

Geschichte und Ästhetik der audiovisuellen und digitalen Medien II

Grafik

Prof. Dr. Jochen Koubek



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



Aufbau

Tile-based Environments

Gekachelte Umgebungen



Ultima I, 1980 (1986)



Tomb Raider, 1996

Continuous Environments



Broken Sword, 1996



Tomb Raider, 2013

Projektionen

Zentralperspektive



Doom, 1993



Half Life 2, 2004

Vogelperspektive (3-Punkt-Perspektive)

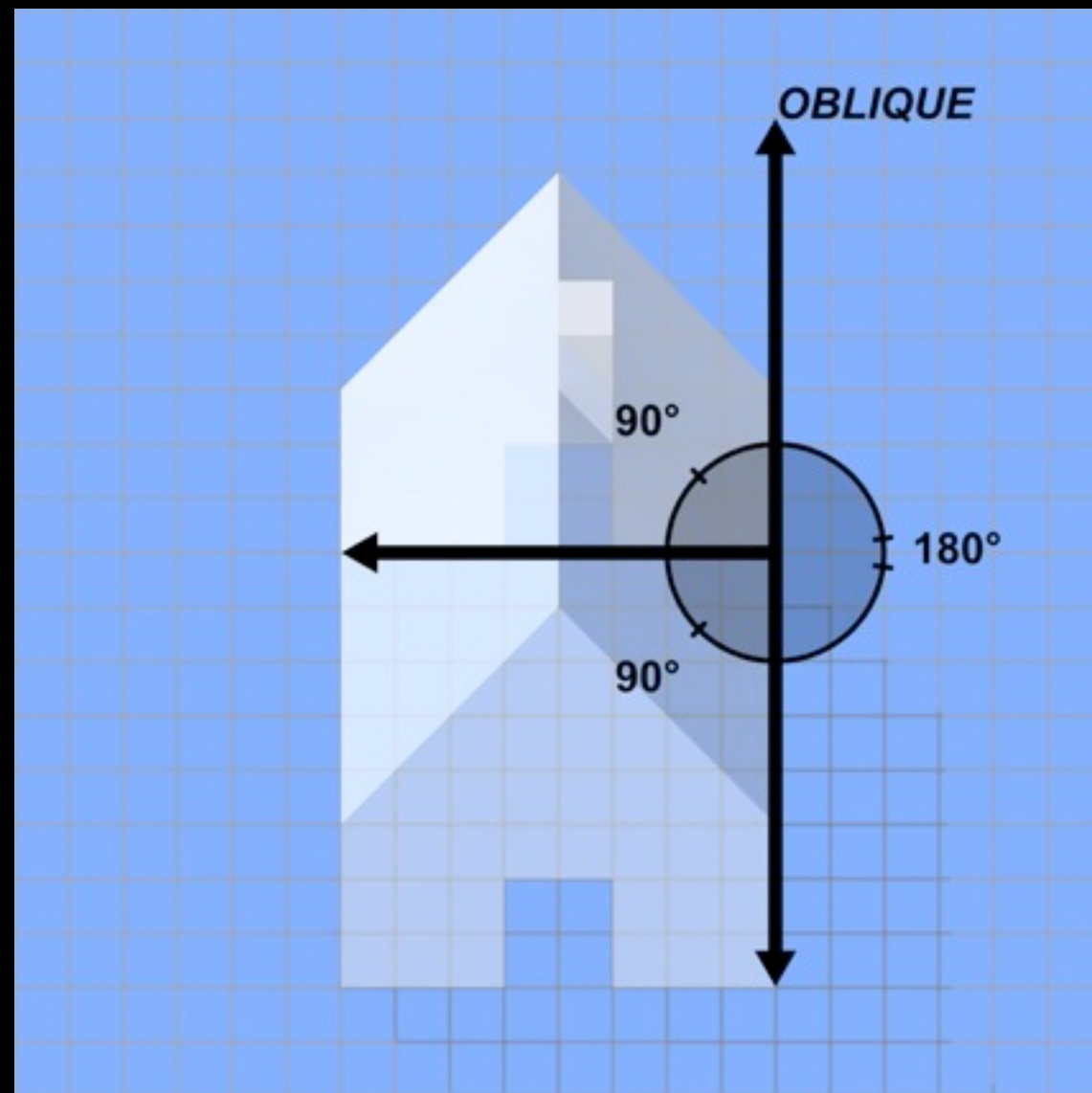


Guybrush

Health and mana bars, and other UI elements for the character Guybrush.

Game skill bar with icons for various abilities and a central mini-map.

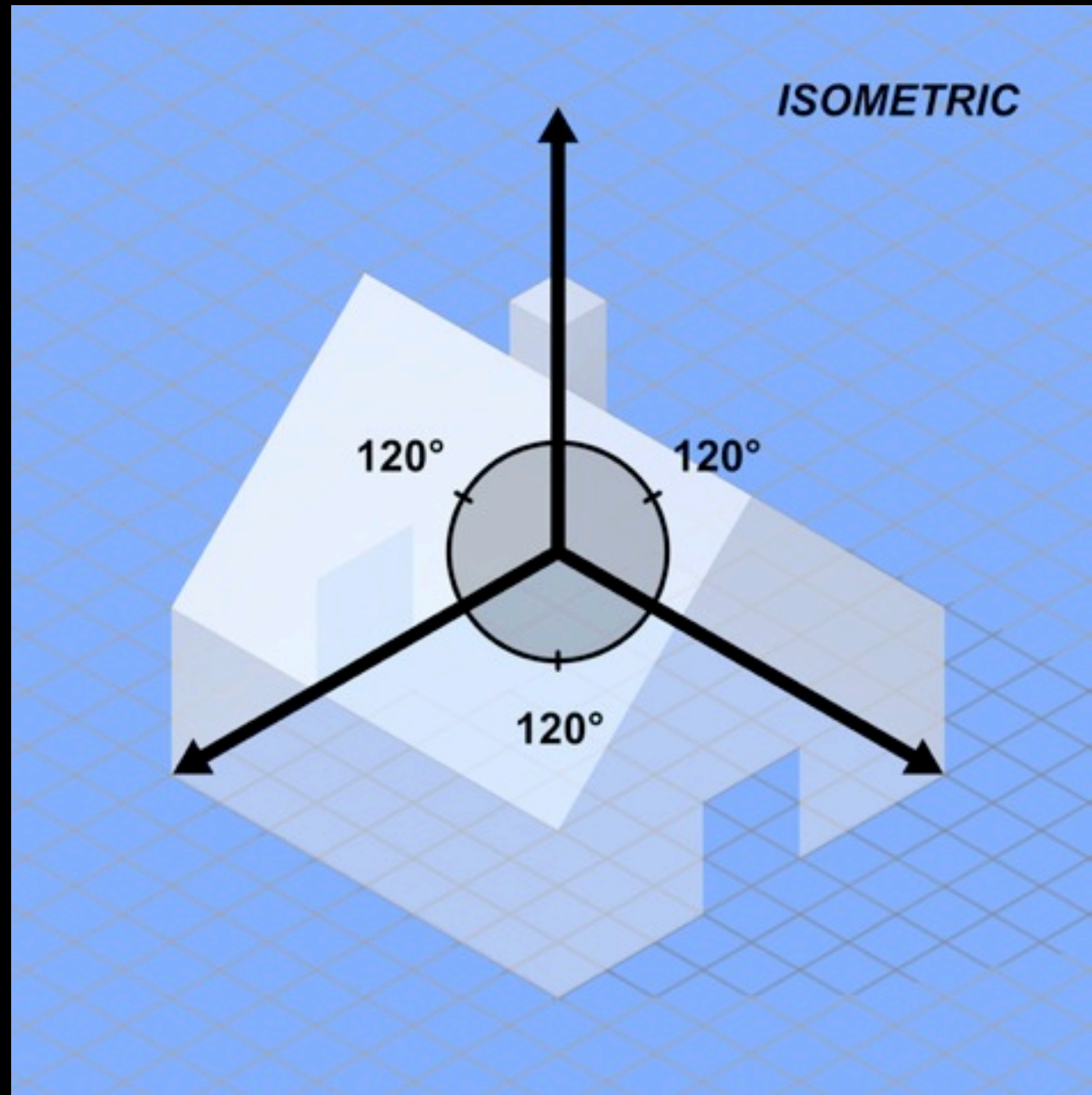
Schrägriss



Chrono Trigger, 1995

Isometrische Projektion

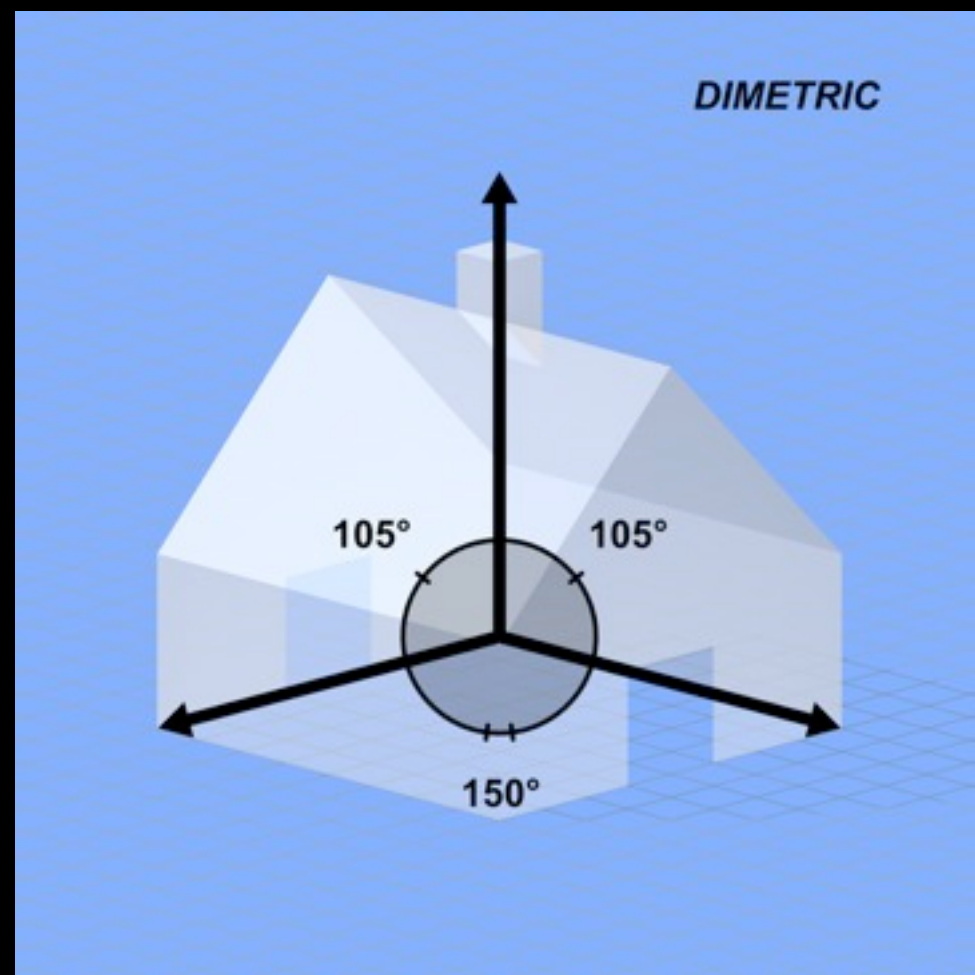
Drei identische Winkel (120°)



