# SIGGRAPH '84
# Technical Slide Set Credits

**Editors:** Ellen Gore
Stephen R. Levine
Art Durinski

**Assistant:** Stephanie Moore

The SIGGRAPH '84 technical slide set represents the state-of-the-art in computer graphics. The set is an example of over 800 slide submissions from industry, academia and the art world.

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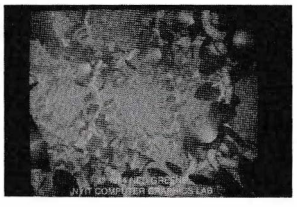
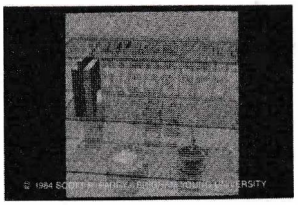
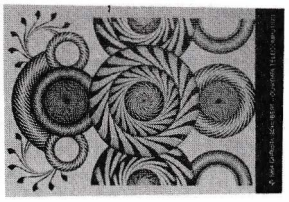
Each slide is printed here in black and white to facilitate locating information about the images. The full color 35mm slide set can be ordered from ACM. See the listing above of SIGGRAPH '84 materials available.



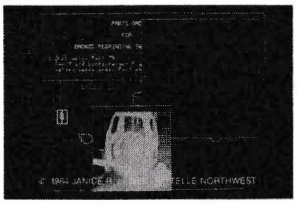
**Ned Greene,** NYIT Computer Graphics Lab, Box 170, Old Westbury, NY 11568, (516) 686-7644. "Inside a Quark." All objects in the scene were modeled in three dimensions from polygons. The vines were modeled using tree modeling software authored by Jules Bloomenthal and rendered with bump mapping. A depth image for the bark texture was obtained by x-raying a plaster cast of real bark. Flowers, sepals, and leaves were modeled using a program which creates a polygon mesh file from a depth image and hand-drawn boundary curves. The leaves and sepals were texture mapped with painted texture. Depth cueing simulates homogenous fog; contrast falls off as an exponential function of distance from the eye. Design, modeling, and animation by Ned Greene. The hardware used was a DEC VAX 11/780 computer with Genisco frame buffers. Software credits to Jules Bloomenthal, Paul Heckbert, Ned Greene, Lance Williams.



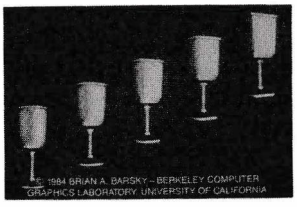
**Scott R. Parry,** Brigham Young University - MOVIE. BYU, 368 CB, Provo, UT 84602, (801) 378-2811. "SIGGRAPH '84 Bookcase." The software used was MOVIE. BYU on a Ramtek 9460 (1024 line, 8 bit frame buffer) taken with a Dunn 632 camera.



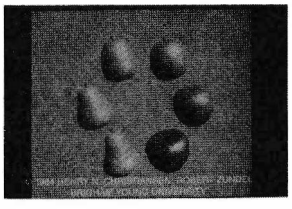
**Christa Schubert,** Quikdata Telecomputing, 10375 Los Alamitos Blvd., Los Alamitos, CA 90720, (213) 594-0344. The image was developed by Christa Schubert and Ernst Schubert using 128K Ampex (novatype), Z100 (Zenith) micro, Soltec and IBM high resolution plotters. The slide is a collage of computer graphics mandalas and spirals.



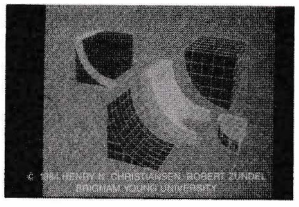
**Janice R. Lewis,** Battelle Northwest, P.O. Box 999, Richland, WA 99352, (509) 375-3769. Rik Littlefield and Pat Martin developed the slide which portrays a combination of vector graphics and raster images displayed in logical screen windows on a Ramtek 9400. The software is written in FORTRAN for a VAX 11/780.




**Brian A. Barsky, Tony D. DeRose, Mark D. Dippe,** Berkeley Computer Graphics, Laboratory, Computer Science Division, University of California, Berkeley, CA 94720, (415) 642-9838. "Pewter Goblets with Different Tension Values." This image was rendered on an Adage/Ikonas RDS-3000 raster display system attached to a DEC VAX 11/750 running Berkeley UNIX 4.2bsd. The five 'Beta2-spline' pewter goblets are defined by the same control vertices. The changing shapes, from round to flat, are controlled by increasing tension values (from left to right: 0, 5, 10, 20, 50). The scene was rendered with a fast subdivision algorithm that converts beta-splines to polygons.

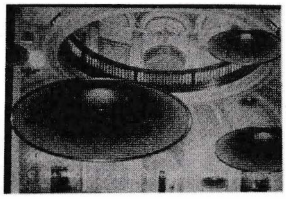


**Henry N. Christiansen, Robert Zundel,** Brigham Young University - MOVIE.BYU, 368 CB, Provo, UT 84602, (801) 378-2811. "Geometry Transformation - Pear to Apple." The software used was MOVIE.BYU on a Ramtek 9460 (1024 line, 8 bit frame buffer) taken with a Dunn 632 camera.

