History of Computer Art

URL: http://iasl.uni-muenchen.de/links/GCA_Indexe.html

Part V: Computer Animation

Seminar, 28nd April 2014

Danube University Krems

Department for Arts and Image Science

MediaArtHistories: Masters of Art

Thomas Dreher

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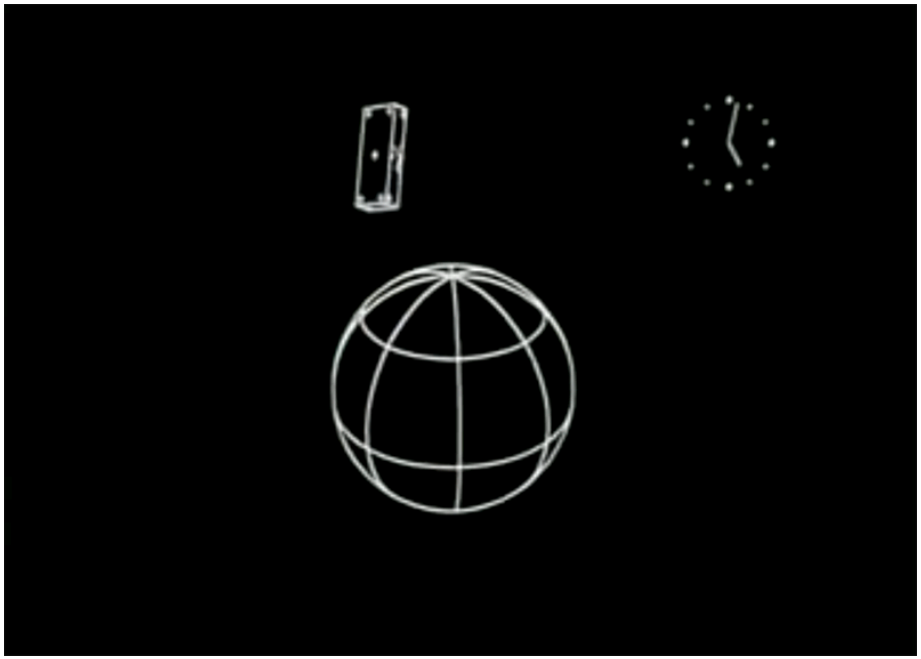
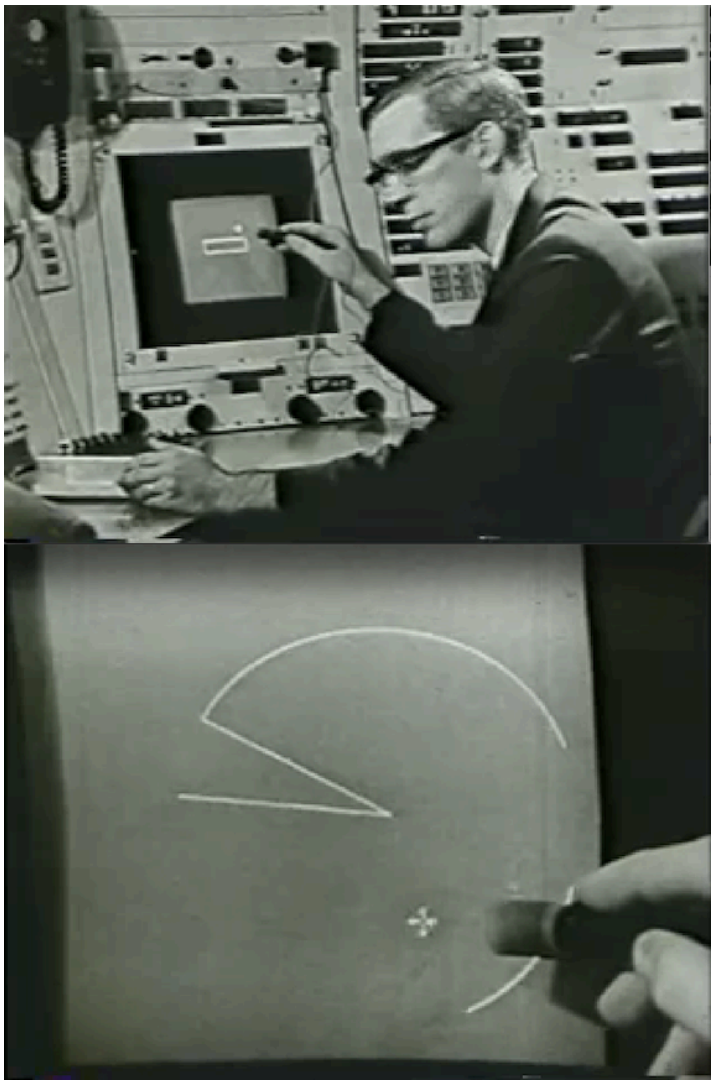
Pioneers (I)



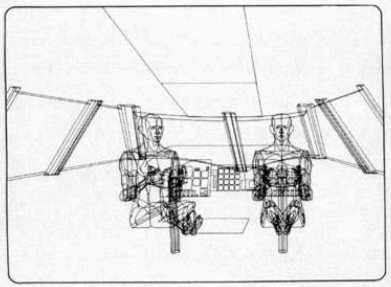
Left: Zajac, Edward E.: Gyro gravity gradient attitude control system, film, 1963. Bell Laboratories, Murray Hill/New Jersey.
Screenshot from URL: https://www.youtube.com/watch?v=m8Rbl7JG4Ng

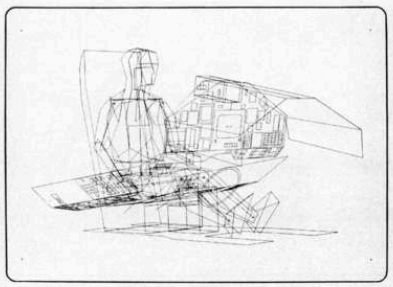


Right: Morash, Russell: [Ivan Edward Sutherland´s] Computer Sketchpad. National Educational Television. Filmed by WGBH-TV, Boston. Massachusetts Institute of Technology/ Lincoln Laboratory. Lexington/Massachusetts 1964.