Sim City 2000, 1993

Dimetrische Projektion

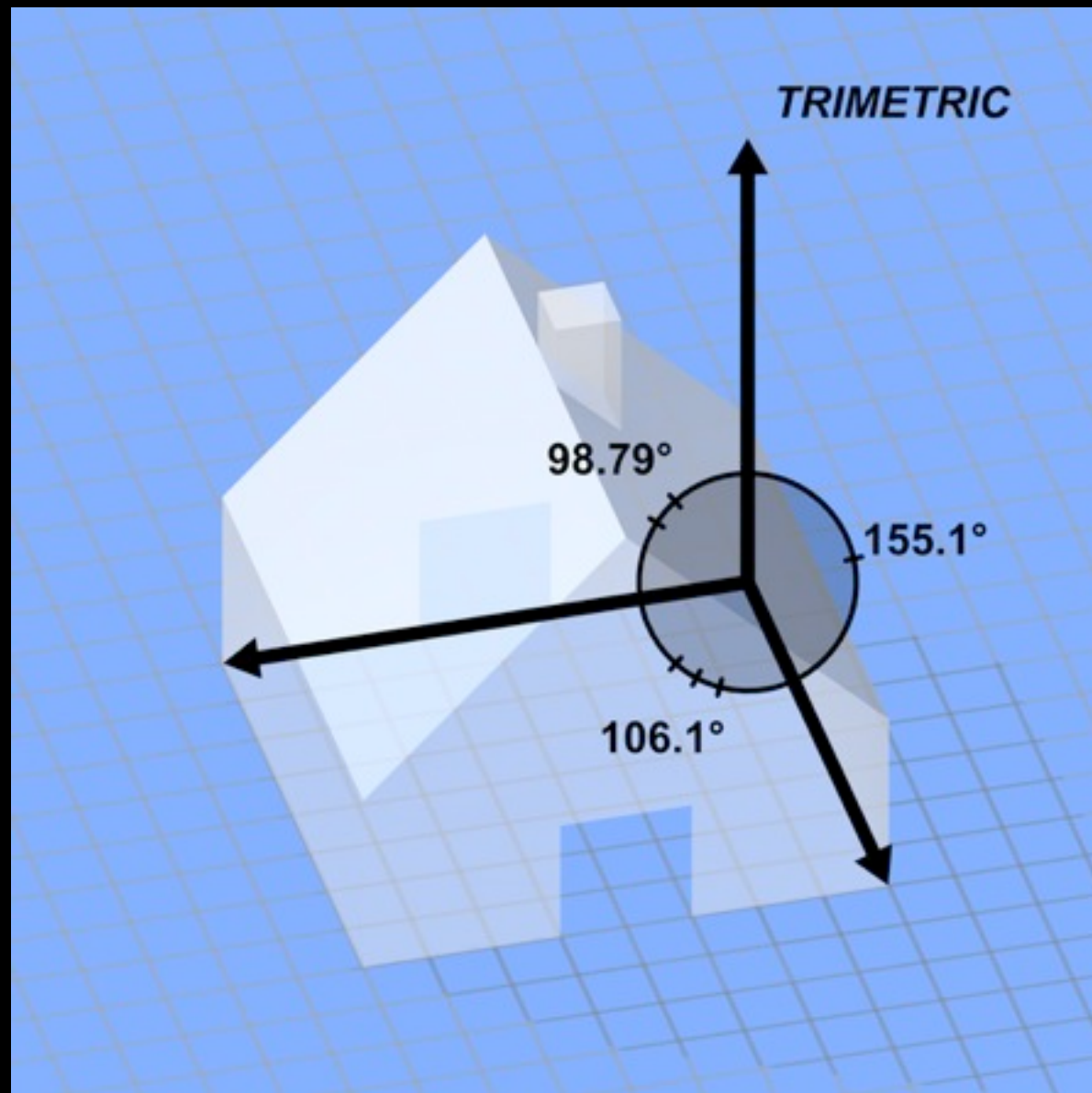
Zwei identische Winkel



Ant Attack, 1983

Trimetrische Projektion

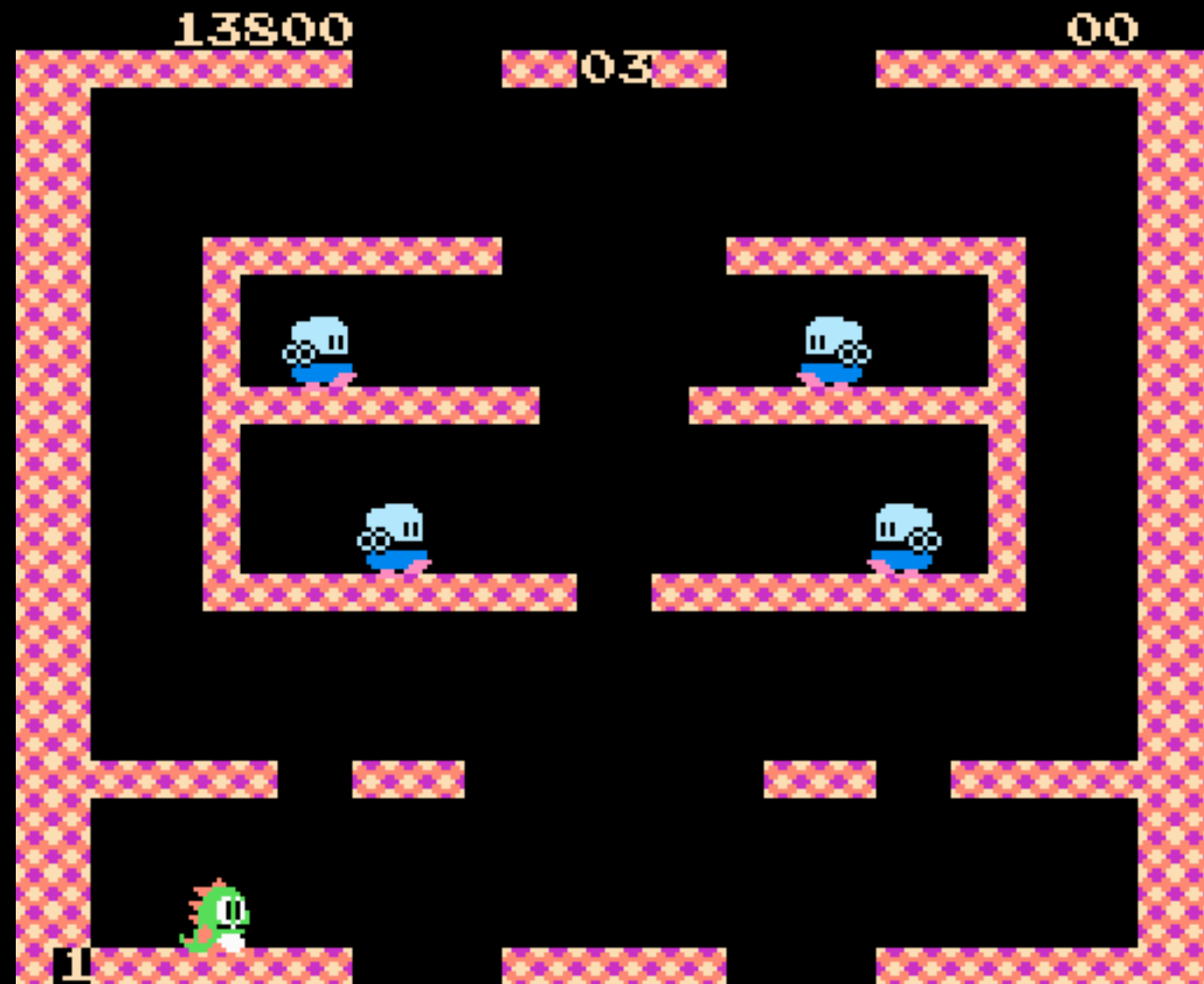
Drei verschiedene Winkel



Fallout, 1997

Dimensionen

2D

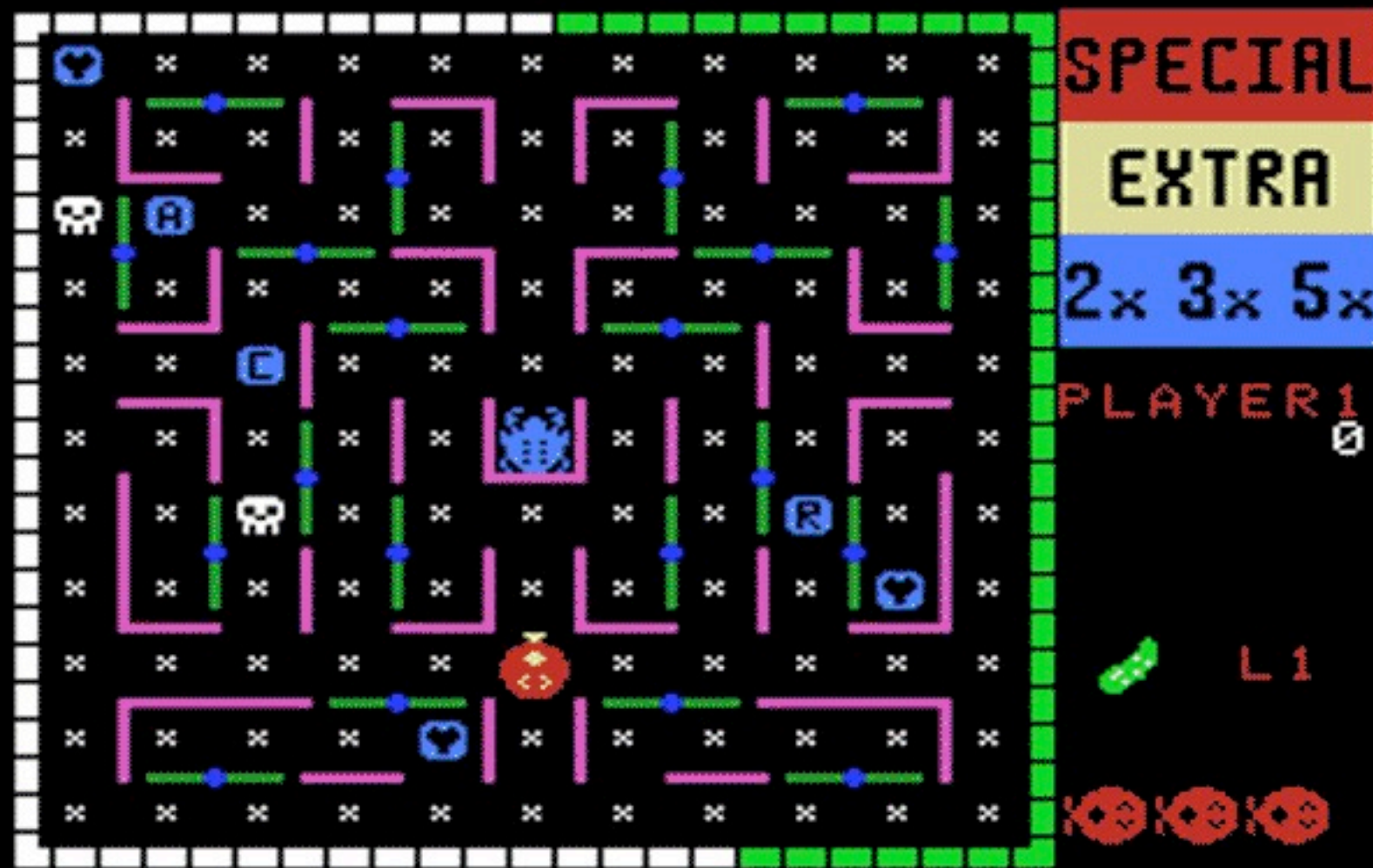


Bubble Bobble, 1986

