

Geschichte und Ästhetik von Film, Fernsehen und Neuen Medien II

3D 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

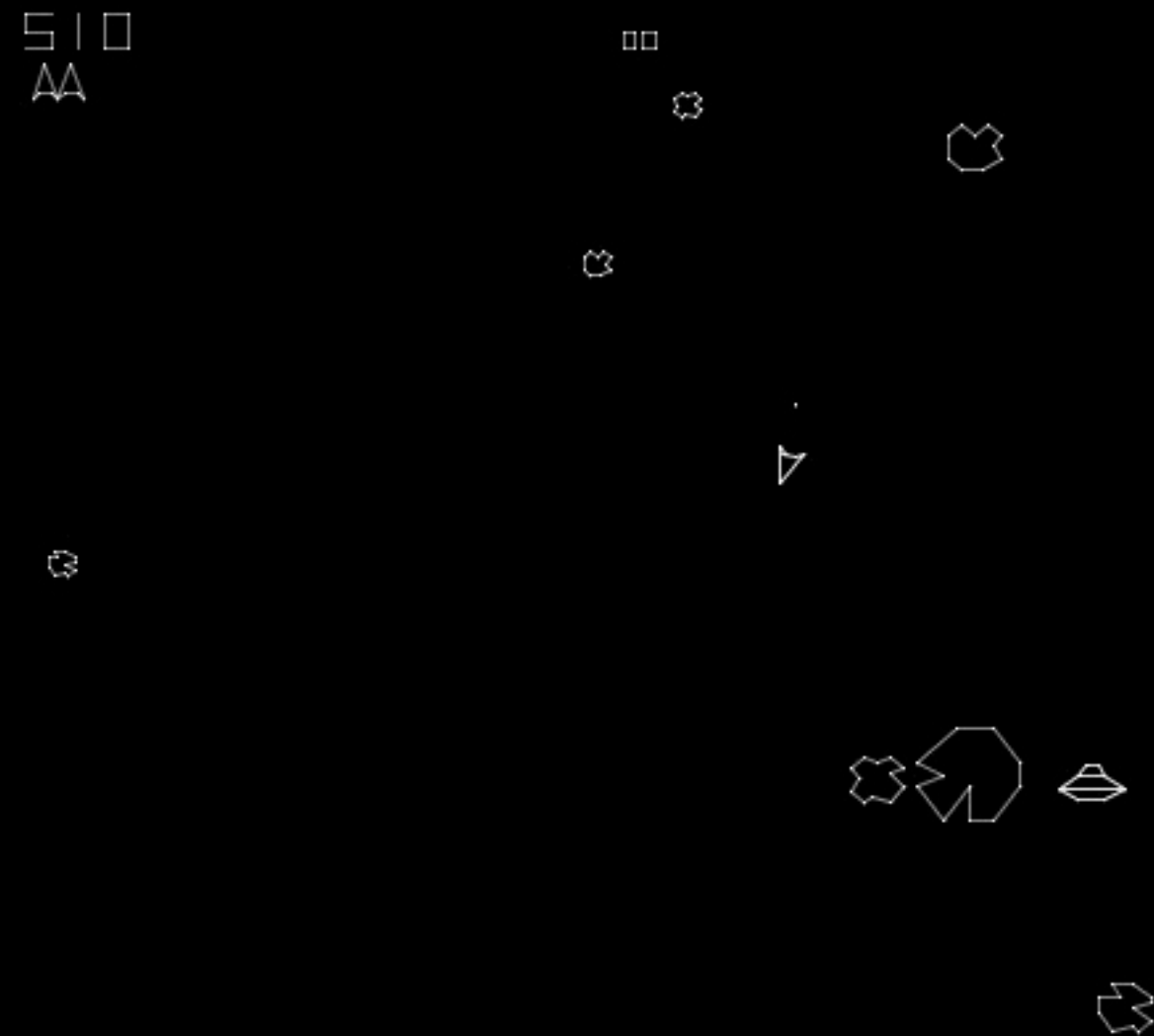
Toy Story 1995

Final Fantasy 2001

Avatar 2009



2D Vector Graphic



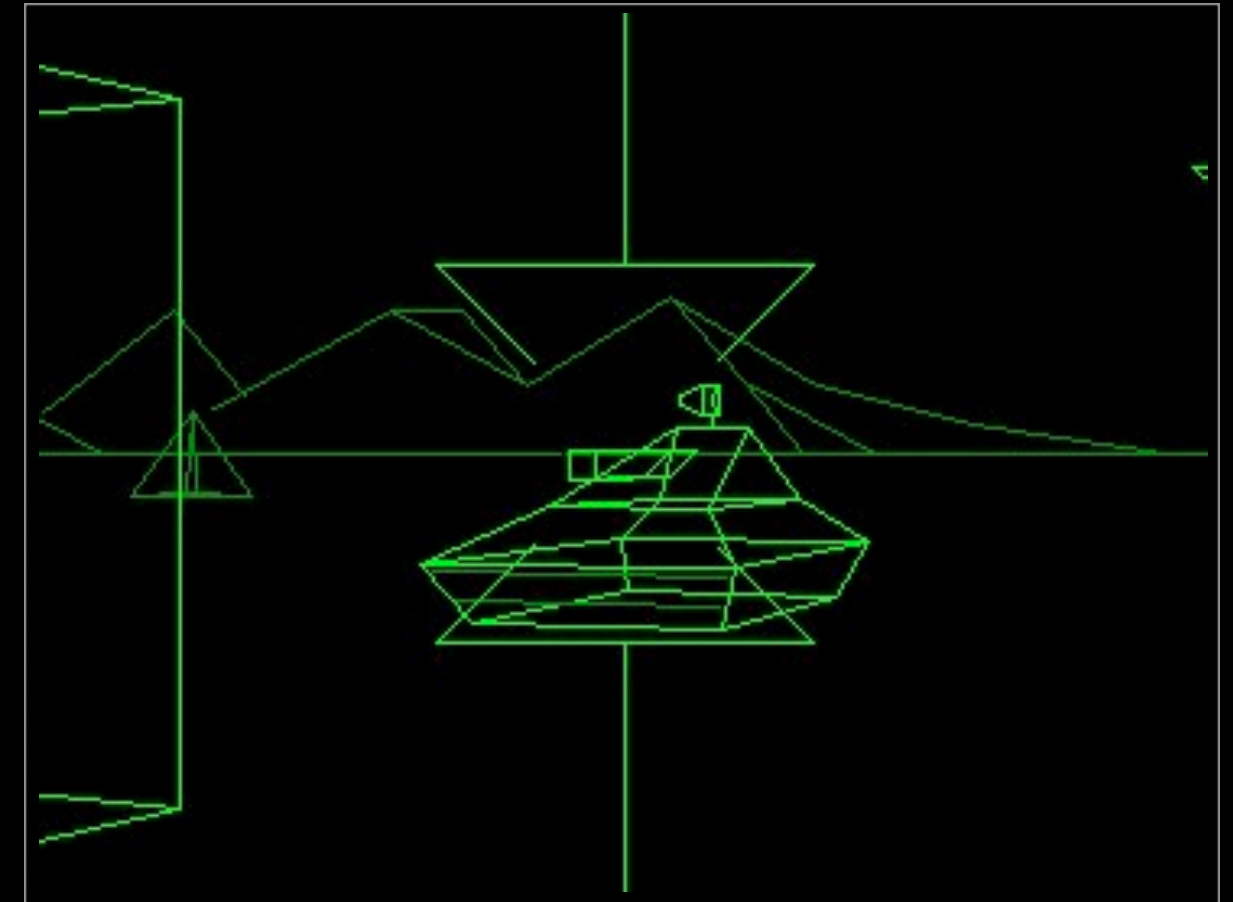