Screenshots from URL: https://www.youtube.com/watch?feature=player_embedded&v=USyoT_Ha_bA

Pioneers (II)



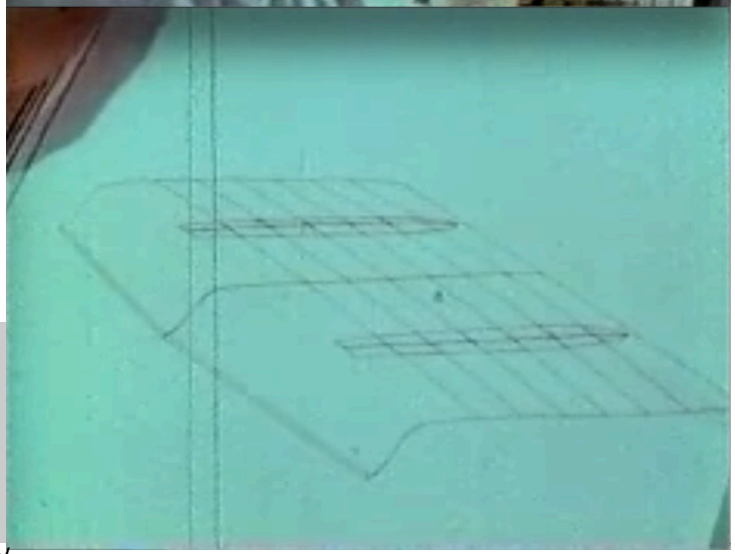


Fetter, William Allan/Boeing Aircraft Company:

Above: Fifty Percentile Human Figures Related to Cockpit.

Below: Twenty-Element Figure Placed in Cockpit Geometry.

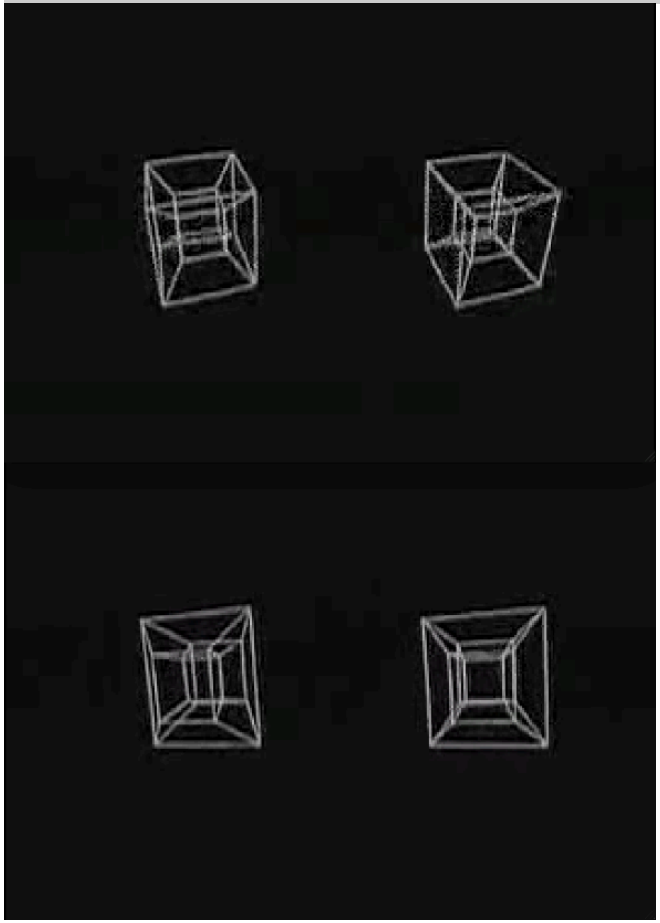
Photo reproductions of plotter drawings representing humans in cockpits, between 1966 and 1969. Collection Clarissa, Sprengel Museum Hannover (Piehler: Anfänge 2002, p.315s., unpaginated with ill. 84,86).



General Motors Research Laboratories: DAC-1,
development of a boot lid, between 1965 and 1967.
Right, above: Graphics console with electronic pen.
Right, below: Printout. Stills from a film by GM Photographic.

Screenshots from URL: http://design.osu.edu/carlson/history/lesson3.html

Pioneers (III)



Left: Noll, A. Michael: Hypercube, film, 1965. Bell Laboratories, Murray Hill/New Jersey. Two stills (among themselves) of the film presenting a turning four-dimensional hypercube with two views (horizontally next to each other) for stereoscopes.