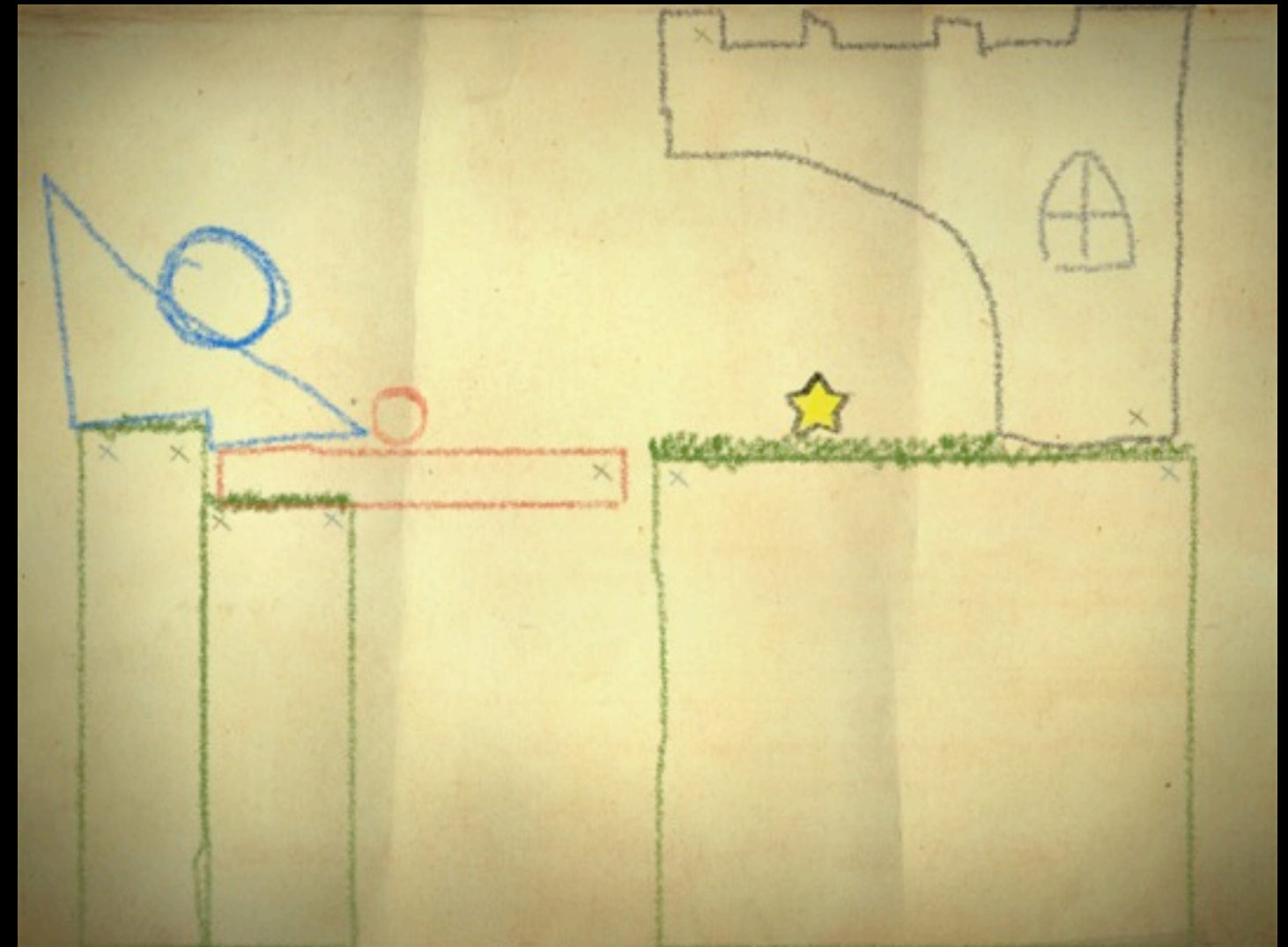


Scramble, 1981

Fixed Screen

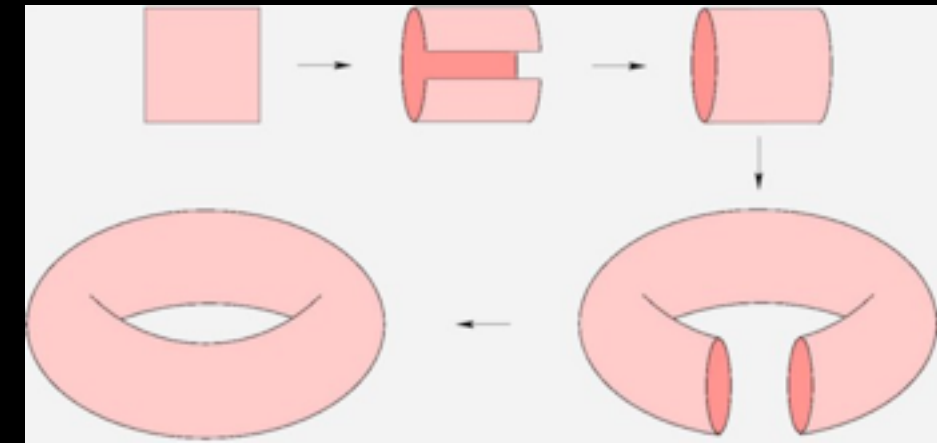


Lady Bug, 1981



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

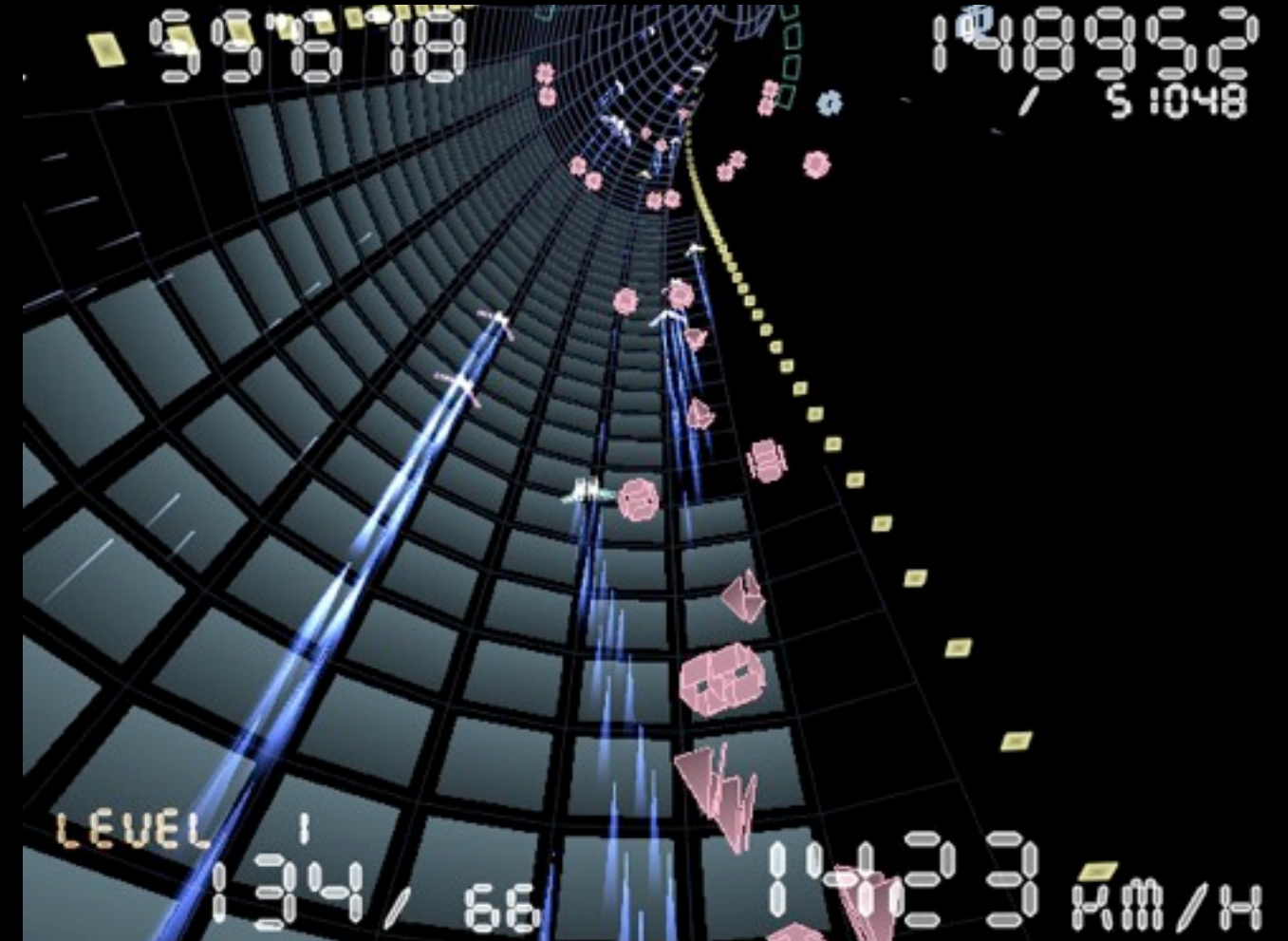


F1 World Grand Prix, 1998

Rail / Tube-Scroller



Space Harrier, 1985



Torus Trooper, 2005

2.5 D