©1979 ATARI INC

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

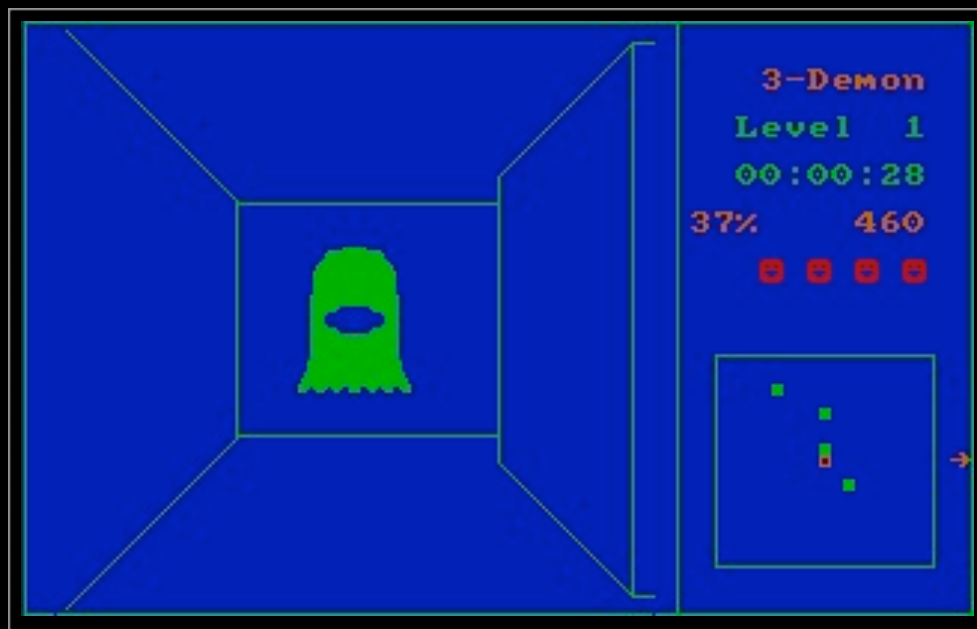


I, Robot, 1983



Multiplayer-Game: MIDI Maze, 1987

Sprite Scaling



3-Demon, 1983

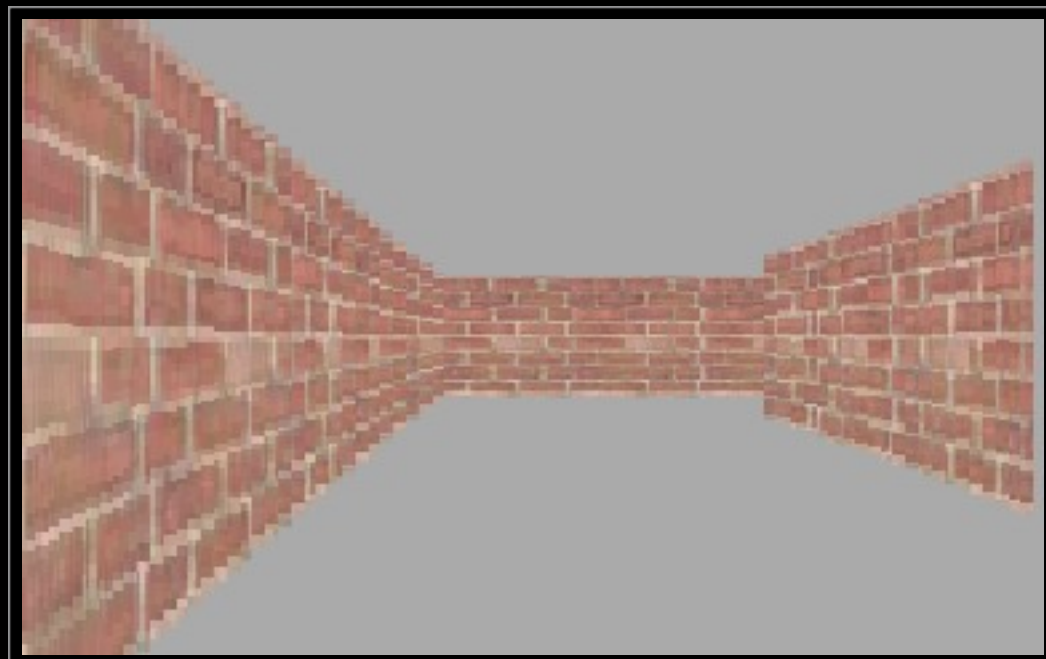
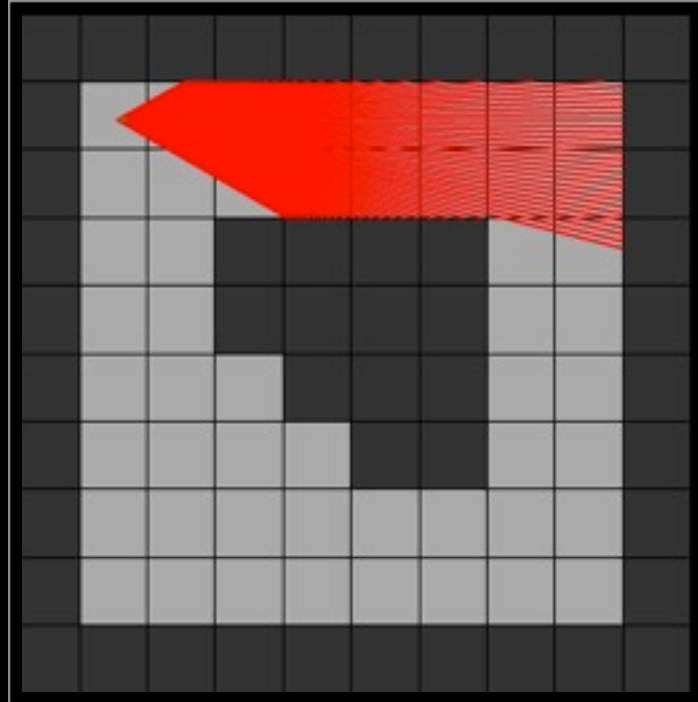