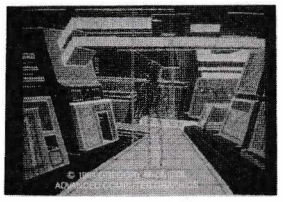


**Henry N. Christiansen, Robert Zundel,** Brigham Young University - MOVIE.BYU, 368 CB, Provo, UT 84602, (801) 378-2811. "Curved Clipping." Software, MOVIE.BYU on a Ramtek 9460 (1024 line, 8 bit frame buffer) taken with a Dunn 632 camera.

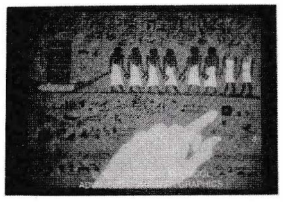

**John Lewis,** Architecture Machine Group, MIT, 77 Massachusetts Ave., Cambridge, MA 02139, (617) 253-7920. The image is a textured rendering of Easter Island statues, with landscape background produced using the Onionpaint texture synthesis program.



**Timothy M. Warner,** National Imagemakers, 31 East 17th Street, New York, NY 10003, (212) 475-1050. The image was developed by Timothy M. Warner and Jim Casey. A Genigraphic 100B console was used to create the original artwork (and corresponding masks), a 100B film recorder shot them onto 35mm film, and a Forox camera was used to combine the computer-generated and flat art subjects.

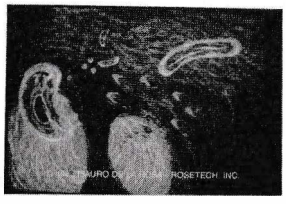


**Gregory MacNicol,** Advanced Computer Graphics, 211 Maple, Santa Cruz, CA 95060, (408) 426-0403. The image was produced using an Apple graphics tablet, an Apple II and a Vectrix VX384. The resolution is 480x672 at 512 displayable colors. The software was written by Gregory MacNicol.

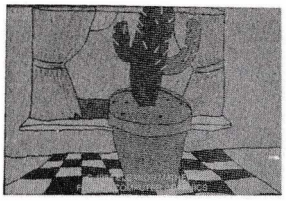


**Gregory MacNicol,** Advanced Computer Graphics, 211 Maple, Santa Cruz, CA 95060, (408) 426-0403. The image was produced using an Apple graphics tablet, an Apple II and a Vectrix VX384. The resolution is 480x672 at 512 displayable colors. The software was written by Gregory MacNicol.


**Charles Esrock,** ACCD, 393 N. Euclid, -2, Pasadena, CA 91101; (213) 449-3781. The image was created at Caltech by Charles Esrock using a DEC 11/34, Grinnell frame buffer, and a paint system developed by graduate students.

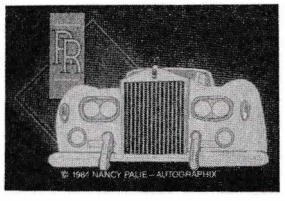


**Isauro De La Rosa,** Rosetech, Inc., 15 West 38th St., Suite 903, New York, NY 10018, (212) 382-1813. The image was developed using Via Video.

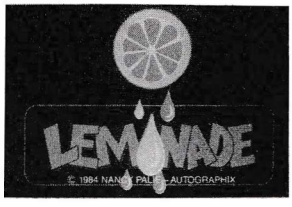


**Eleanor Mathews,** Florida Computer Graphics, Fairfield Graphics Division, 1923 First Avenue, Suite 300, Seattle, WA 98101, (206) 682-2876. "Emcactus." This slide was made with the Florida Computer Graphics Beacon Illustrator package which includes the IBIS drawing software.

**John Ridgeway,** Genigraphics Corp., 215 Lexington Ave., 18th Floor, New York 10016, (212) 532-5930. A Genigraphics 100D console was used to produce the image.

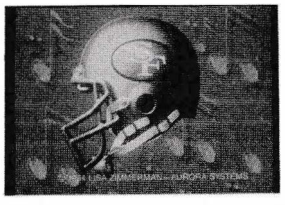


**Nancy Palie,** Autographix, 100 Fifth Avenue, Waltham, MA 02154 (617) 890-8558. The image was produced on an Apple II based turnkey workstation with Autographix PolyCurve software.

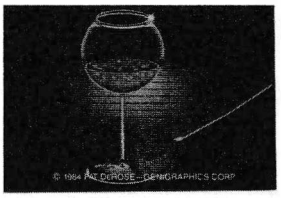



**Nancy Palie,** Autographix, 100 Fifth Avenue, Waltham, MA 02154 (617) 890-8558. Apple II based turnkey workstation used as hardware with the Autographix PolyCurve software.

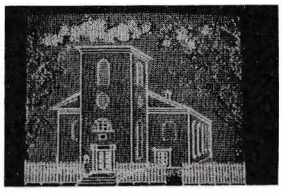
**Herman Towles,** Computer Creations, Inc., 1657 N. Commerce Dr., South Bend, IN 46628, (219) 233-1020. "Metropolia galazy in Star Rider." The image was designed by: artists Eric Brown, Shaun Reynolds, Suzanne Knox; programmers Thomas Klimek, Herman Towles, Robert Beech. Computer Creations used its own proprietary videoCel software system to produce and record a 20 minute animated sequence for videotape. Major hardware included VAX 11/750 and PDP 11/50 computers, Adage/Ikonas frame buffer processors, Evans & Sutherland Multi-picture system (MPS), with broadcast video recorders by Ampex and Sony.