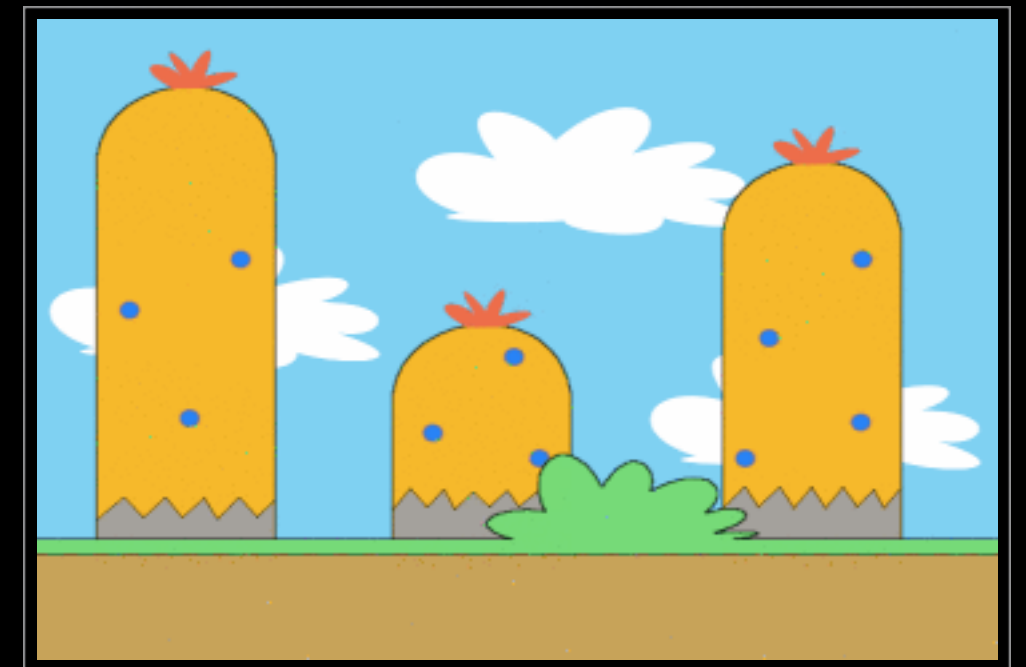
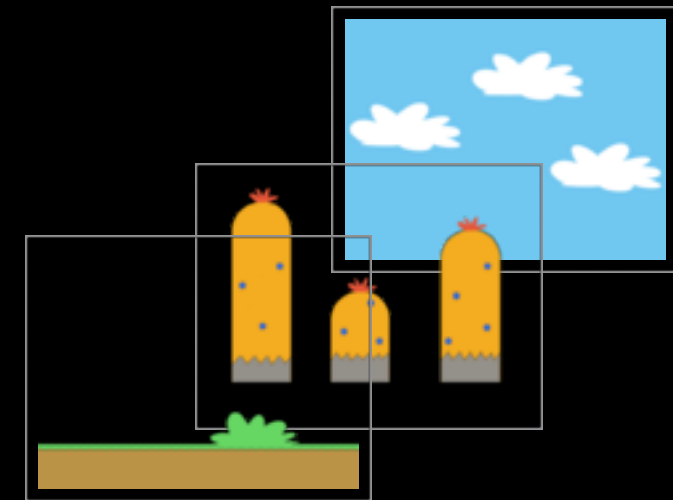


Street Fighter IV, 2008



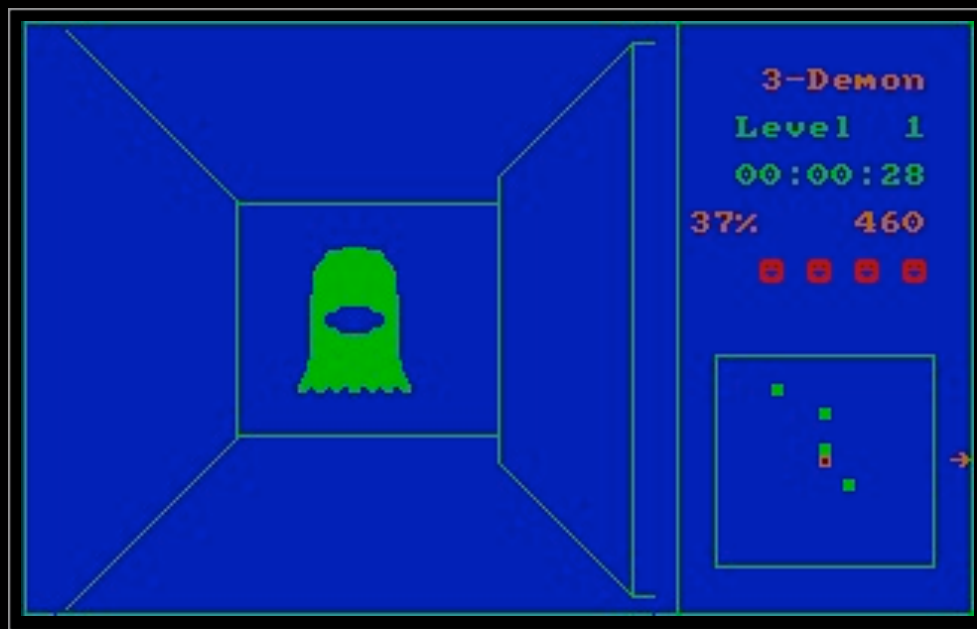
Gradius V, 2004

Parallax Scrolling



Moon Patrol, 1982

Sprite Scaling



3-Demon, 1983

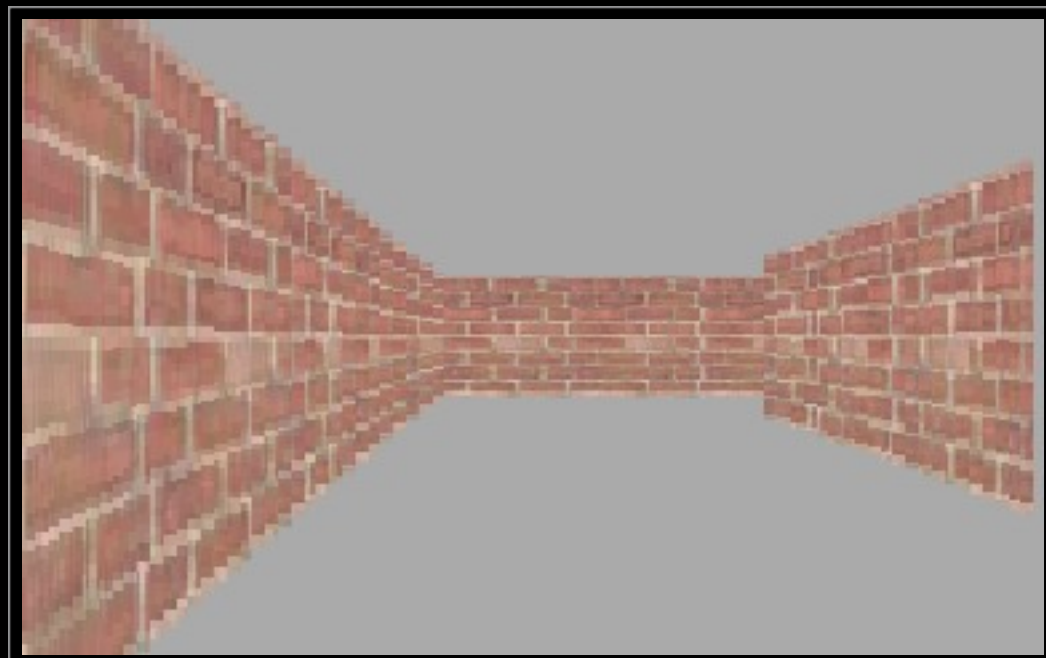
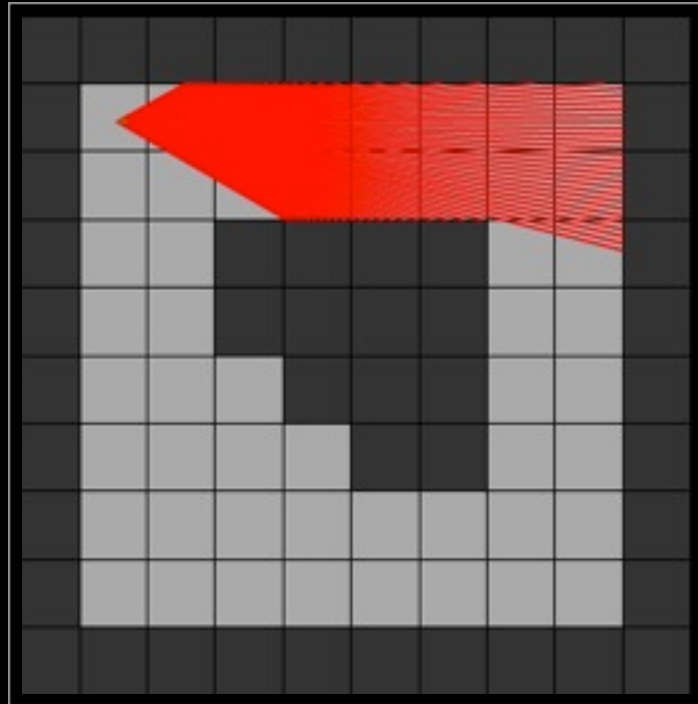