Space Harrier, 1985



Ego Shooter: Aliens, 1986

Ray Casting



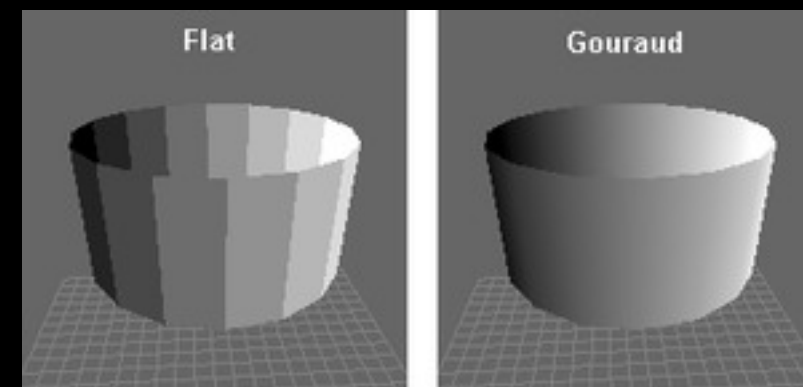
id: Doom, 1993

Gouraud Shading

Vertex Lighting



LucasArts: Star Wars TIE Fighter, 1994



Texture Mapping



Parallax: Descent, 1995