Screenshot from URL: http://dada.compart-bremen.de/item/artwork/385#/media-tab

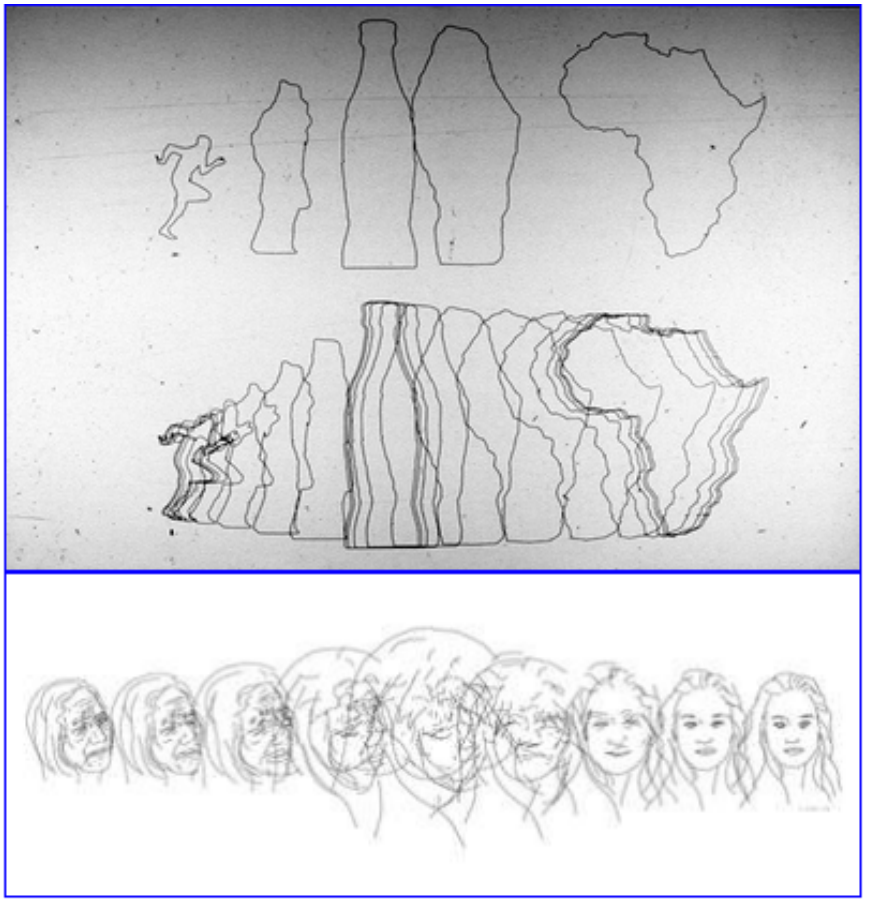
Right: VanDerBeek, Stan/Knowlton, Kenneth C.: Poem Field No.2, film, 1966.

Screenshots from URL: https://www.youtube.com/watch?feature=player_embedded&v=BMaWOp3_G4A

Animated Drawings, 1967-68

Left: Csuri, Charles: Hummingbird, film, 1967.

Screenshot from URL: https://www.youtube.com/watch?feature=player_embedded&v=awvQp1TdBqc



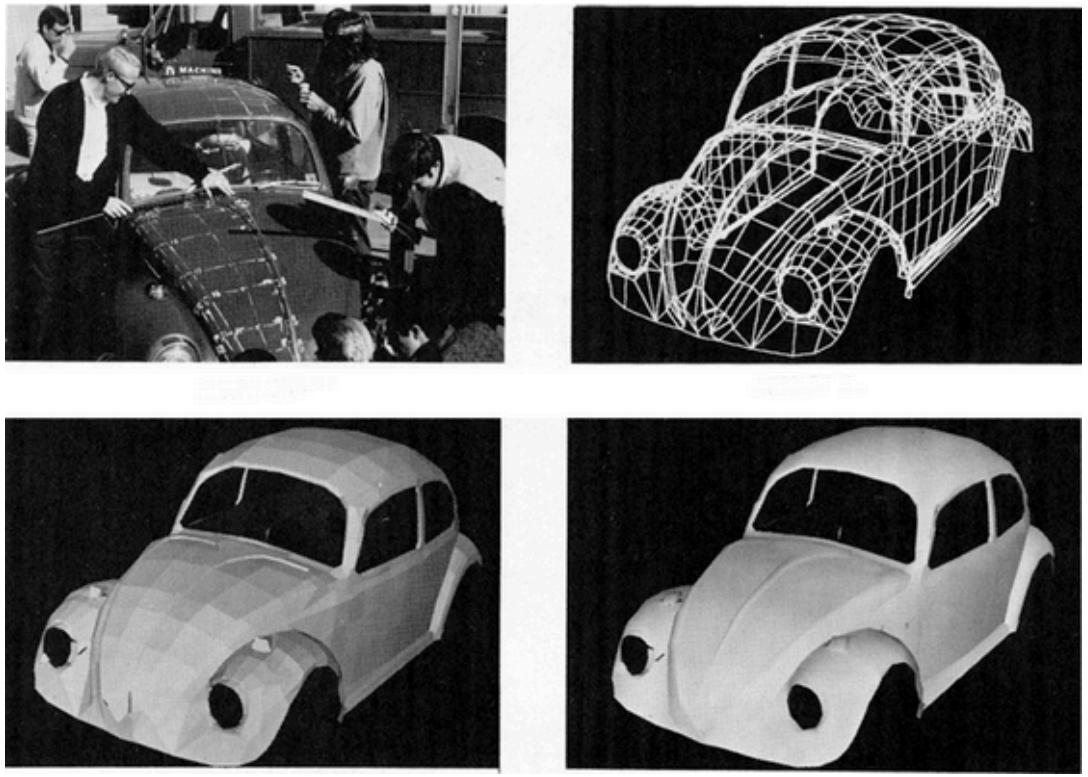
Right, above: Computer Technique Group (CTG): Running Cola is Africa, plotter drawing, 1967/68. Collection Computer Arts Society, London. Image source: URL: http://computer-arts-society.com/static/cas/cache/CAS0012.HTM

Right, below: Csuri, Charles: Aging Process, plotter drawing, 1967 (Glowsky: Csuri 2006, p.71).

From 2D to 3D Animation

Foldes, Peter: Hunger/La Faim, film, 1974.

Screenshots from: http://rapidshare.com/files/333700834/
la.faim.peter.foldes.1974.part1.rar.



From the object to the wire-frame and polygon model with smoothed planes (Sutherland/Sproull/Schumacker: Characterization 1974, p.5, fig.2c-f).