Space Harrier, 1985



Ego Shooter: Aliens, 1986

Ray Casting

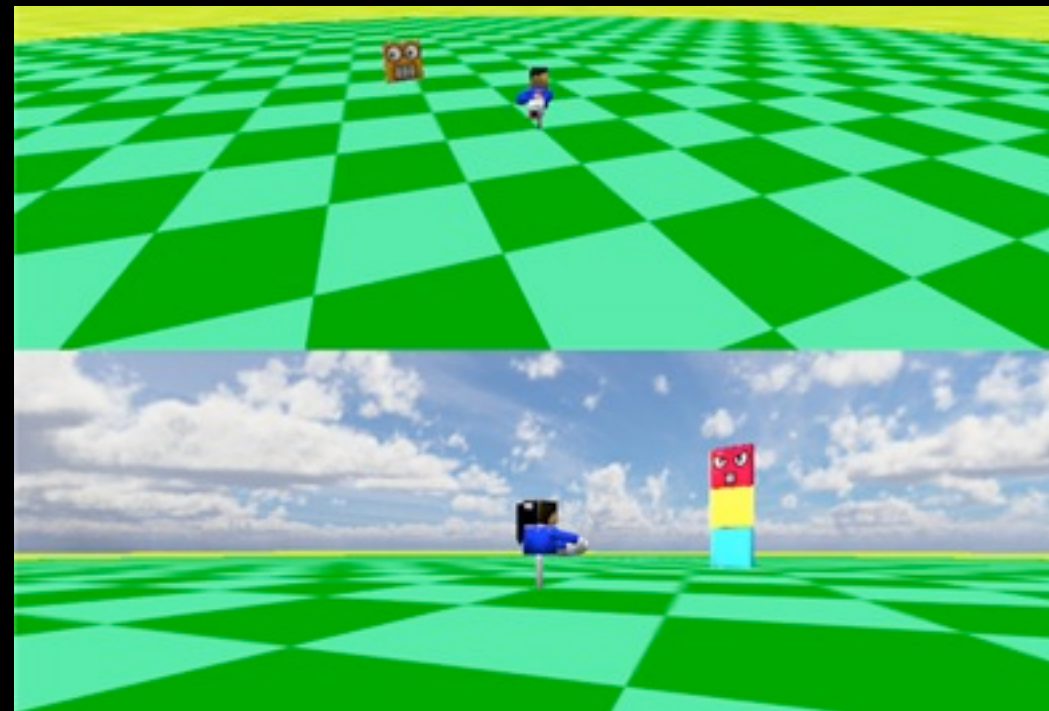


id: Doom, 1993

3D



First-Person
System Shock, 1994



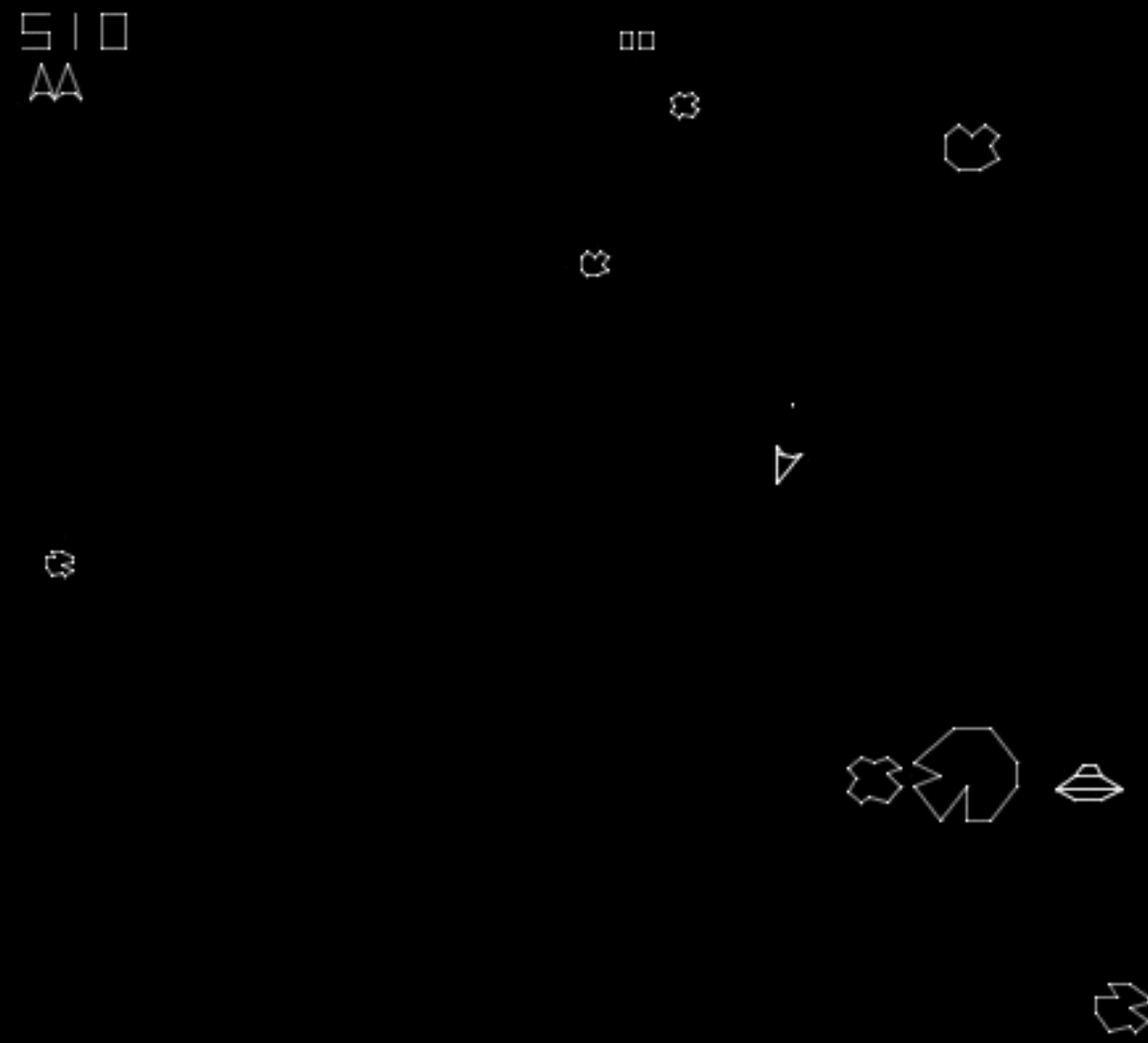
Second-Person
Second-Person-Shooter Zato, 2011