Realtime Lighting



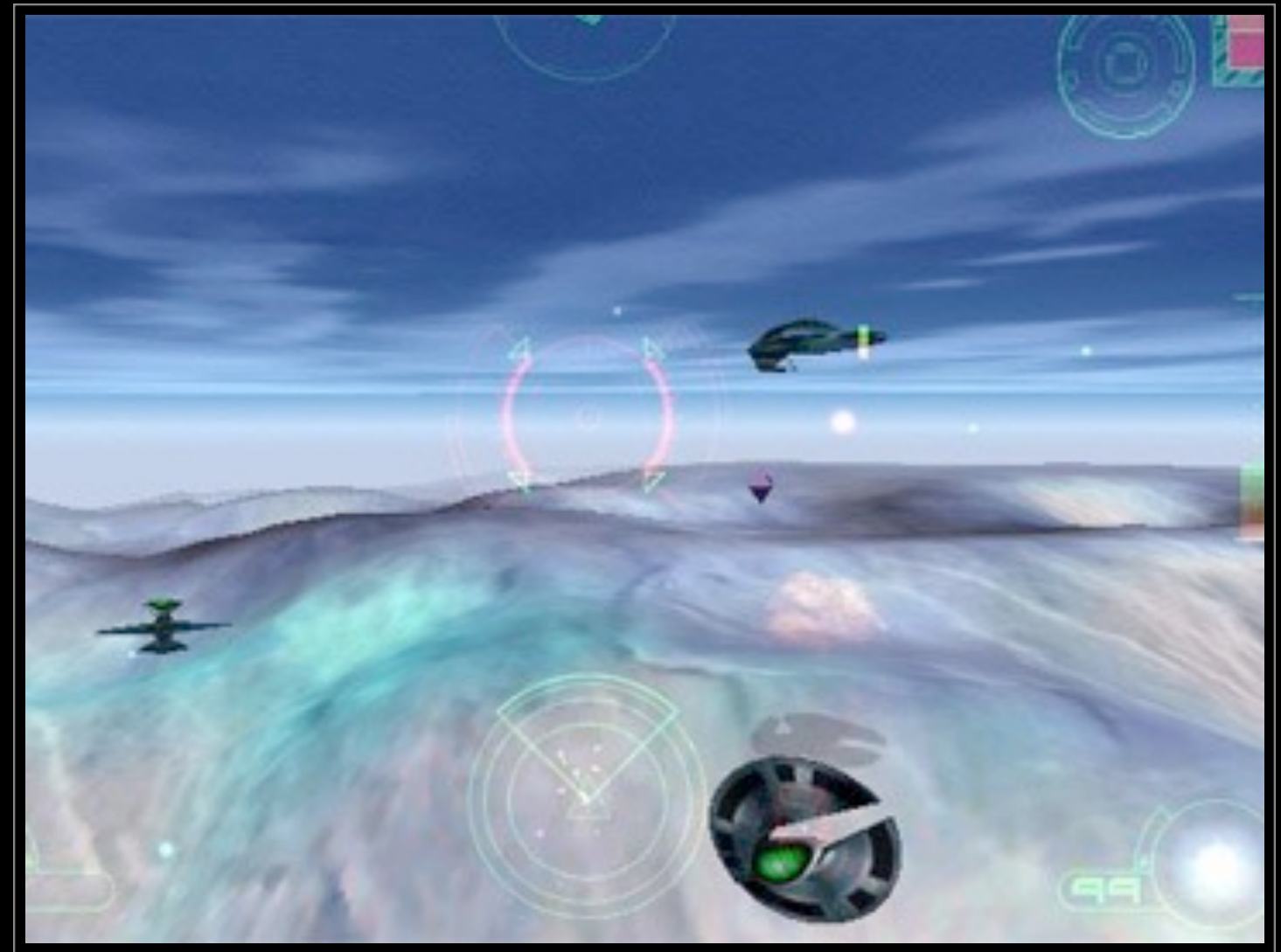
Id: Quake, 1996

Pre-Computed Lighting



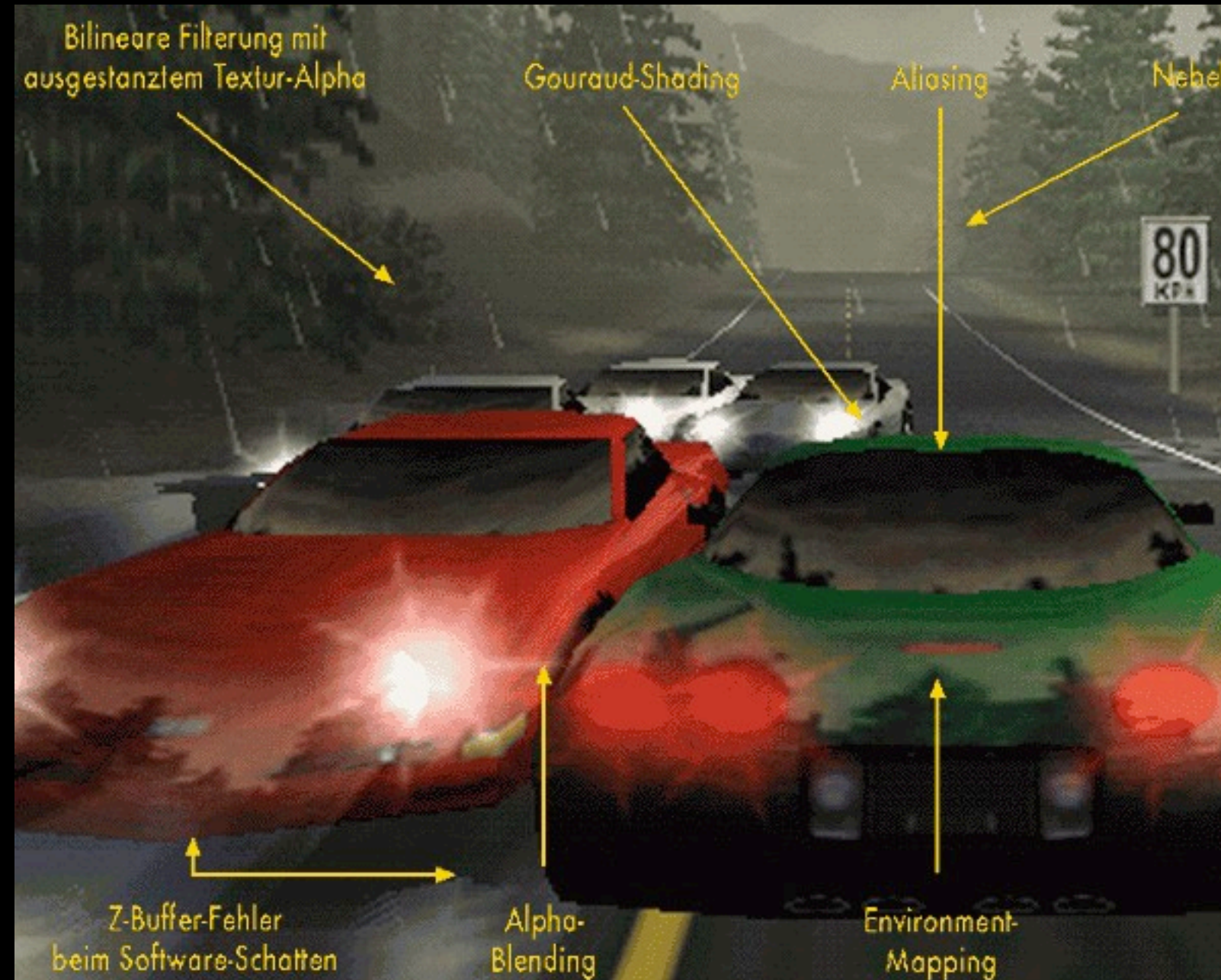
Id: Quake II, 1997

MIP Mapping



Rage: Incoming, 1998

Reflection



Need for Speed III, 1998