**Lisa Zimmerman,** Aurora Systems, 185 Berry Street, #143, San Francisco, CA 94107, (415) 777-2288. The image was created on the Aurora/100 digital videographics system by artist Norman Leong.



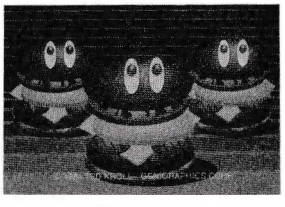
**Pat Derose,** Genigraphics Corp., 3495 Piedmont Rd., NE, Bldg. 9, Suite 100, Atlanta, GA 30305, (404) 266-8755.



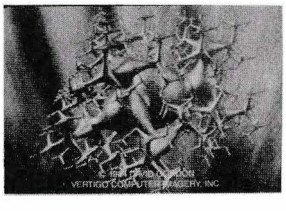
**Leslie Schutzer,** 16 Gay Street, New York, NY 10014, (212) 929-4081. "St. Luke's-in-the-Fields." The image was created on an Apple II + and an Apple Graphics Tablet. The slide was shot directly from a Sony monitor.

**Peter Watterberg,** Sandia National Laboratories, Division 2644, Albuquerque, NM 87185, (505) 844-7196. "Martian Magnolia in a Mushroom Patch." The image was produced using experimental ray tracing software. The image was recorded on a Dicomed D48C at 1872x1245 resolution.

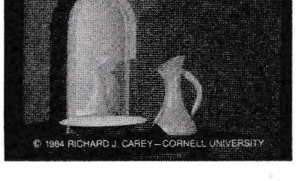
**Karas Burrows,** Orange Coast College, 757 Roswell Ave., Long Beach, CA 90804, (213) 434-8680. "Looking for the Way Out of Time and Space." Produced with a CAT1600 real time frame grabber (Digital Graphic Systems, Inc.) with firmware routines, a Z-80 S-100 host processor, FORTH-83 public domain software system (Laxen and Perry).



**Ted Kroll,** Genigraphics Corp., 2475 Augustine Drive, Bldg. 6, Suite 1E, Santa Clara, CA 95051, (408) 970-0380. Image produced on a Genigraphics 100D console.



**David Gordon,** Vertigo Computer Imagery, Inc., Suite 221, 119 W. Pender St., Vancouver, BC. V6B 1S5, (604) 682-0966. Image created using a VAX 11/780 computer, AED 767 frame buffer, and in-house software (VQVSP).



**Richard J. Carey,** Program of Computer Graphics, Cornell University, 120 Rand Hall, Ithaca, NY 14853, (607) 256-4880. Image created by Rikk Carey, Roy Hall, Chan Verbeck with ray traced B-spline surfaces. The image was generated at 512x512x24 bit resolution and a VAX 11/780.

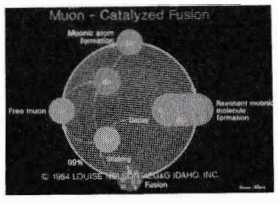
**Thomas Bisogno,** MAGI/Synthavision, #3 Westchester Plaza, Elmsford, NY 10523, (914) 592-4646 ext. 276. "PACMAN and Ghosts." The synthoids are by Larry Elin, Chris Wedge, Jan Carlee, Joshua Pines, Gene Miller, Eugene Troubetzkoy, Christine Chang, Ken Perlin, Thomas Bisogno, Carl Ludwig. Synthavision was used to calculate the geometry. The Image Code was used to render the image in raster form (all done on an SEL/GOULD 3287). The final images were output to a CELCO CFR 4000 via a Perkin-Elmer 3240.


**Mary Codd,** Coddbarrett Computer Graphics, 345 South Main Street, Providence, RI, (401) 273-9898. "Air Filter." The illustration on the packaging was produced on a Dicomed D38, imaged on a D48 as a 35mm slide, color separated and combined with text (at frame) and printed.

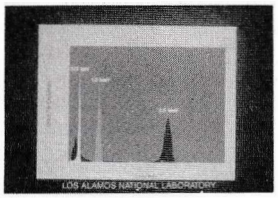

**Alan Green,** Digital Effects, Inc., 321 West 44th Street, New York, NY 10036, (212) 581-7760. "Comet." Image produced using DEI's "Visions" software, and Harris 500, IBM 4341, PDP 11/34, "Video Palette IV" Paint System, and Dicomed D48.


**Percy Keeley,** HVH Development Corp., 100 Ward Avenue, Suite 900, Honolulu, HI 96814, (808) 521-5341. "Medical." The artist is Jackie Kanna. Picture frame created using NAPLPS. Hardware and software developed by CableShare, Inc.