Third-Person
Crash Bandicoot, 1996

Rendering

2D Vector Graphic



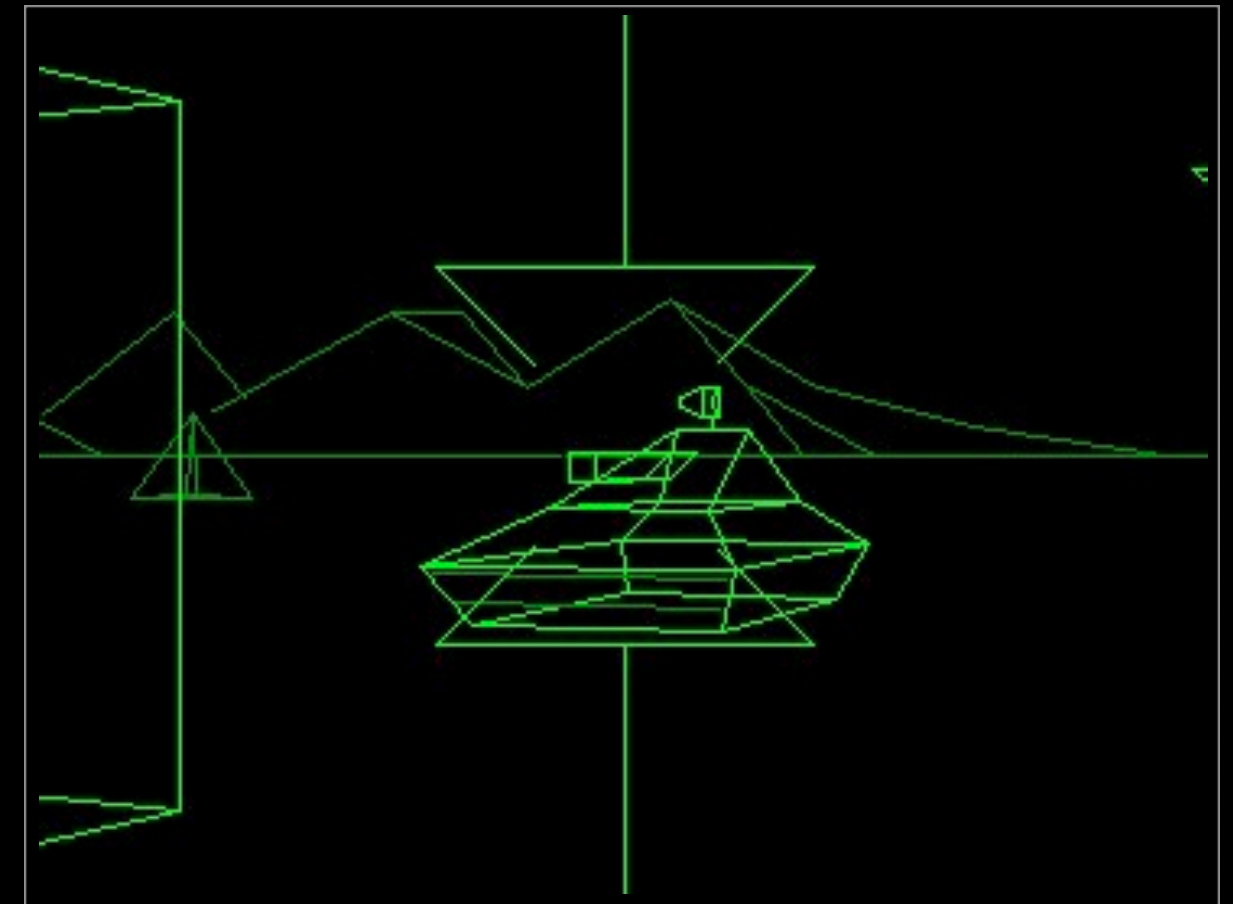
©1979 ATARI INC

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



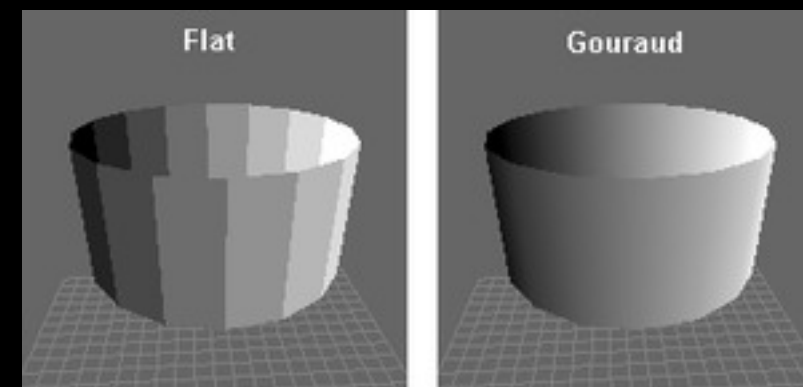
Multiplayer-Game: MIDI Maze, 1987

Gouraud Shading

Vertex Lighting



LucasArts: Star Wars TIE Fighter, 1994



Texture Mapping



Parallax: Descent, 1995

Realtime Lighting