Anti Aliasing

Tomb Raider ohne und mit 3DFX

Phong Shading



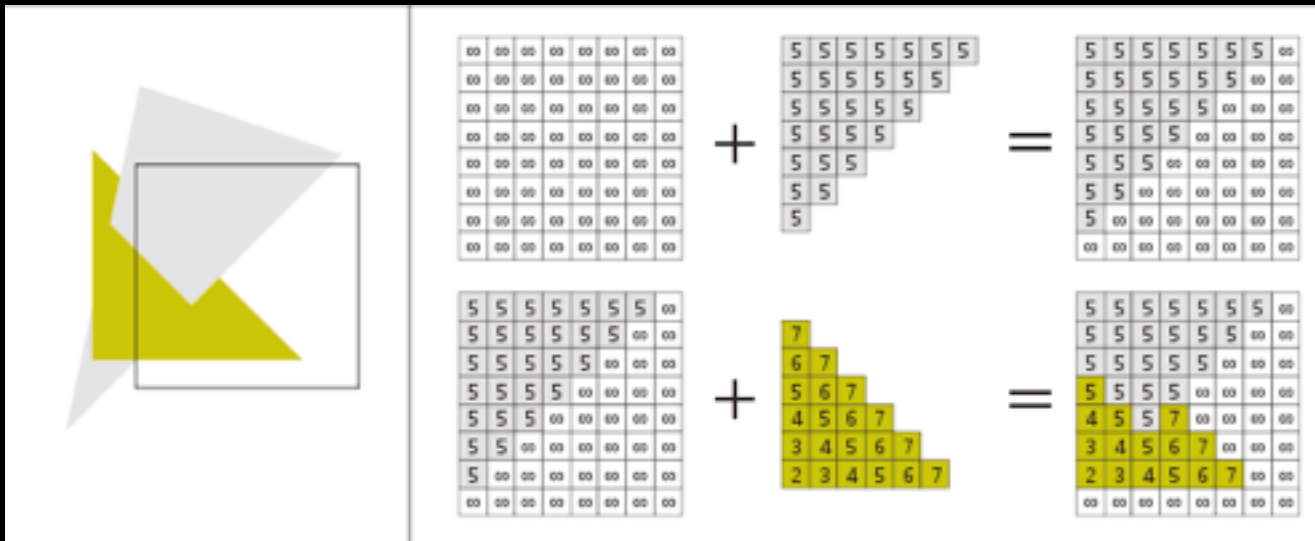
Space Channel 5, 1999

Parametric Surface



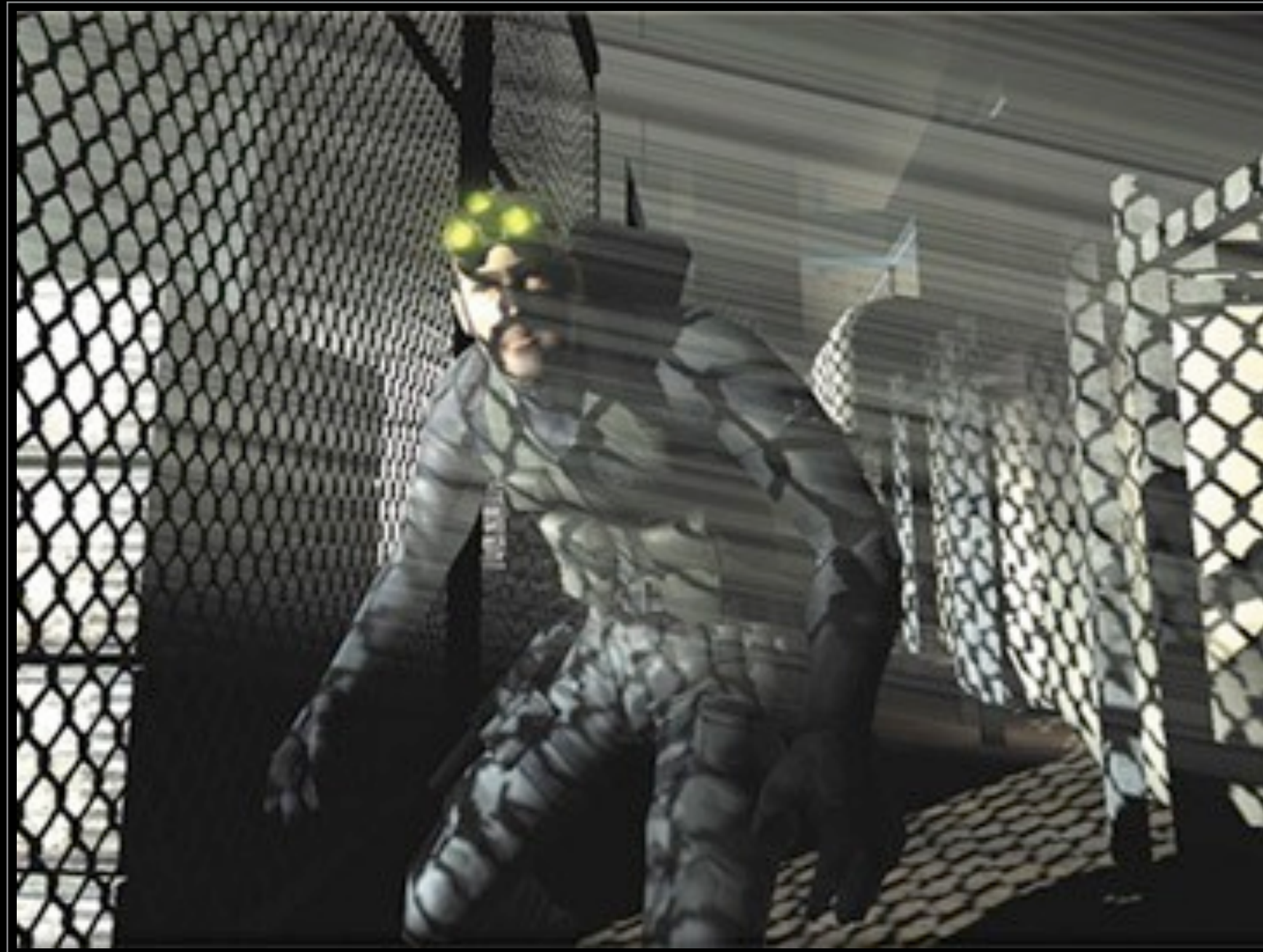
id: Quake III, 1999

Z-Buffer