Henri Gouraud´s Continuous Shading, 1971

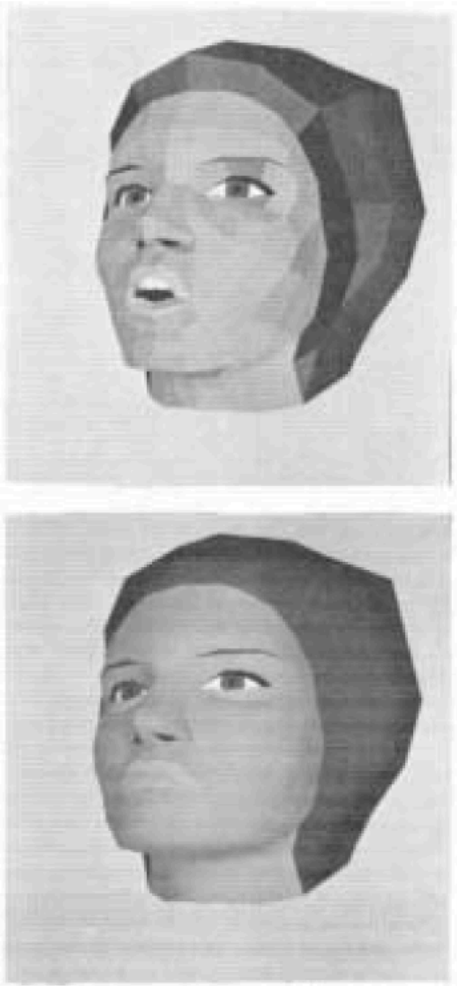


Figure 1
Two expressions of the same face. The top one was rendered using polygonal shading. The bottom one was rendered using Gouraud's smooth shading algorithm.

(Parke: Animation 1972, p.452, fig.1).

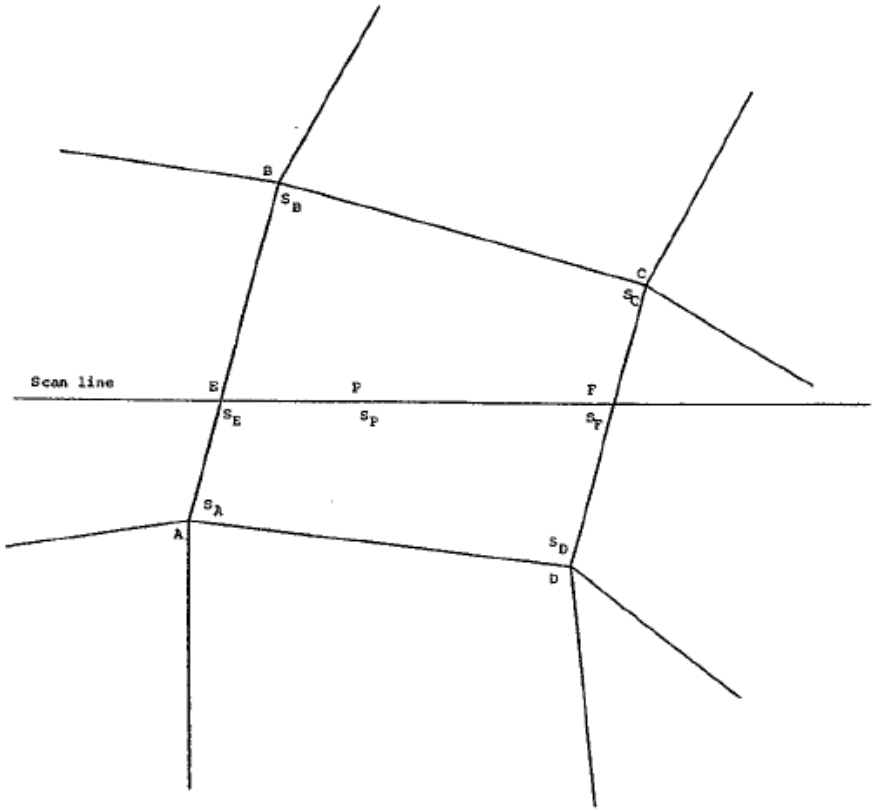


Fig. 5. Projection of one polygon intersected by the scan line.

Polygon A-B-C-D and the "Scan line" E-P-F built by the lines of the electron beam in a cathode ray tube E-P-F (Gouraud: Shading 1971, p.91, fig.5).

Utah Teapot and Texture Mapping

Fig. 2. Simple gridwork texture pattern: left-hand side shows texture pattern; right-hand side shows textured object.

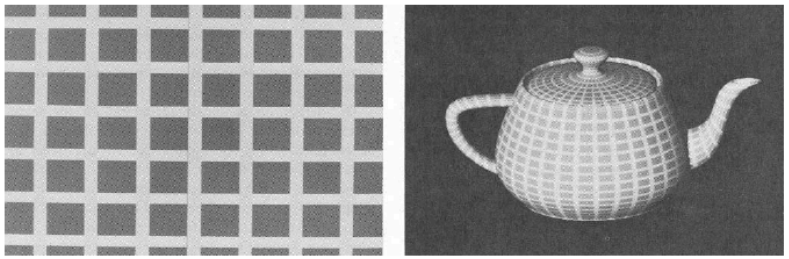


Fig. 3. Hand sketched texture pattern: left-hand side shows texture pattern; right-hand side shows textured object.