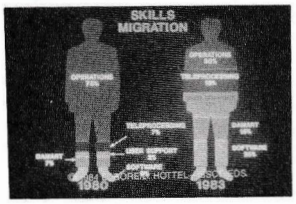
**Philip L. Burk,** Sohio Petroleum Co., 50 Fremont Street, San Francisco, CA 94105, (415) 979-5407. "Computers for Peace." The image was produced on a Raster Technologies Model One/20 frame buffer with 512x512x24 bit resolution using a Sohio paint system running in the device. The pixel and brush function was used extensively for smooth coloration. Photographed on a Dunn 632.




**Louise Nelson,** EG&G Idaho, Inc., P.O. Box 1625, Idaho Falls, ID 83415 (208) 526-0155. "Felker Cutoff Saw." Images created at the Idaho National Engineering Laboratory using parallel Cyber 176's and a Dicomed D148C for hardware and a modified version of Los Alamos National Laboratory's 'Mapper' for software.

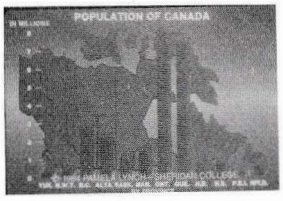



**Kathleen M. Dolberg,** Los Alamos National Laboratory, MS-K493, IT-1 Los Alamos, NM 87545, (505) 667-3764. The software used to create the image was Mapper, designed by Dave Dahl; Animate, designed by Dave Dahl; DISSPLA by ISSCO. The hardware was a Cray computer and FR80 camera.



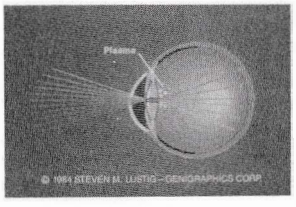

**Ellen Gore,** ISSCO and **D. Hottel,** EDS 10505 Sorrento Valley Rd., San Diego, CA 92121, (619) 452-0170. The image was created for a national plot contest conducted by ISSCO and the ISSCO user group. The image by D. Hottel, EDS, was one of the winners.


**James Sayers,** Sheridan College, 1430 Trafalgar Rd., Oakville, Ont., Canada, (416) 485-9430. The image was created with a Genigraphics 100C.

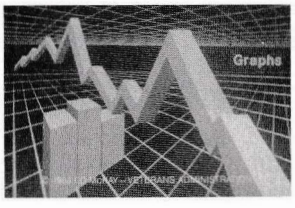



**Pamela Lynch,** Sheridan College, 1430 Trafalgar Rd., Oakville, Ont., Canada (416) 485-7879. The image was created with a Genigraphics 100C.

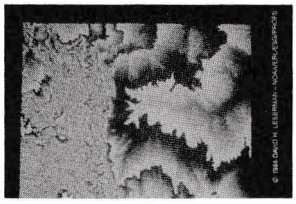

**Jan Stanley,** Genigraphics Corp., 1468 West 9th Street, Suite 800, Cleveland, OH 44113, (216) 566-8165. A Genigraphics 100D console was used to produce the image.



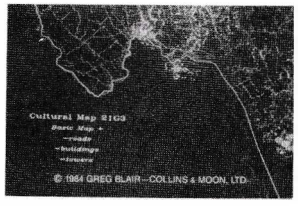

**Steven M. Lustig,** Genigraphics Corp., 4701 Teller Avenue, Newport Beach, CA 92660, (714) 752-7300. This image was created on a Genigraphics 100C graphics console running Genigraphics RSX software. The picture was shot using a Forox camera.



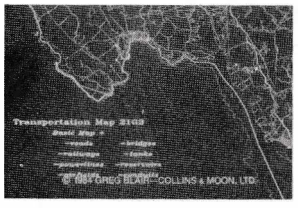

**Ed McKay,** Veterans Administration, RLRS (I42B), Jefferson barracks, St. Louis, MO 63125, (314) 487-0400 ext. 520. "Graphs." A Genigraphics 100B Graphics terminal was used to develop the artwork and a Genigraphics film recorder to image the slide.



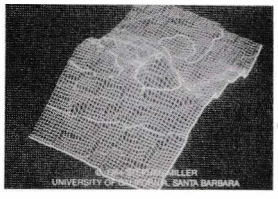
**David H. Leserman,** NOAA/ERL/ESG/PROFS, R/E23, 325 Broadway, Boulder, CO 80303, (303) 497-6157. "The South Platte." The concept was developed by David H. Leserman; Image: Paul Schultz; Color Table: David Reynolds and Joan Murray. The image is a digitized topography of N.E. Colorado including the South Platte River Valley. Color table intended for combined infrared and visible satellite image. The hardware is a VAX 11/750 and Ramtek 9400.



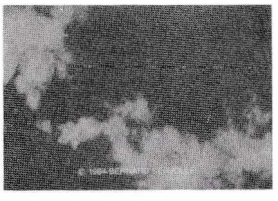

**Greg Blair,** Collins & Moon, Ltd., 435 Stone Road West, Guelph, Ont., N1G2X6, (519) 836-3844. "Cultural Map of St. Andrews, New Brunswick." The image was created on a PDP11/34 with UNIX V7 and a Dicomed film recorder.