Nintendo: Super Mario 64, 1996

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

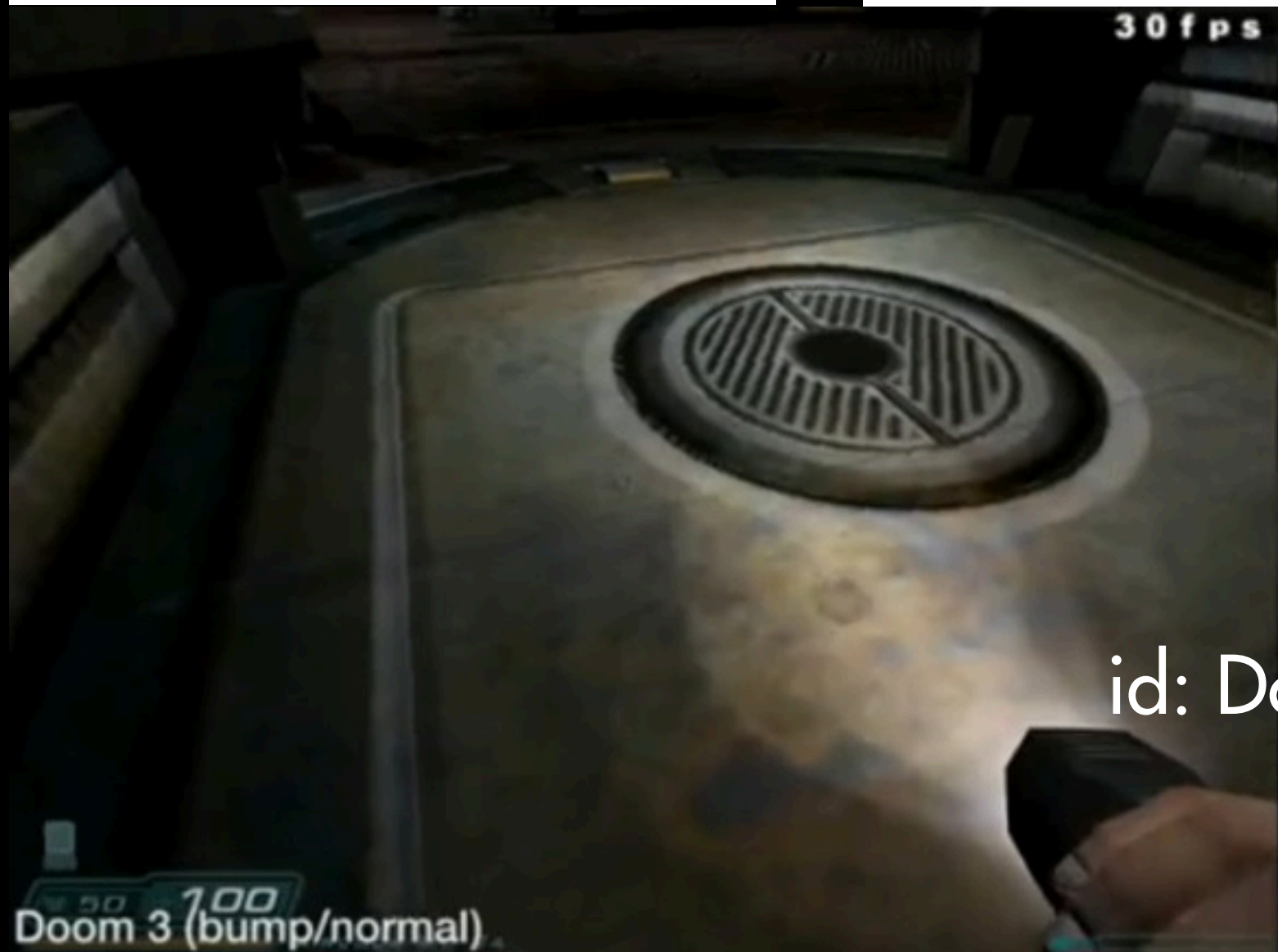
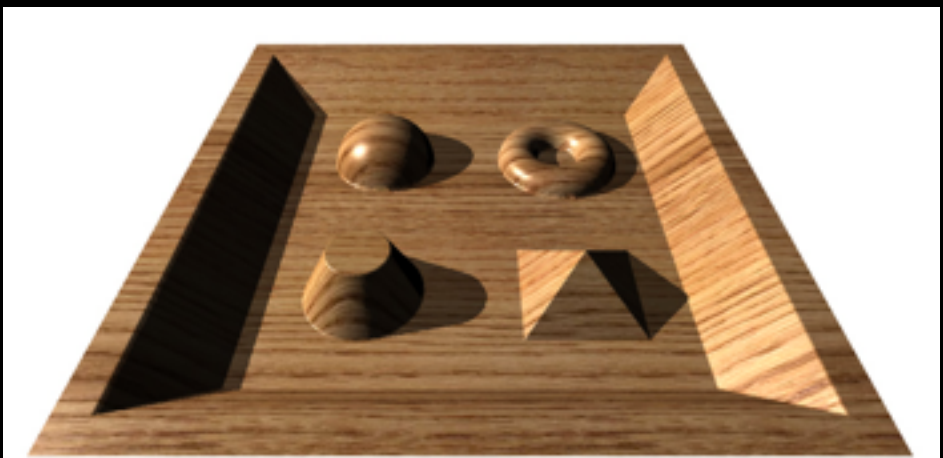
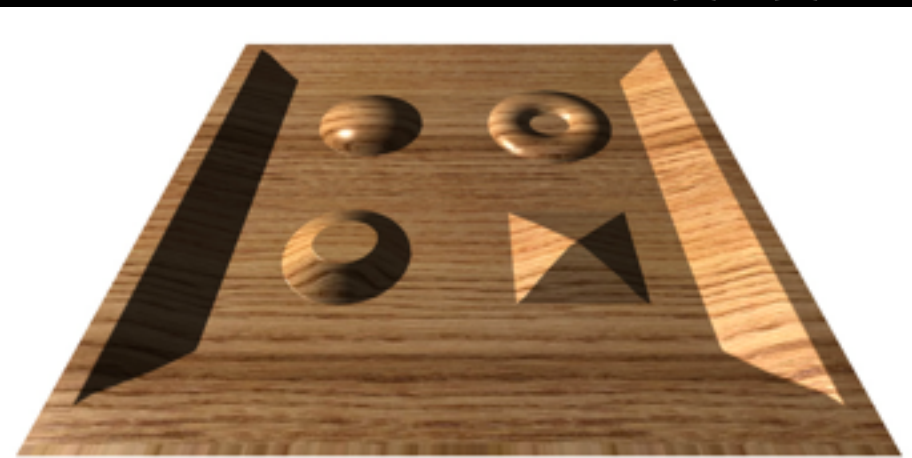
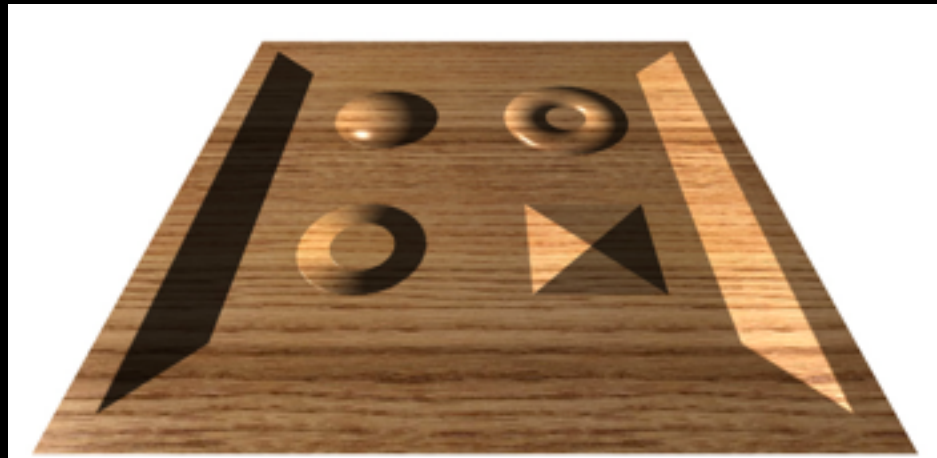