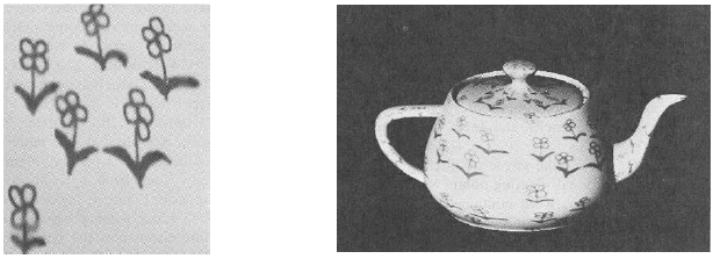
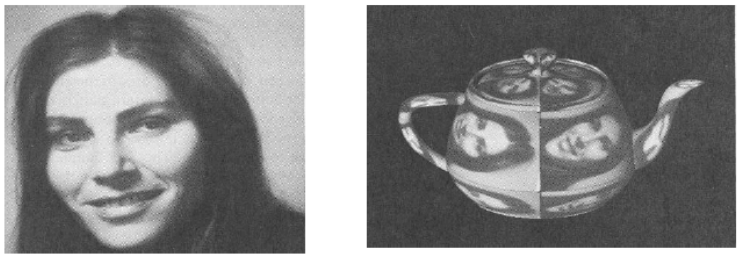
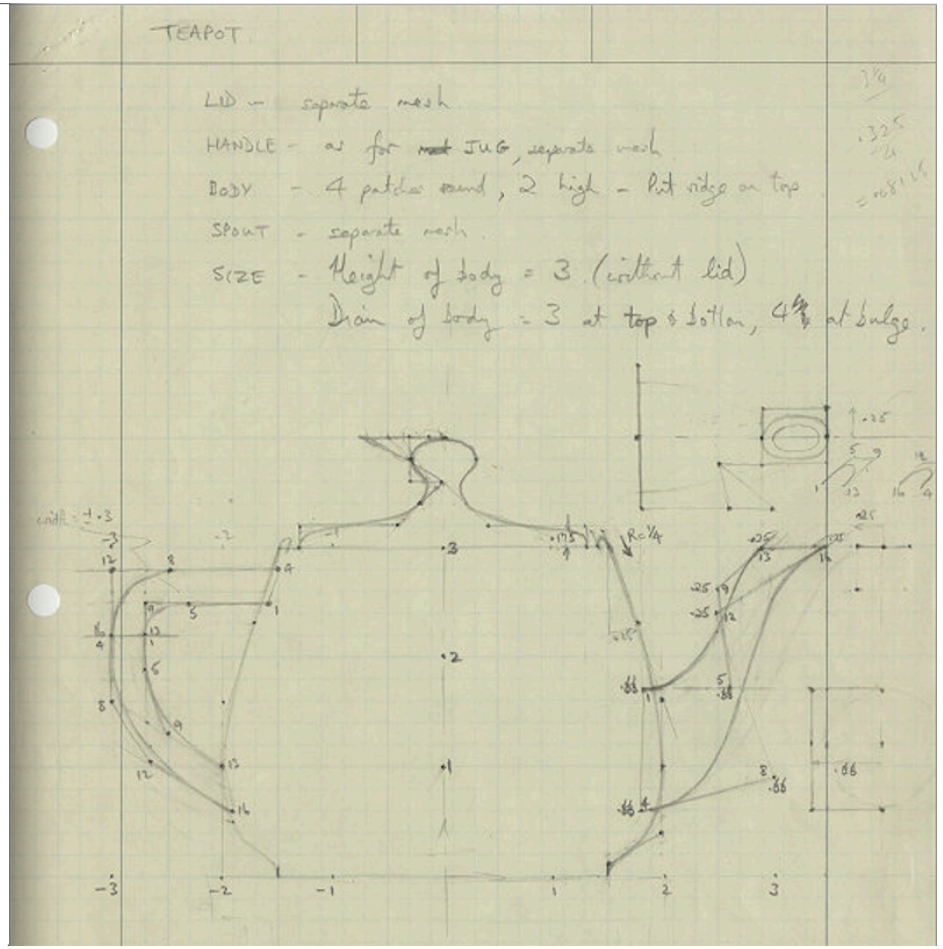


Fig. 4. Photographic texture pattern: left-hand side shows texture pattern; right-hand side shows textured object.



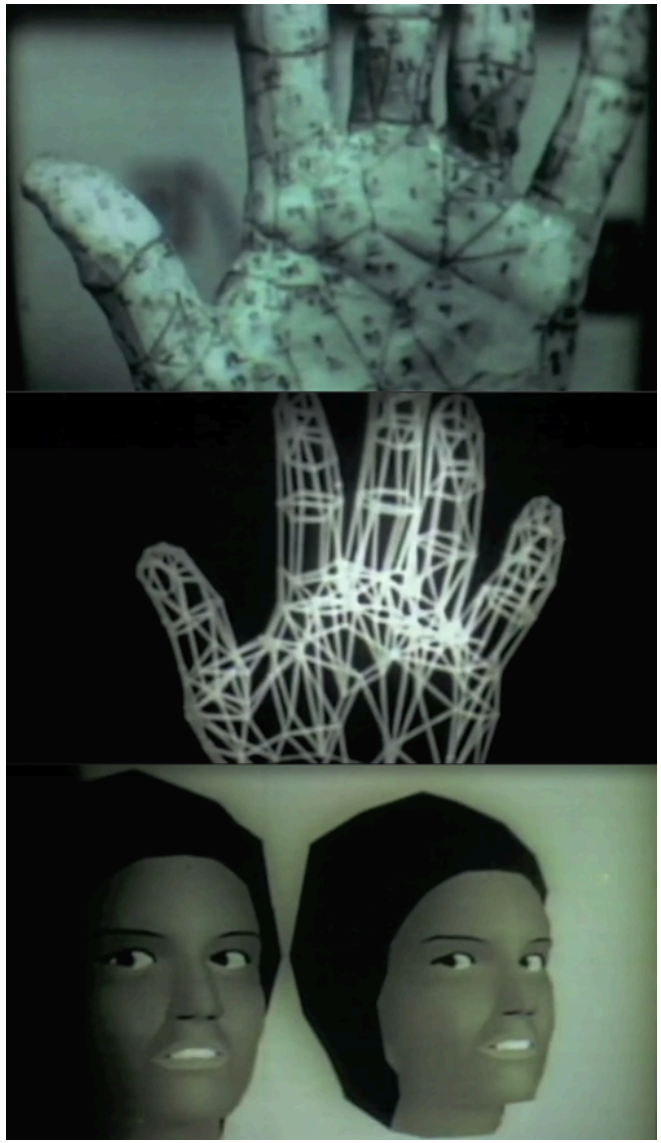


A Melitta teapot ("Utah teapot") from 1974 became a model for computer animations.