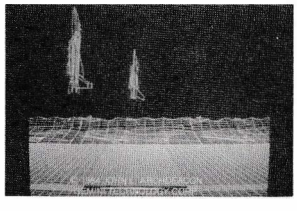

**Greg Blair,** Collins & Moon, Ltd., 435 Stone Road West, Guelph, Ont., N1G2X6, (519) 836-3844. "Transportation Map of St. Andrews, New Brunswick." Created on a PDP 11/34 with UNIX V7 and a Dicomed film recorder.



**Stephen Miller,** Department of Geological Sciences, University of California, Santa Barbara, CA 93106, (805) 961-2853. "3-D View Sea Floor Bathymetry." The image was produced with Precision Visuals Contouring System and a Tektronix 4113 terminal.



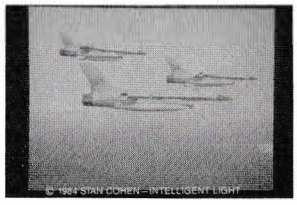
**Bernard Servolle,** 33 Paloma, Venice, CA 90291, (213) 396-4152. "Cloud 1." Hardware includes a Chromatics 7900 with 68000 processor and 768x1024x8 resolution. The software, under development, is written in assembly code and C, and is based on a stochastic process.



**John L. Archdeacon,** Gemini Technology Corp., 23505 Crenshaw Blvd., Suite 106, Torrance, CA 90505, (213) 326-8455. "F-15 and F-16 in Vertical Climb over the Range." The image was developed by John L. Archdeacon and Dale B. Stimson on a VAX/MPS Generic Visual System (GVS). A software product of Gemini Technology Corp. Real time computer graphics for flight simulators. Uses VAX and Evans & Sutherland Multi Picture System hardware.

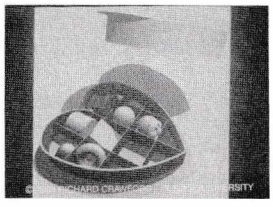

**Darwyn Peachey,** Department of Computational Science, University of Saskatchewan, 86 Commerce Bldg., University of Saskatchewan, Saskatoon, Saskatchewan, Canada S7N 0W0, (306) 343-2301. "Jetport." A solid modeling system written in C, based on constructive solid geometry and ray tracing, was used to generate the image at 512x512 resolution on a VAX 11/780 under UNIX. The image was displayed in 24-bit color on a Comtal Vision One/2D image processing system and photographed by a Matrix Instruments Model 3000 film recorder.


**Steven Roussos,** Structural Dynamics Research Corp., 2000 Eastman Dr., Milford, OH 45150, (513) 576-2648. "Punishment of Luxury." Image developed by Steven Roussos and Geoff Nay. The hardware/software used on this image: SDRC GEOMOD 2.5 solid modeler; Ramtek Marquis Display; VAX 11/780; Jets modeled using surface skimming over 2-D cross-sections, displayed using 4 light sources—3 white, 1 red; Background uses translucency and special shading effects programmed by Steven Roussos.

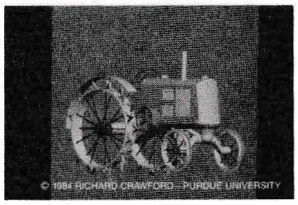



**Stan Cohen,** Intelligent Light, Austin Electronics, 17-01 Pollitt Drive, Fair Lawn, NJ 07410 (201) 794-0200. "Flying in Formation." Image produced on a VAX 11/780, Adage/Ikonas RDS 3000 1024x1024x24 frame buffer, Dunn Instruments Model 632 film recorder. All modeling and image generation software written by Intelligent Light personnel.

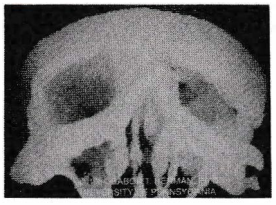

**Tibor Berenyi,** Deere & Co., Technical Center, 3300 River Drive, Moline, IL 61265, (309) 757-5461. "John Deere 4850 Tractor." Image developed by Tibor Berenyi and Dan Cowley. The picture was made with a Deere & Co. developed geometric modeler called HAL. The hardware was a Prime 750.



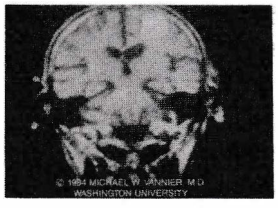
**Richard Crawford,** Purdue CADLAB, Potter Engineering Center, Purdue University, West Lafayette, IN 47907, (317) 494-5944. "Valentine's Day Sampler." Software: scene modeled with Leo, image generated with CDC ICEM Modeler. Hardware: CDC Cyber 170-720/Ramtek 9400.



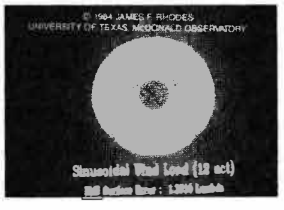

**Richard Crawford,** Purdue CADLAB, Potter Engineering Center, Purdue University, West Lafayette, IN 47907, (317) 494-5944. "1935 Oliver Tractor." Software: CDC ICEM Modeler. Hardware: CDC Cyber 170-720/ Ramtek 9400. Programmer: J. Middelton.