Parallax Mapping



Oblivion, 2006

Relief Mapping



id: Doom 3



Impostors / Billboarding



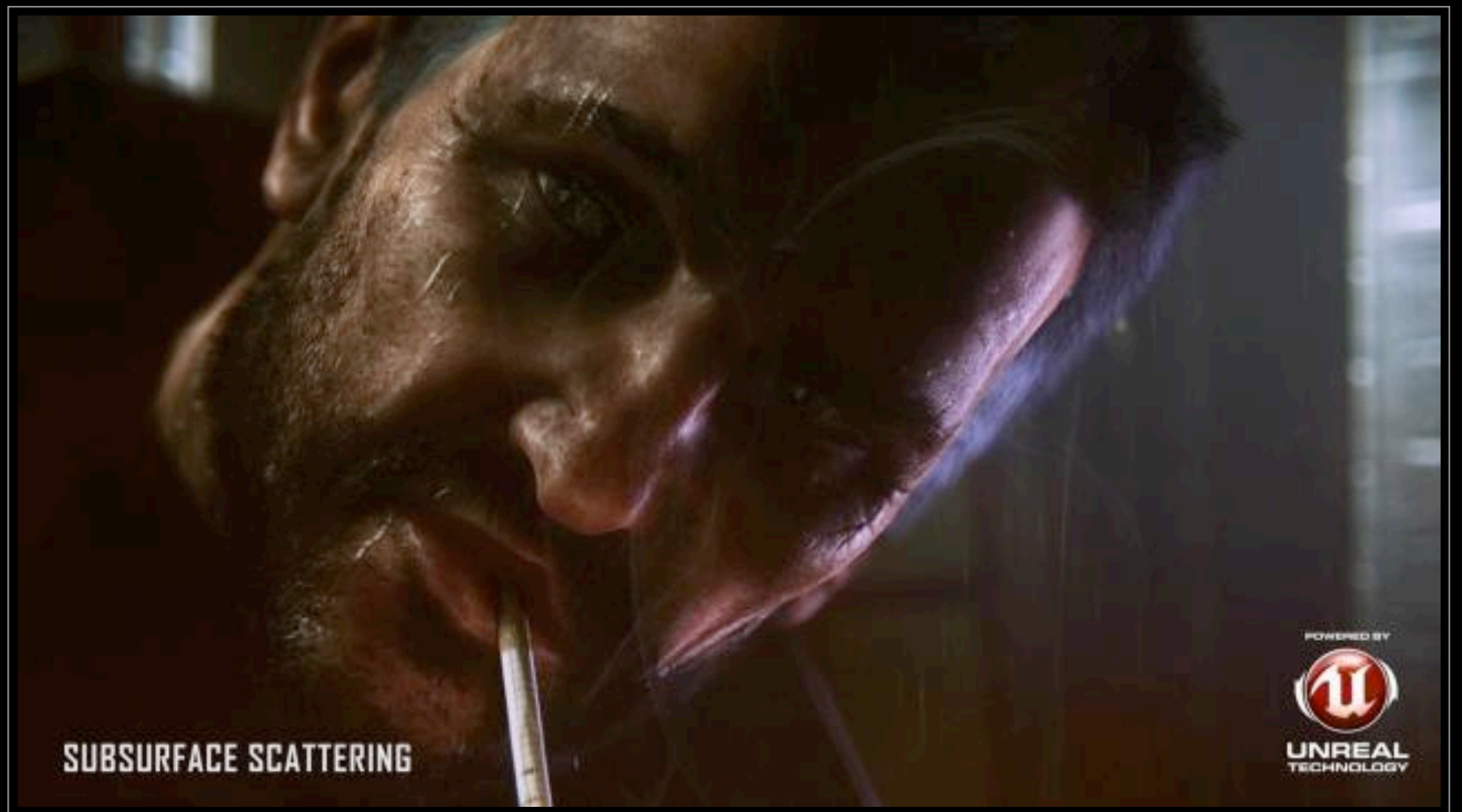
Kameo, 2005

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

*Both scenes are lit differently
A moving shadow is missing on the PS4
Lens flare is more apparent on the PC version*



Original PC demo

Nvidia GTX 680

June 2012

Scale: 50% (540p)
Can't put them bigger, sorry :)