Left: Three examples for texture mapping (Blinn/Newell: Texture 1976, p.544, fig.2-5).

Right: Martin E. Newell´s measurement of the Melitta teapot on squared paper. Computer History Museum, Mountain View/ California. Image Source: URL: http://www.computerhistory.org/revolution/computer-graphics-music-and-art/15/206

Computer Animation in Movies (I)

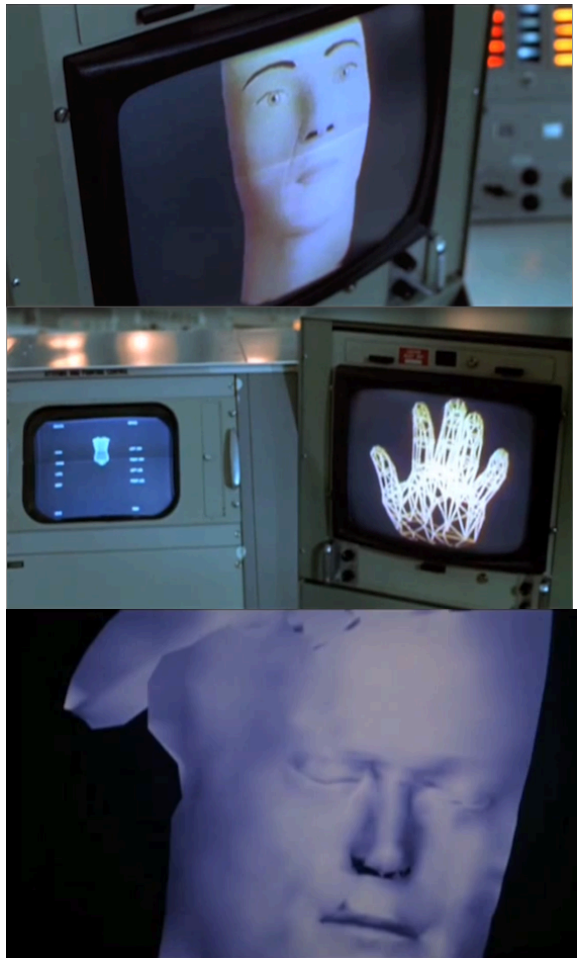


Left: Catmull, Edwin Earl/Parke, Frederick I.: Halftone Animation, film, 1972.

Screenshots from URL: http://vimeo.com/16292363

Right: Crichton, Michael: Westworld, film, 1973, stills from Gunslinger´s perception. Screenshots from URL: https://www.youtube.com/watch?v=jJHa7nHoBLc

Computer Animation in Movies (II)



Left: Heffron, Richard T.:
Futureworld, film, 1976.

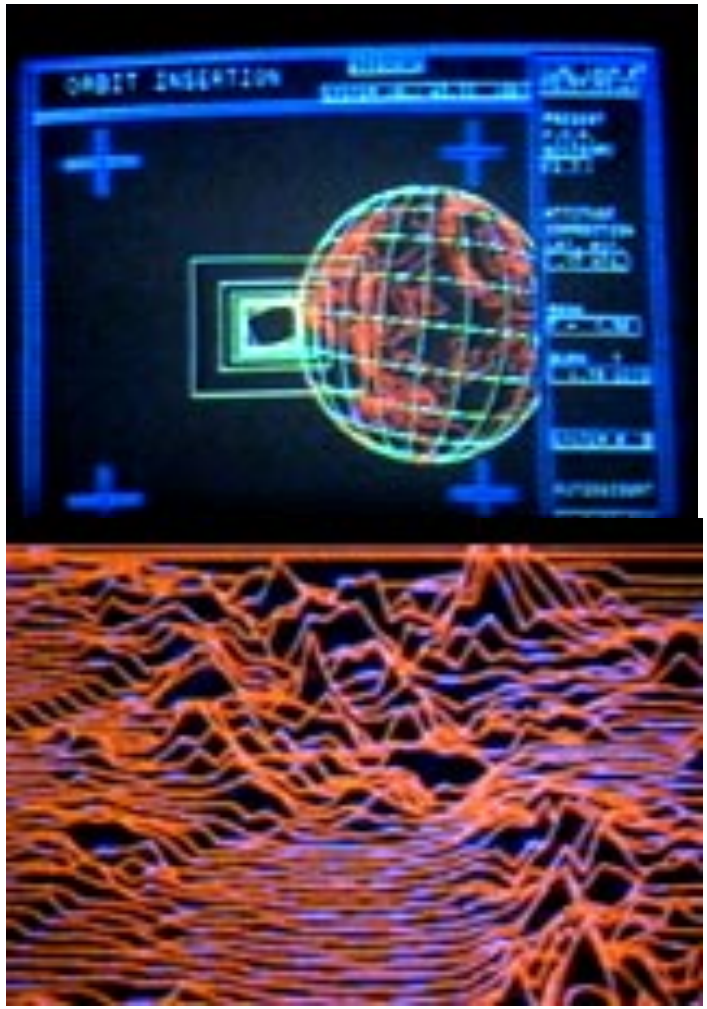
Screenshots from URL: https://
www.youtube.com/watch?v=ybVoFwmb70s

Right: Lucas, George: Star Wars Episode IV: A New Hope, film, 1977
(scene with the projection of the Empire´s station "Death Star" and its production with GRASS, explained by Larry Cuba).