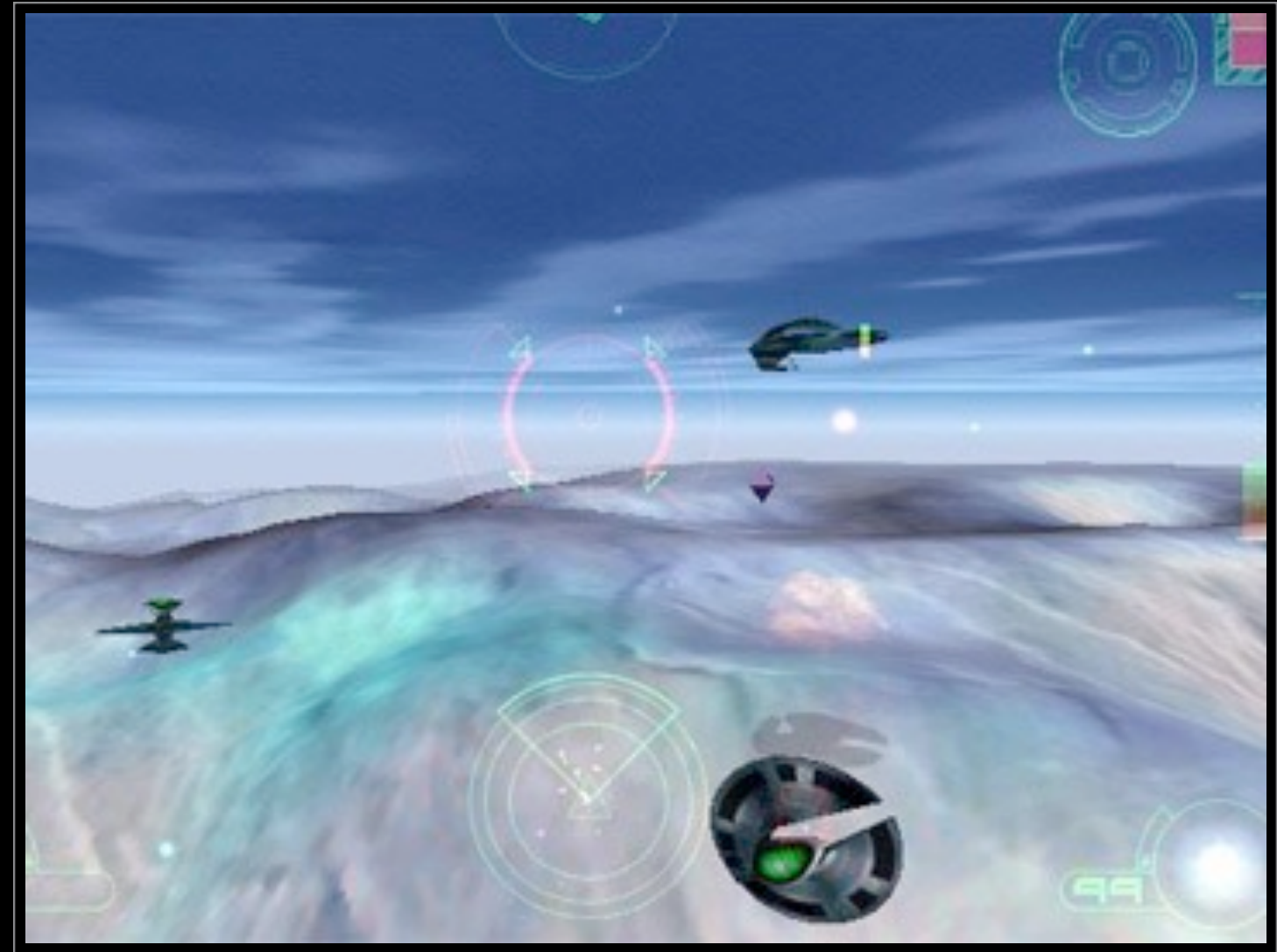
Id: Quake, 1996

Pre-Computed Lighting



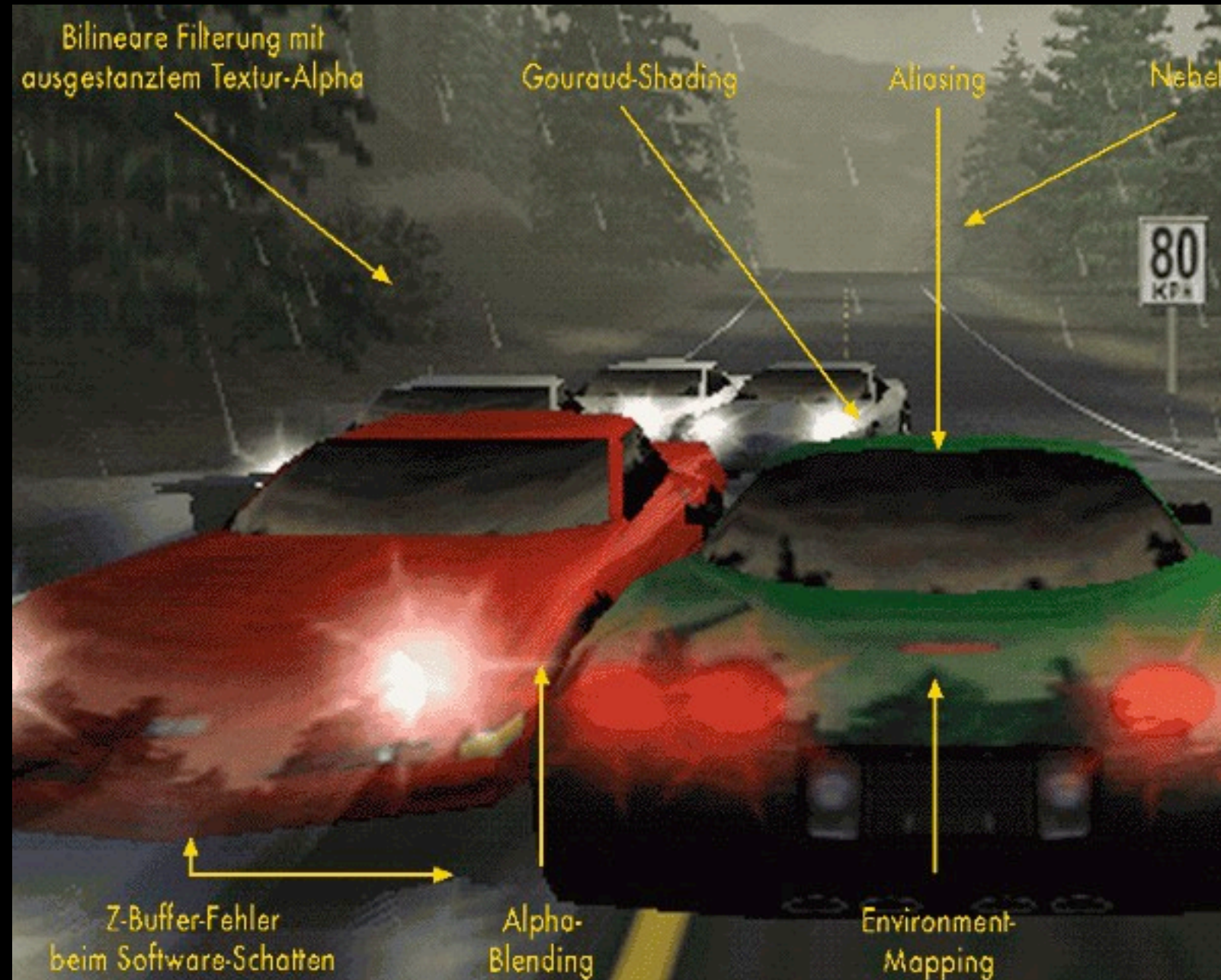
Id: Quake II, 1997

MIP Mapping



Rage: Incoming, 1998

Reflection



Need for Speed III, 1998



Anti Aliasing

Tomb Raider ohne und mit 3DFX

Phong Shading



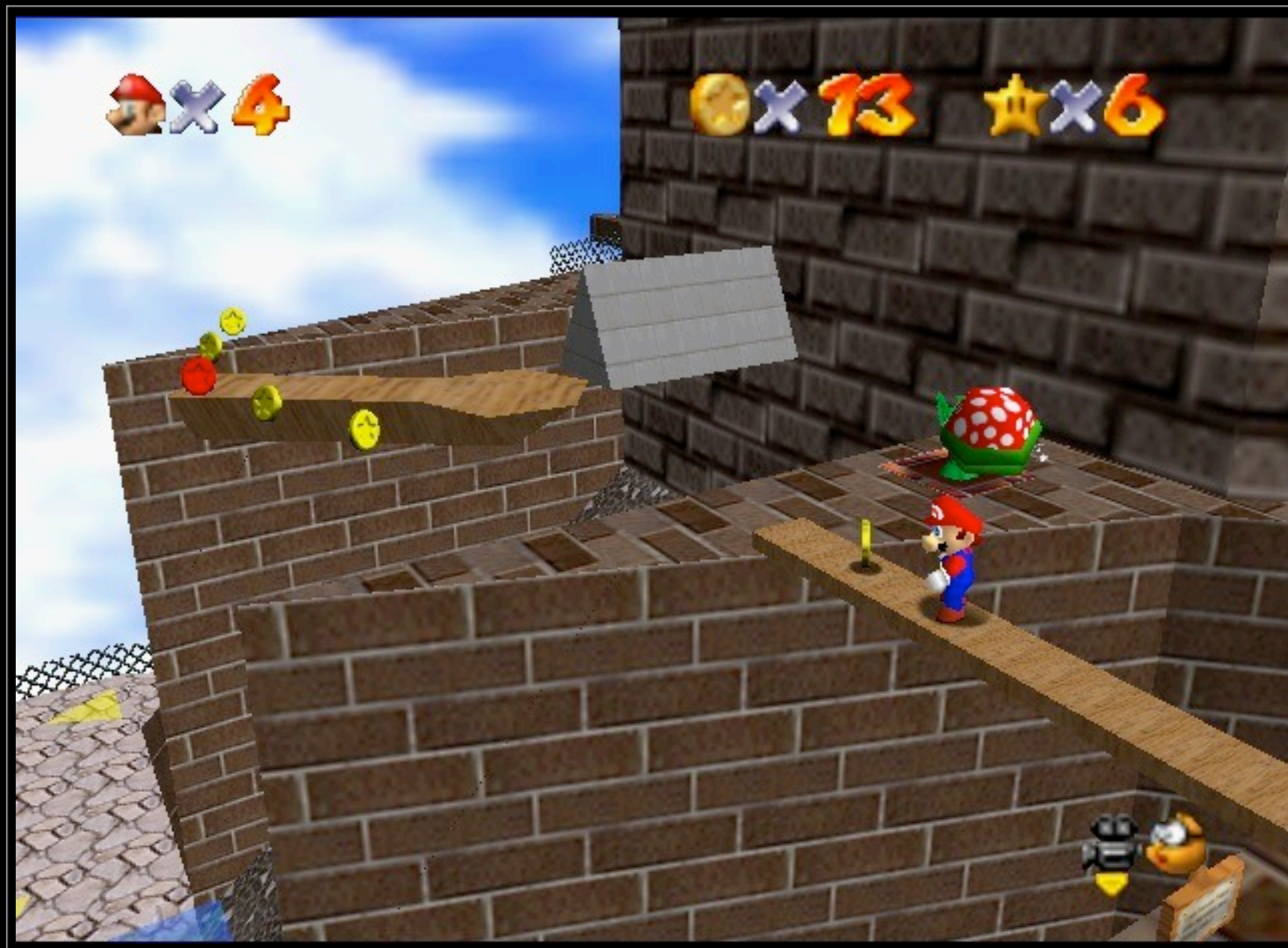
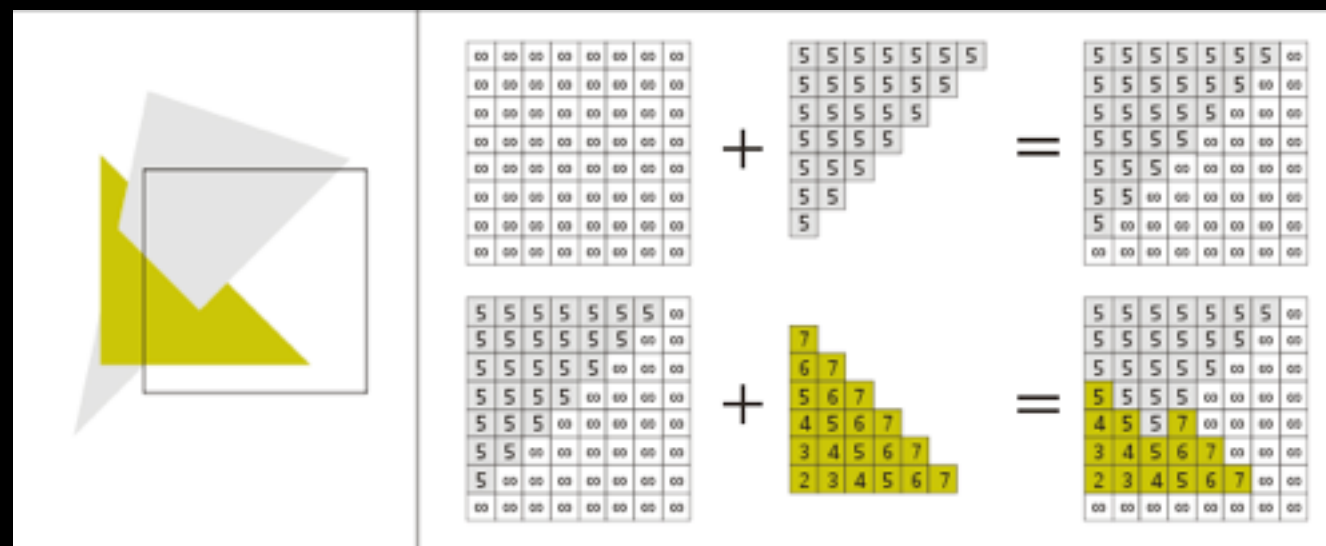
Space Channel 5, 1999