PS4 demo

Custom 8-core AMD APU

March 2013

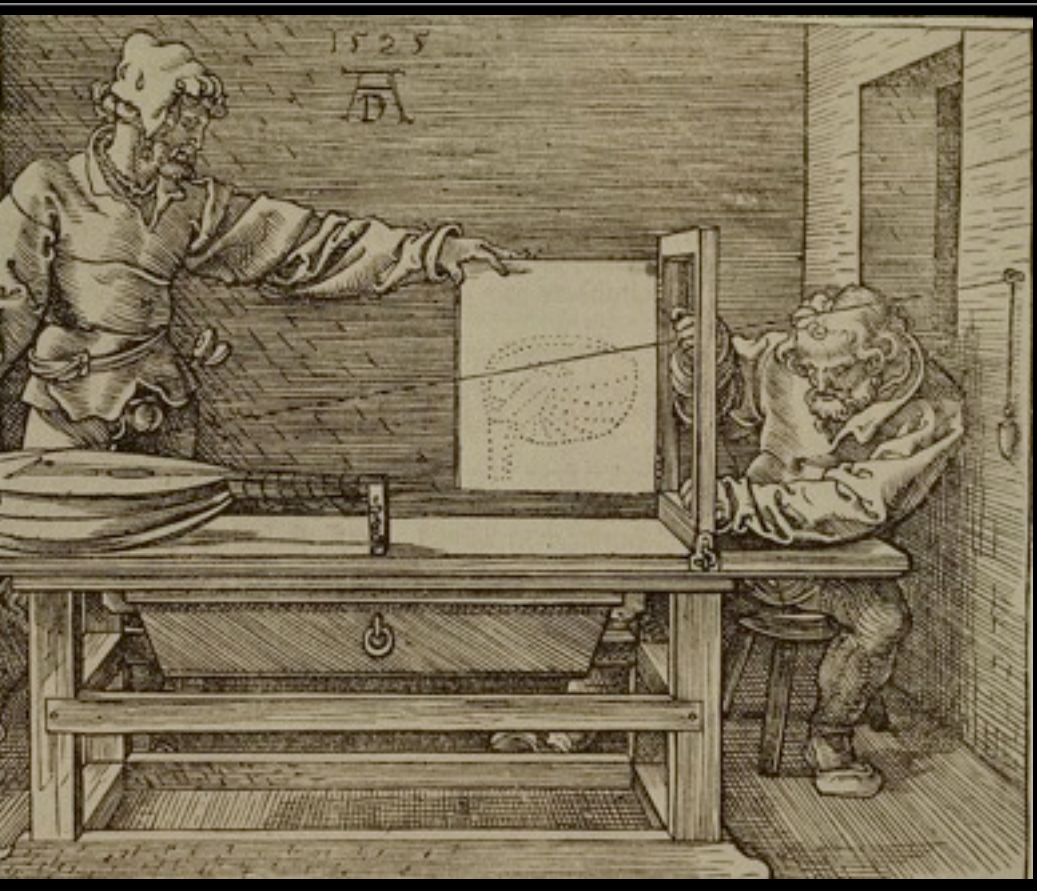
Unreal 4 – <http://www.youtube.com/watch?v=mFgVR2Ke0XY>

Non-Photorealistic Rendering Toon Shading / Cel Shading

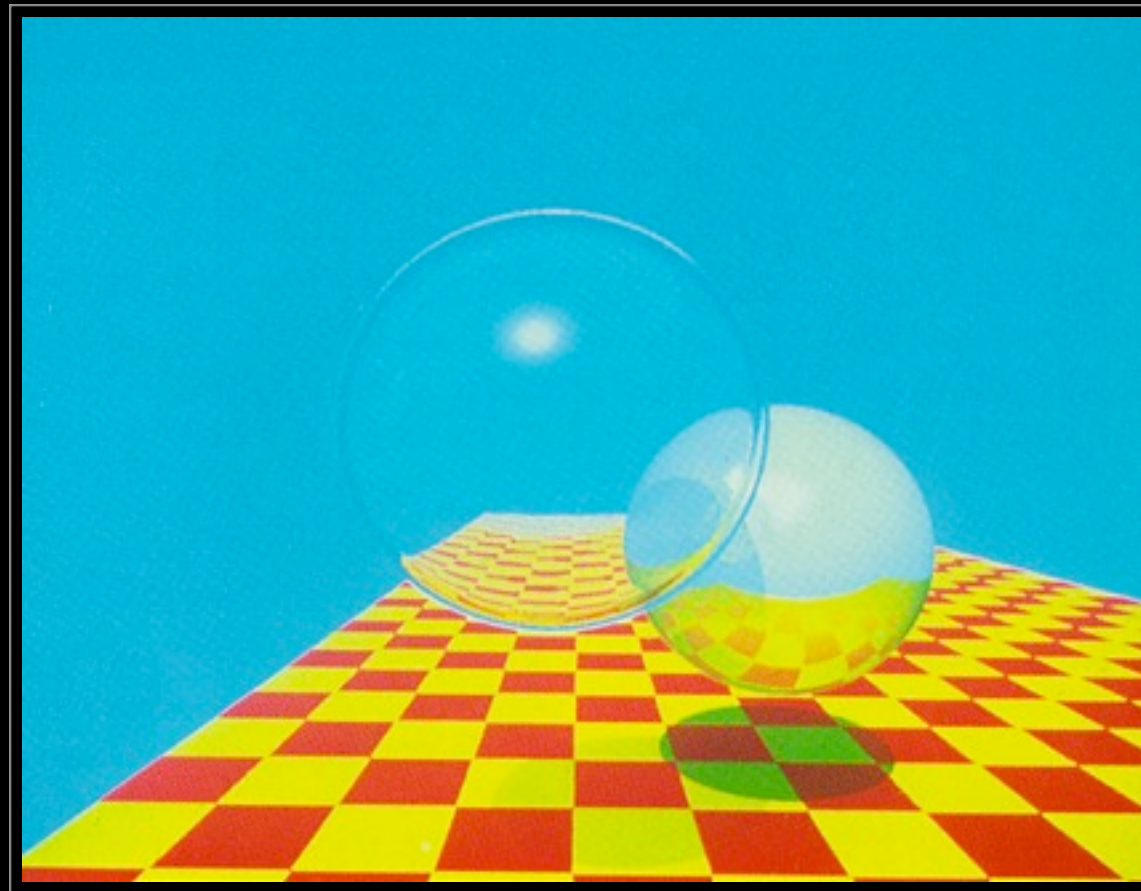


Okami, 2006

Die Zukunft: Ray-Tracing



Albrecht Dürer, 1538



Turner Whitted, 1980



Quake 4, raytraced, 2007