Top: Image source: URL: https://oh-tech.org/content/
history_osc_and_oarnet_1963_1986

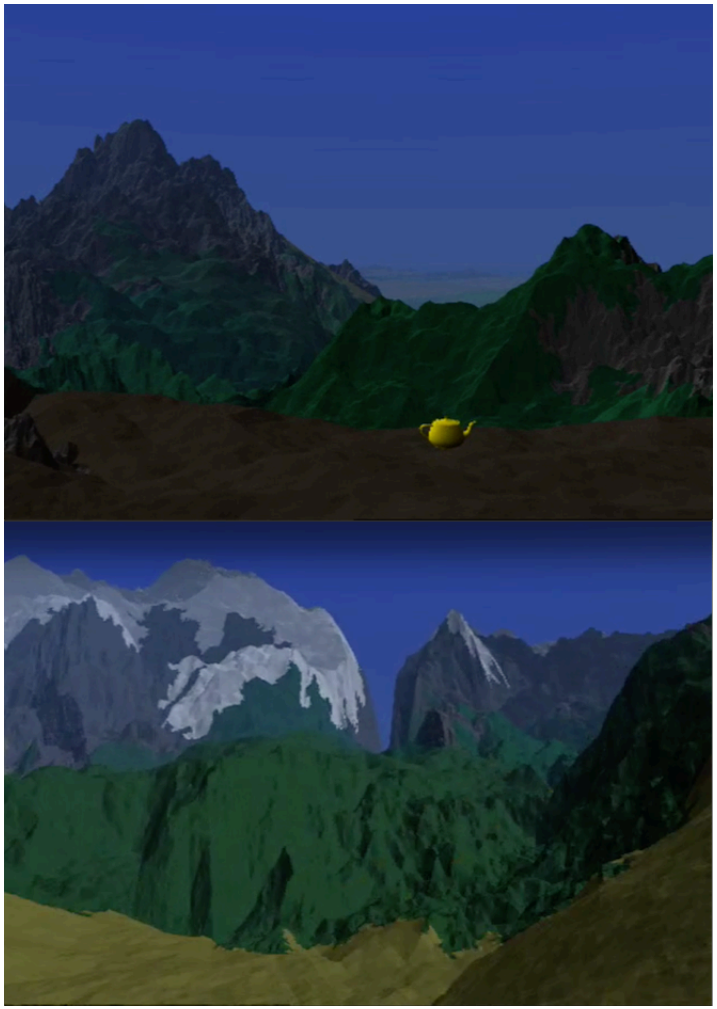
Bottom: Screenshot from URL: https://www.youtube.com/watch?v=yMeSw00n3Ac

Computer Animation in Movies (III)



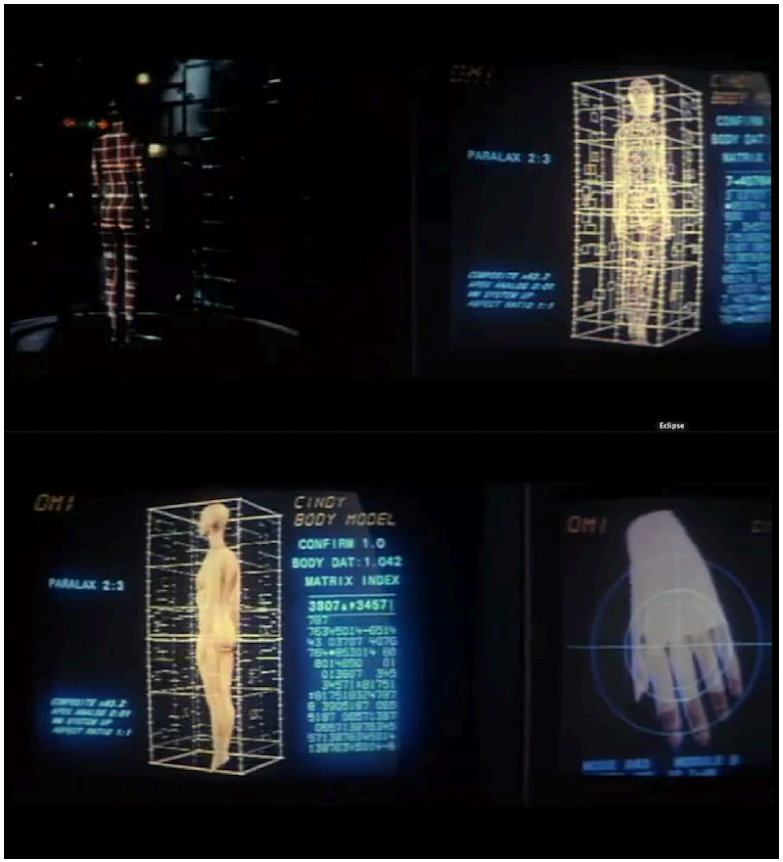
Scott, Ridley: Alien, film, 1979. Alan Sutcliffe´s computer animation on navigation screens in the spaceship Nostromo.