Parametric Surface



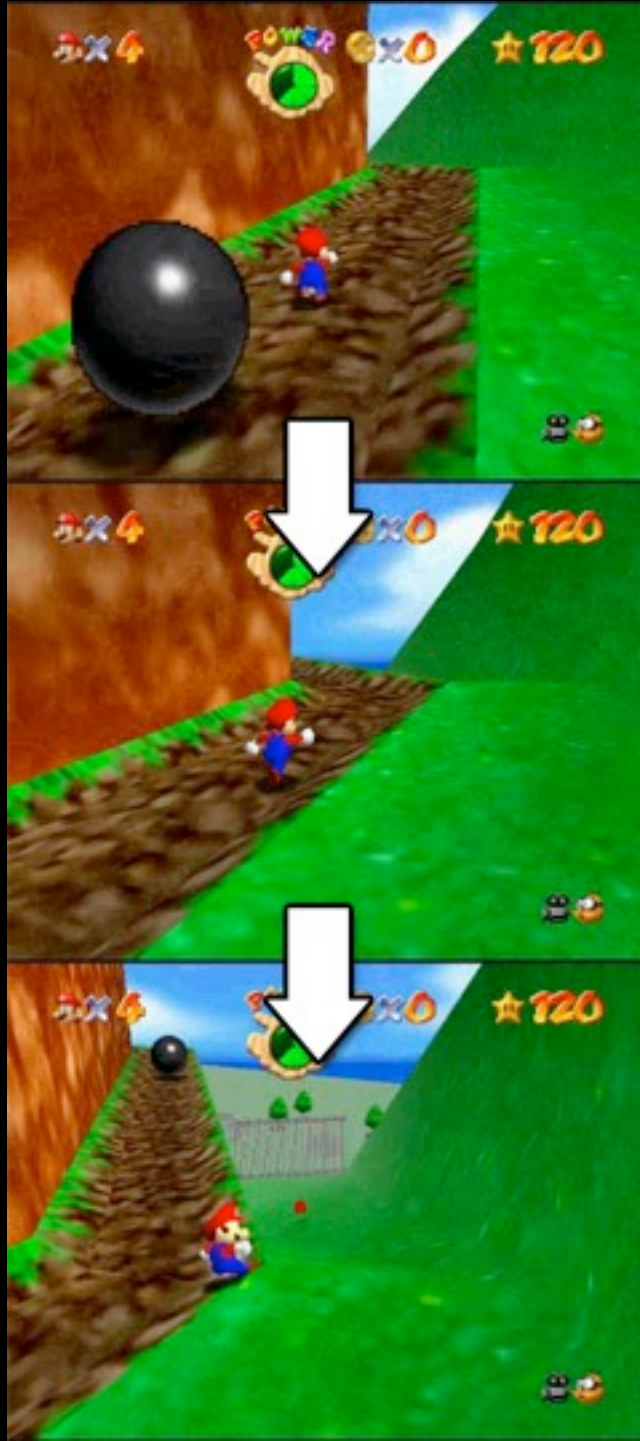
id: Quake III, 1999

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

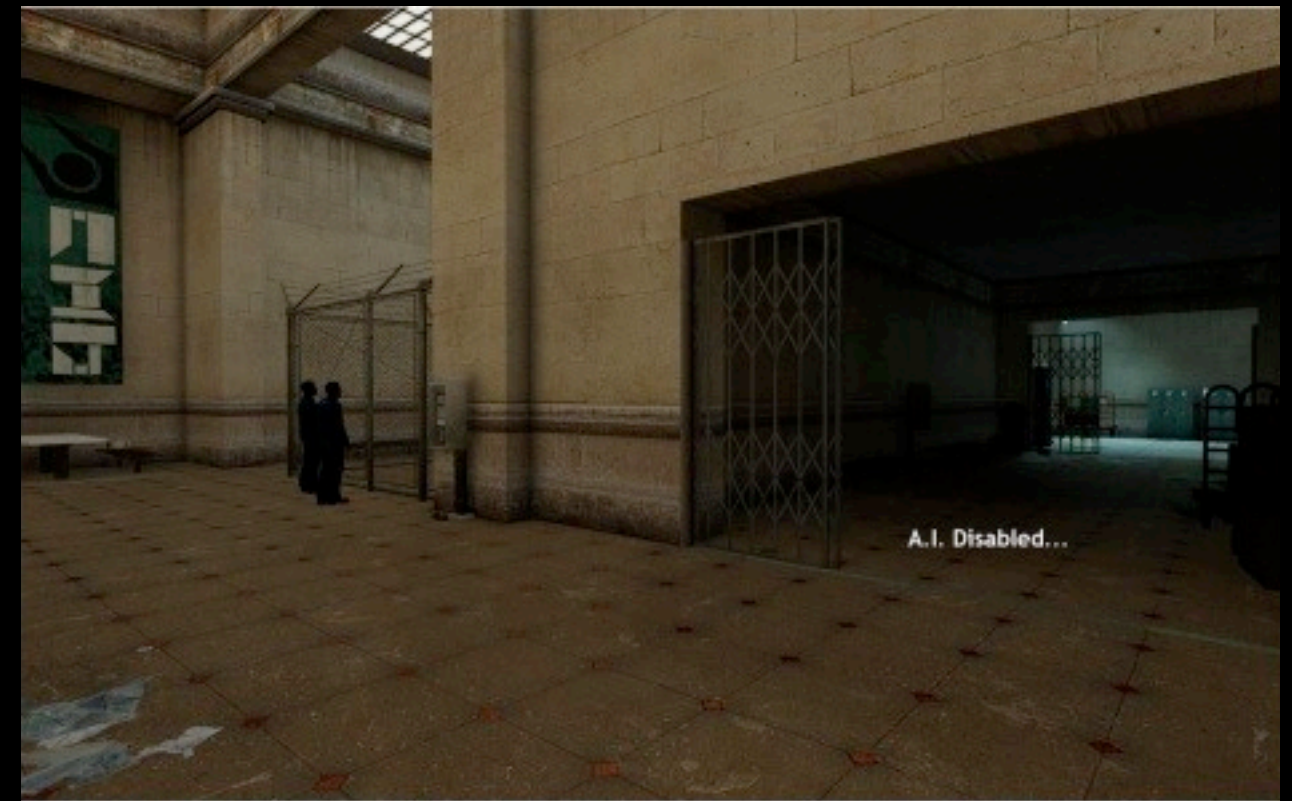


Bloom: Prince of Persia: The Sands of Time, 2003



HDR Rendering: Half Life 2, 2004

Ambient Occlusion



Valve: Half Life 2, 2004

Normal Mapping



Low Poly

High Poly

Low Poly - Normal



782 Polygons



18.332 Polygons



782 Polygons

id: Doom 3, 2004

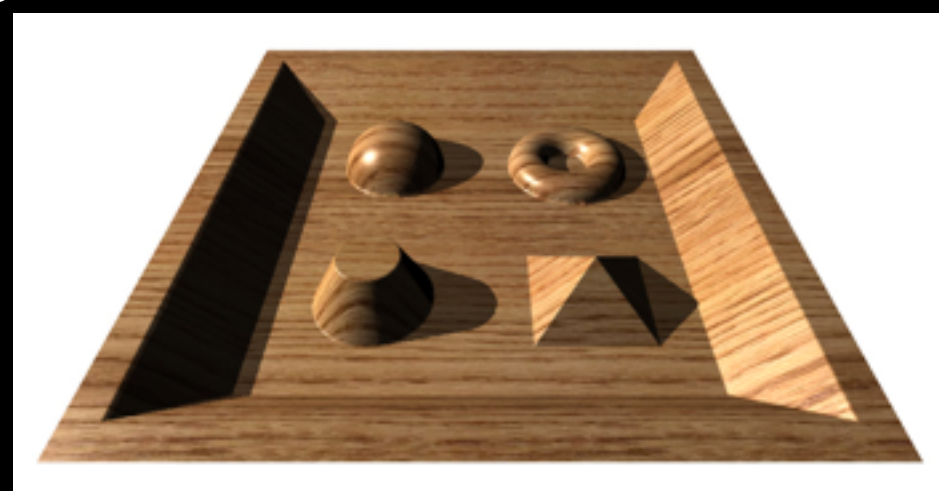


Parallax Mapping



Oblivion, 2006

Relief Mapping



30 fps

30 fps

id: Doom 3

Doom 3 (bump/normal)

Doom 3 (relief/parallax mapping mod)

Impostors / Billboarding



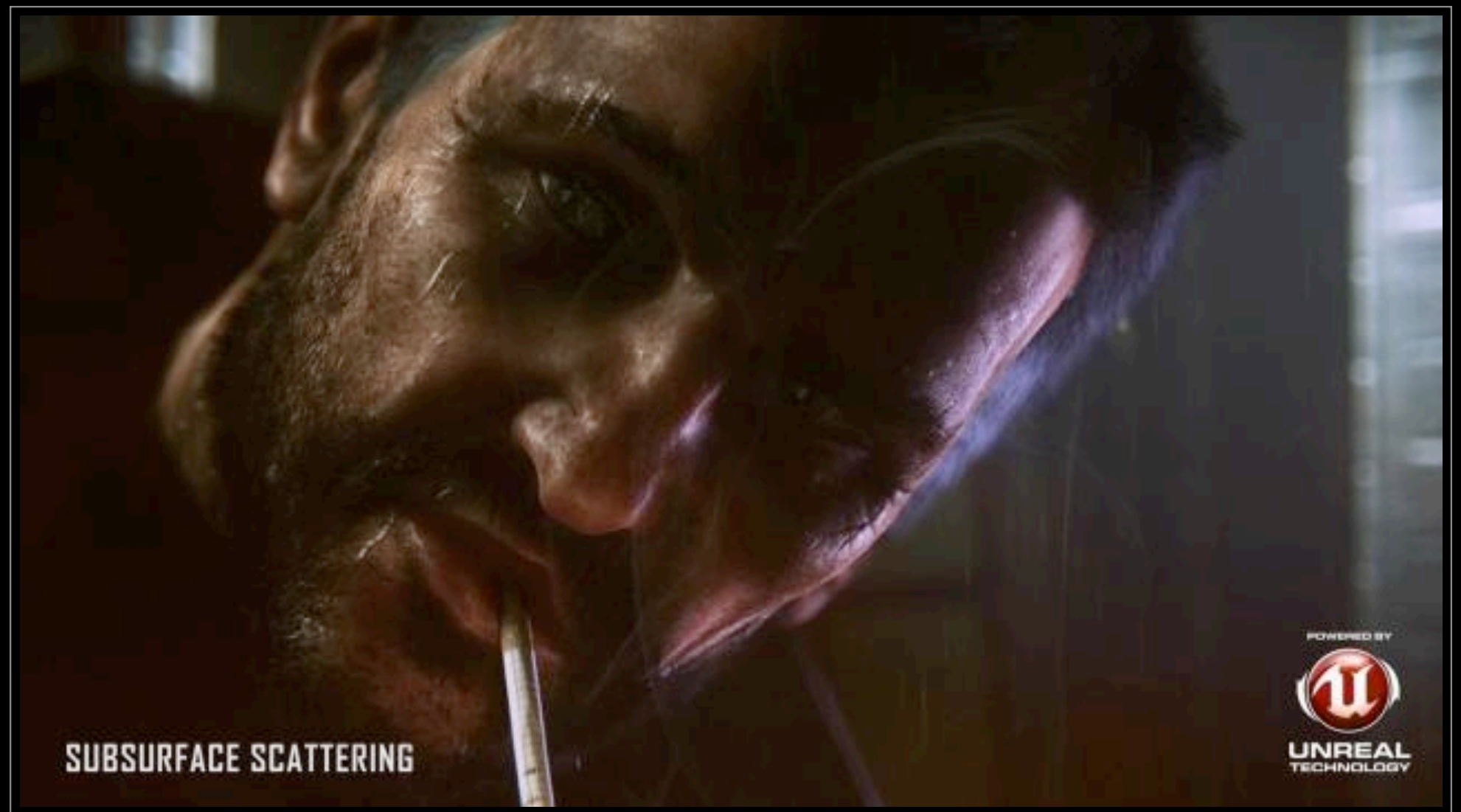
Kameo, 2005

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

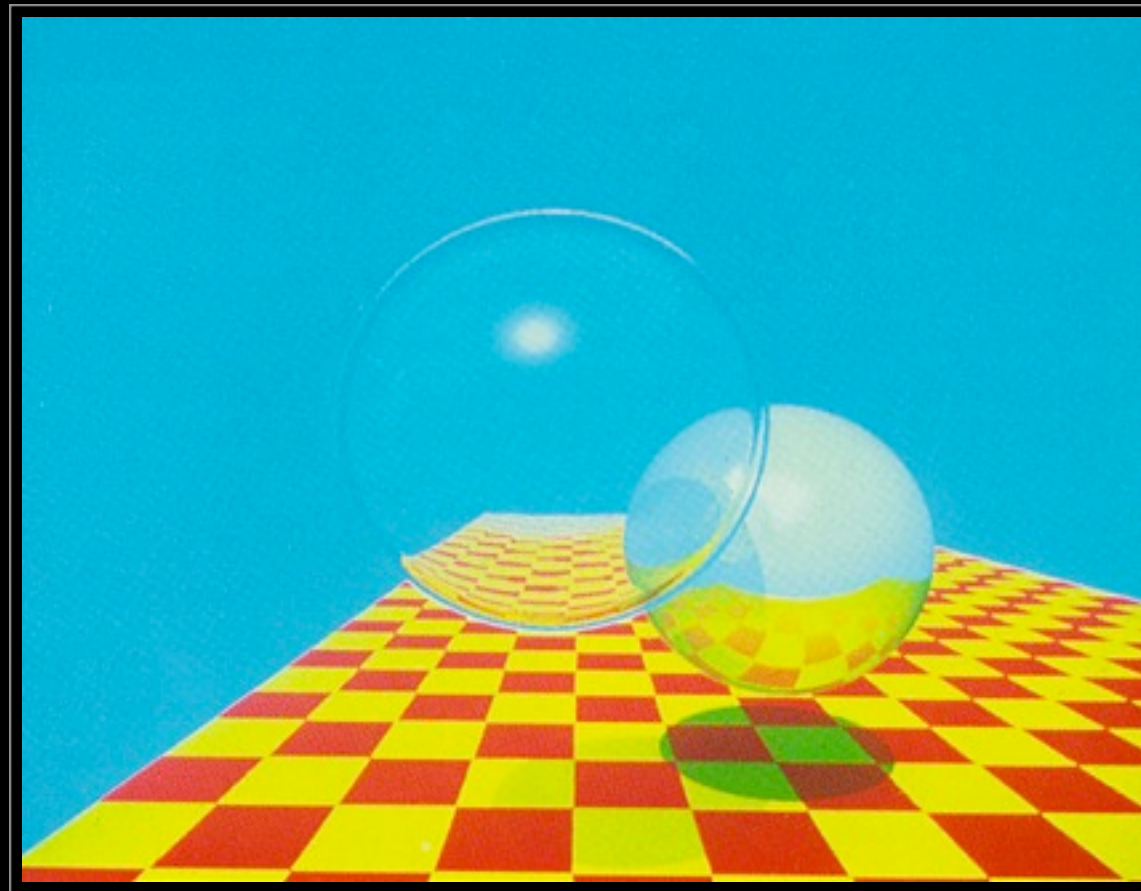


Okami, 2006

Die Zukunft: Ray-Tracing



Albrecht Dürer, 1538



Turner Whitted, 1980



Quake 4, raytraced, 2007