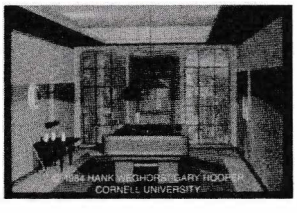
**Gabor T. Herman,** Ph.D., Medical Image Processing Group, Department of Radiology, University of Pennsylvania, 3400 Spruce Street, Pennsylvania, PA 19104, (215) 662-6784. Skull of a motorcycle accident victim: a 3-D image based on postoperative CAT-scans. The programmers were Lin-Shyang Chen, Dr. Gabor T. Herman, Craig R. Meyer, R. Anthony Reynolds, and Dr. Jayaram K. Udupa. This image is from a paper entitled, "Surface Rendering in the Cuberille Environment," Medical Image Processing Group Technical Report No. MIPG87. The image has been produced using the normal-based contextual shading technique.



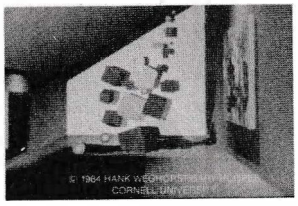

**Michael W. Vannier, M.D.,** Mallinckrodt Institute of Radiology, Washington University, 510 S. Kingshighway, St. Louis, MO 63110, (314) 362-7113. The image was created by M.W. Vannier, R.L. Butterfield, and D. Jordan. The color composite image was formed interactively from 3 channels of NMR image data obtained with a Siemens Magnetom magnetic resonance imaging system (0.5T). The color images were formed on a GE Image 100 satellite image processing system located at the University of Florida, Gainesville.



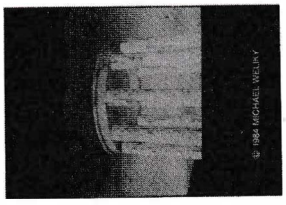

**James F. Rhodes,** McDonald Observatory, The University of Texas at Austin, Robert L. Moore Bldg., Room 15.310A, Austin, TX 78712, (512) 471-4461. The image was developed using in-house hardware/software by B.S. Mani, Frank Ray, James F. Rhodes. The hardware used was Matrix 4007 camera, interfaced to Grinnell GMR-270, on VAX 11/780. The software used was MOVIE.BYU running under VAX/VMS.




**Hank Weghorst, Gary Hooper,** Cornell University, Program of Computer Graphics, 120 Rand Hall, Ithaca, NY 14853, (607) 256-4880. "The Pool Room." Ray tracing algorithm written in C, running under VAX/VMS on a VAX 11/750, and displayed on a Grinnell frame buffer with 512x480 resolution.

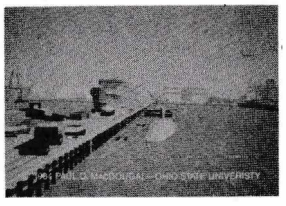



**Hank Weghorst, Gary Hooper,** Cornell University, Program of Computer Graphics, 120 Rand Hall, Ithaca, NY 14853, (607) 256-4880. "Sculpture Gallery." Generated by a ray tracing algorithm, written in C, running under VAX/VMS on a VAX 11/780 and displayed on a 512x480x24 Grinnell frame buffer.

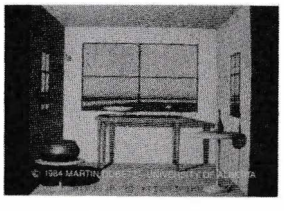



**Michael Weliky,** 1072 Ridge Crest St., Monterey Park, CA 91754, (213) 269-6091. "Temple of Delphi." The image was generated on a Perkin-Elmer 3250, and recorded on a Celco film recorder at 512x384 resolution. Stone and marble textures were digitized with an Eikonix image digitizer and mapped onto anti-aliased polygons.

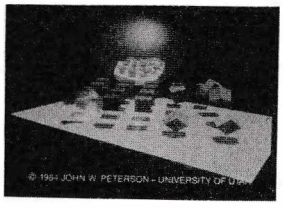

**Geoffrey Gardner,** Grumman Aerospace Corp., MS A08-35, Bethpage, NY 11714, (516) 575-4791. "Textured Quadric Terrain." The image was created on a Data General Eclipse S/250 minicomputer, Genisco GCT-3000 color frame buffer (480 lines by 640 pixels by 24 bit color). Computer image generation: textured quadric surface algorithms in FORTRAN V.




**Paul D. MacDougal,** Ohio State University Computer Graphics Research Group, 1501 Neil Avenue, Cranston Center, Columbus, OH 43201, (614) 422-3416. "Docking at Norfolk, VA." Programmers for the image were Paul D. MacDougal, Julian Gomes, David Zeltzer with artists Doug Kingsbury and Judy Sachter. One frame of a docking simulation using texture mapping, haze and changing levels of detail. Calculated on a VAX 11/780 and displayed on a 640x484x32 bit in-house frame buffer.

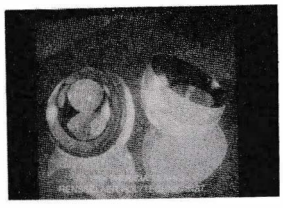


**Martin Dubetz,** University of Alberta, Department of Computing Science, Edmonton, Alberta, Canada T6G 2H1, (403) 432-3854. The slide was produced on a VAX 780 running UNIX and an International Imaging Systems Model 75 image processor with a 512x512x24 bit frame buffer. The software used is a modified version of MOVIE.BYU.