Image source: URL: http://www.filmsite.org/visualeffects10.html



Carpenter, Loren C.: Vol Libre, film, 1980.
Screenshots from URL: http://vimeo.com/5810737

Computer Animation in Movies (IV)



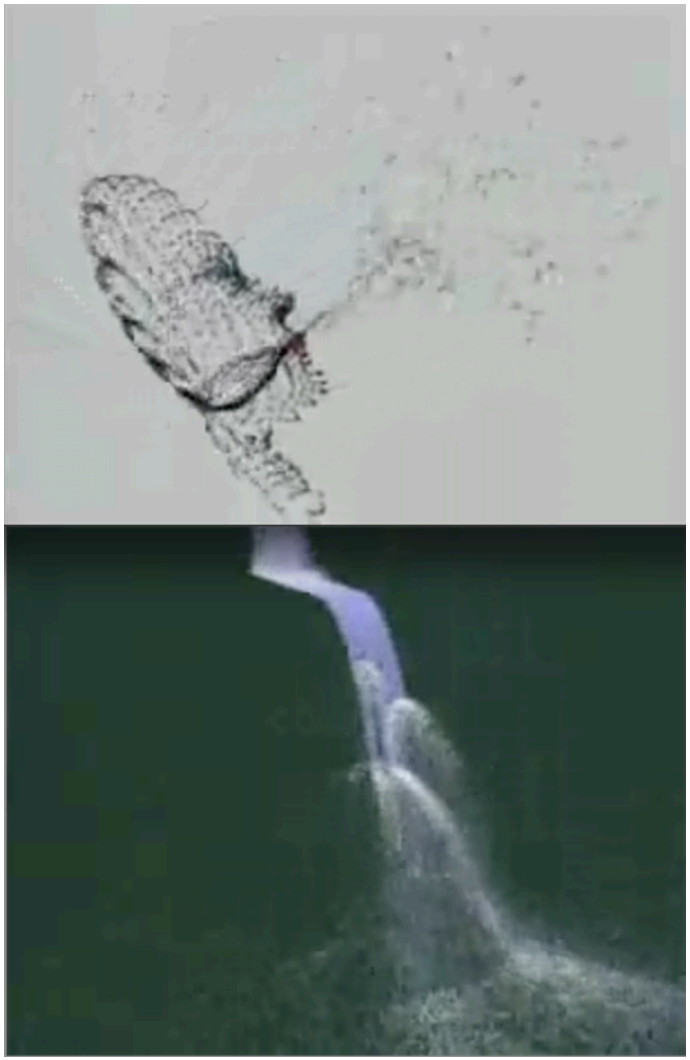
Crichton, Michael: Looker, film, 1981. Scene with a scan of a fashion model´s body.

Screenshots from URL: https://www.youtube.com/watch?v=yGFRI0NUSqs

Meyer, Nicolas: Star Trek II: The Wrath of Khan, film, 1982. Genesis demo.

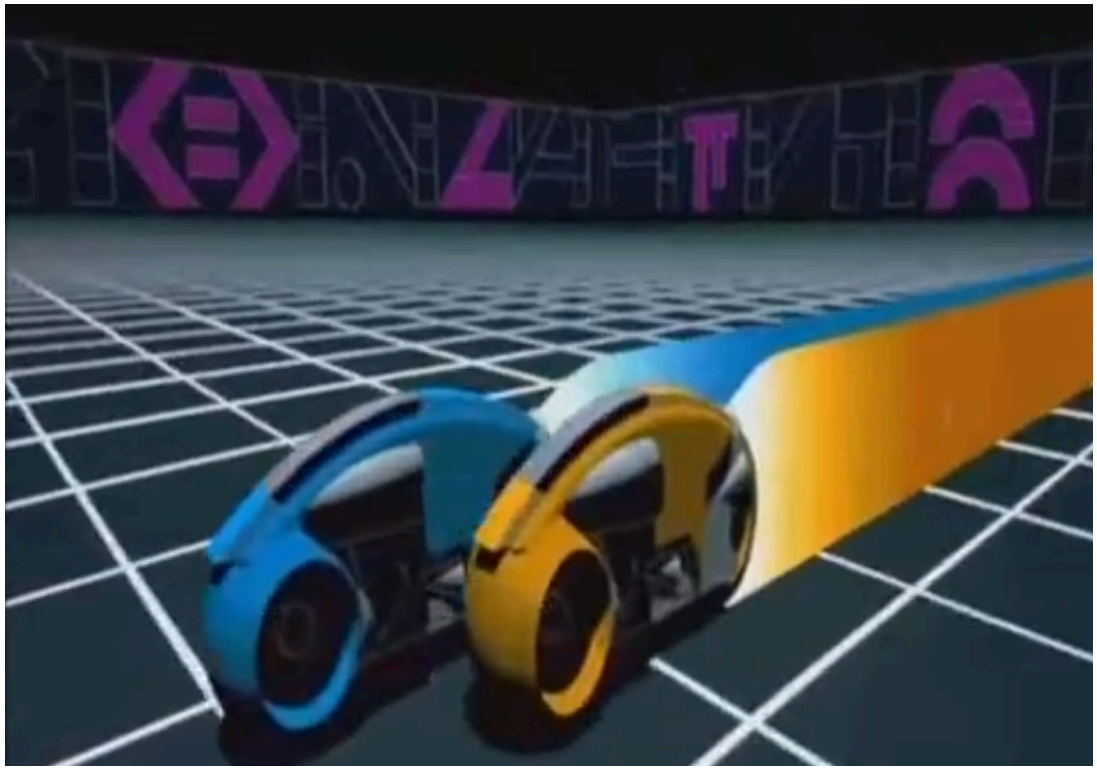
Screenshot from URL: https://www.youtube.com/watch?feature=player_embedded&v=UJTi7KJPx_E

Computer Animation in Movies (V)



Sims, Karl: Particle Dreams, film, 1988.

Screenshots from URL: https://www.youtube.com/watch?v=hwDvna0q3rA



Lisberger, Steven: Tron, Film, 1982. Lightbike scene.
Screenshot from URL: https://www.youtube.com/watch?v=-3ODe9mqoDE

Computer Animation in Movies (VI)

Lasseter, John: Toy Story, film, 1995. Stills.

Image sources: URL: http://www.imdb.com/title/tt0114709/mediaindex?ref_=tt_pv_mi_sm

Bibliography with informations about the abbreviations used in the captions:

Dreher, Thomas: History of Computer Art. Chap. Bibliography. In: URL: http://iasl.uni-muenchen.de/links/GCA-IXe.html