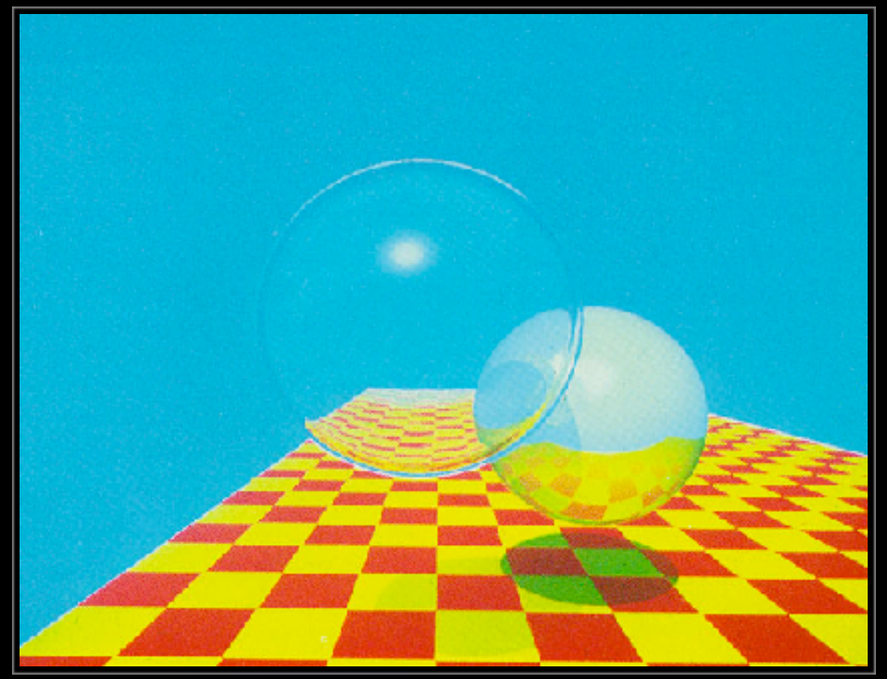
Non-Photorealistic Rendering
Toon Shading / Cel Shading

Okami, 2006

Die Zukunft: Ray-Tracing



Albrecht Dürer, 1538



Turner Whitted, 1980

Quake 4, raytraced, 2007