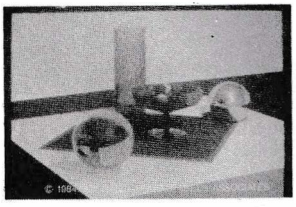
**John W. Peterson,** University of Utah, 3160 M.E.B. (Department of Computer Science), Salt Lake City, UT 84112, (801) 581-8866. The image was produced on an Apollo DN600 workstation, using image synthesis software by the artist.

**Cucumber Studios Ltd,** 10 Livonia Street, London, WI, (01) 7340841. "Quatro Machine." The image was produced by George Kular, Sogitec, using a Perkin-Elmer 3200 MPS. Transfer on Calcomp on 35mm film computing resolution 2048x2048. Transfer resolution 512x512 with anti-aliasing treatment. All software including model construction, lighting, color and animation by Sogitec software.

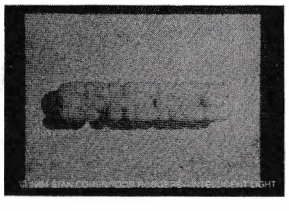


**Patricia Search,** Rensselaer Polytechnic Institute, Troy, NY 12181 (518) 266-6751. "Spirit Two." The image was created by artist Patricia Search with software authors Bruce Edwards, Al Barr, and Gray Lorig. The image was generated on a Data General MV4000 and photographed with a Matrix QCR. Objects were created with superquadrics. The image was created with a ray tracing algorithm.

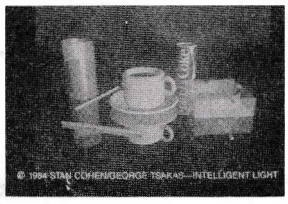
**Philippe Bergeron,** University of Montreal, 3090 Linton, -14, Montreal, Quebec, Canada H3S 1S3, (514) 343-7477. Image designed with a 3-D shaded interactive graphics system called TAARNA, which is written in PASCAL, using the DADS package (Digital Animation Display Software). The computers used are the Cyber 835 and 855, and the terminal used is a raster display with 512x512 resolution (the image is anti-aliased). Programmers/artists are Robidoux, Bergeron, Lachapelle.



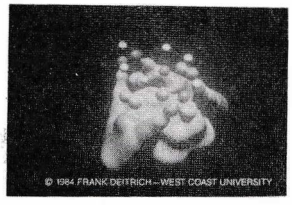
**Roy Hall,** Robert Abel and Associates, 953 N. Highland Ave., Hollywood, CA 90038, (213) 462-8100. The image was generated at Cornell University, by ray tracing on a VAX 11/780, and recorded using a Dunn camera.



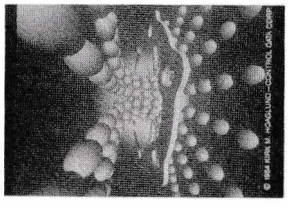
**Stan Cohen, Todd Rogers,** Intelligent Light, Austin Electronics, 17-01 Pollitt Drive, Fair Lawn, NJ 07410 (201) 794-0200. "Spheres." Image created on a DEC VAX 11/780, Adage/Ikonas RDS3000 1024x1024x24 frame buffer, Dunn Instruments Model 632 film recorder. All modeling and image generation software written by Intelligent Light personnel. This image computed on the "Hummer," a 100 megaflop super computer designed by Intelligent Light.



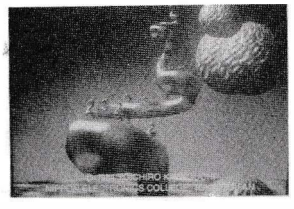
**Stan Cohen, George Tsakas,** Intelligent Light, Austin Electronics, 17-01 Pollitt Drive, Fair Lawn, NJ 07401, (201) 794-0200. "Reflections of Reality with Straw and Soda." Image created using a DEC VAX 11/780, Adage/Ikonas RDS3000 1024x1024x24 frame buffer, Dunn Instruments Model 632 film recorder. All modeling and image generation software written by Intelligent Light personnel.



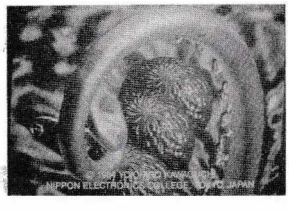
**Frank Dietrich,** 3477 South Ct., Palo Alto, CA 94306, (415) 494-9019. "Vedic Blobs." Programmers used in producing image: Jim Blinn, Blobby molecule and rendering programs; Greg Turk, David Coons for computation of Vedic numbers. Computed on a VAX 11/750, displayed on a Ramtek 9400. Vedic numbers with harmonic properties are used to define color location, size and blobbyness of molecules. These are rendered with slightly modified FORTRAN programs by Jim Blinn.



**Kirk M. Hoaglund,** Control Data Corp., C.I.M. Division, 4105 N. Lexington Avenue, AHS251, Arden Hills, MN 55112, (612) 482-3115. "Flow." The programmers producing the image: J.R. Miller, M.D. Hastings, D.R. Starks, C. Hsu, K.M. Hoaglund. This image was produced using the geometric construction and constructive solid geometry capabilities of the ICEM Solid Modeler. All imaging accomplished on a Cyber 170/760.

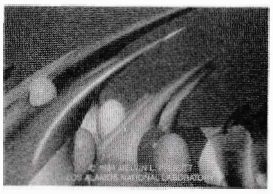


**Yoichiro Kawaguchi,** Nippon Electronics College, 1-25-4, Hyakunin-cho, Shinjuku-ku, Tokyo, 160, Japan, (03) 3637761. "Growth II." Growth model with ray tracing meta-ball, contained reflection, transparency and normal vector mapping. Used LINKS-1 system, directed by Koichi Omura and developed at Osaka University.



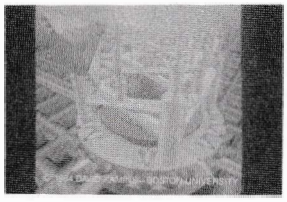
**Yoichiro Kawaguchi,** Nippon Electronics College, 1-25-4, Hyakunin-cho, Shinjuku-ku, Tokyo, 160, Japan (03) 3637761. The image was produced, displayed and recorded at Nippon Electronics College, in cooperation with Osaka University. Growth model with ray tracing meta-ball, contained reflection, transparency and normal vector mapping. LINKS-1 system, directed by Koichi Omura and developed at Osaka University.

**Melvin L. Prueitt,** Los Alamos National Laboratory, MS D415, Los Alamos, NM 87545, (505) 667-4452. "The Flora of Vega." This image was produced by a program called Grafic on a Cray computer. Recorded on a Dicomed film recorder.

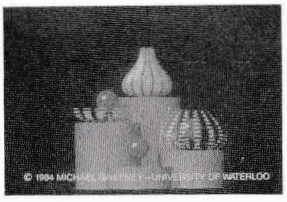


**Melvin L. Prueitt,** Los Alamos National Laboratory, MS D415, Los Alamos, NM 87545, (505) 667-4452. "Easter Promise." This image was produced by a program called Grafic on a Cray 1 computer. Recorded on a Dicomed film recorder.

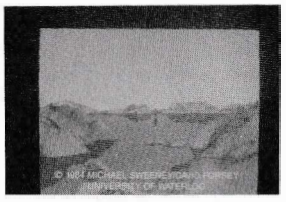
**Jim Dixon,** Crotalus Digital, Inc., 308½ South State St., Ann Arbor, MI 48104, (313) 761-9211. "El Azteco's." Image produced on Cubicomp, Inc. local solid modeling package hosted by an IBM/PC. Proprietary coloring and highlighting software developed in-house.



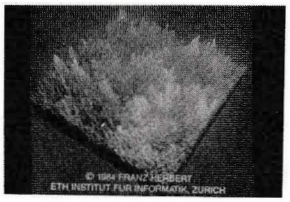
**David Kamins,** Boston University, Academic Computing Center, Computer Graphics Laboratory, 111 Cummington St., Boston, MA 02215, (617) 353-2780. David Kamins: artistic director, image and animation system. Glenn Bresnahan: solids modeling system. Solids modeling and image and animation systems implemented in C, and running on an IBM 3081. Image recording system also written in C, running on a PDP 11/23 connected over a broadband network to the 3081. Matrix 4007 used as film recorder.



**Michael Sweeney,** University of Waterloo, Computer Graphics Lab, Waterloo, Ontario, Canada N2L 3G1 (519) 884-5420. "The Dali Vases." This image was produced by ray tracing software which handles spline surfaces, and runs on a VAX 11/780. The picture was written into an Adage/Ikonas frame buffer and photographed by a Dunn camera.

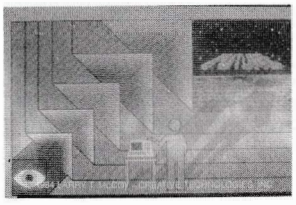


**Michael Sweeney, David Forsey,** University of Waterloo, Computer Graphics Lab, Waterloo, Ontario, Canada N2L 3G1, (519) 884-5420. "Crater Lake." This image was produced by ray tracing software which handles spline surfaces and texture mapped fractals, and runs on a VAX 11/780. The picture was written into an Adage/Ikonas frame buffer and photographed by a Dunn camera.



**F. Herbert, ETH,** Institut fur Informatik, ETH-Honggerberg, CH-8093 Zurich, (01) 575980. Fractal model.

**Patrick Weidhaas,** Lawrence Livermore National Laboratory, P.O. Box 808, Livermore, CA 94550, (415) 422-1817. "Grand Canyon-Winter Scene." Raster image was produced from a digital terrain database of the continental United States. A Cray 1 computer was used; the image was recorded by a Dicomed D48 color film recorder. Visible surface ray tracing is used in the program.



**Larry T. McCoy,** Creative Technologies, Inc., 7630 Little River Turnpike, Annandale, VA 22003, (703) 256-7444. Image created on a Genigraphics 100C system. The artist was Erich Caparas.