SIGGRAPH

JULY/AUGUST 1985

Los Angeles ACM / Special Interest Group on Computer GRAPHics
P.O. Box 90698, World Way Postal Center, Los Angeles, CA 90009

AUGUST MEETING: MICROGRAPHIC IMAGES

Due to SIGGRAPH '85, there is no meeting in July. For this reason, we have combined issues of the newsletter to provide you with an expanded format and an opportunity to showcase the work of some local members.

With Fall school sessions starting soon, our student members may find this month's education emphasis useful. We feature: Art Center, examples of CG images from several schools & a listing of institutions offering CG programs. RANDY RANDALL.

BYE / HI !

AUGUST MEETING
MICROGRAPHIC IMAGES

On August 13, 1985 we will return to UCLA, Moore Hall, Room 100 where our guest will be Diane Wessling Blake, computer artist and Vice President of Creative Development for MicroGraphic Images Corporation of Canoga Park. UCLA is just east of the San Diego Freeway, between Wilshire Blvd. and Sunset Blvd. **SEE MAP ON INSIDE OF LAST PAGE.**

Diane will give a demonstration of the Designers Tool Kit/Professional Version. The system is the product of eight man-years of design and implementation, the goal of which was to produce a computer graphics unit that would align itself to skills that artists already had and that would require minimal training.

A medium resolution computer graphic turnkey system, it operates with 512 x 512 resolution in 4 planes. Major issues discussed will be its user-interface design and modeless operating system. It supports a total of 400 dithered colors with output to color ink jet printers, color dot matrix printers, film recorders, and R.G.B. output devices. The system is Apple II compatible. The Designers' Tool Kit combines the abilities of traditional art tool simulation with computer graphics tools such as shapes, lines, fill, patterns, rotations, scaling and more. This gives the artist maximum flexibility using right-brain and left-brain functions.

Recently presented at the Interface '85 in St. Paul, Minnesota, the system received critical acclaim from human factors professionals. It was featured at the Society of Illustrators of Los Angeles as a preferred computer graphic design tool. The product is seen as a solution to productivity problems in corporate graphic production departments, audio-visual laboratories and in graphic design studios. The unit is included in "The Creative Computer" exhibit at the California Museum of Science and Industry in Los Angeles.

MicroGraphic Images also produces a line of Macintosh enhancements which include: the 1024k MegaMac Upgrade Kit, with MegaRam to RamDisk software and CineMAC, an output port for hi-res (22 khz) monitor or projection display.

During our program, a hands-on presentation will be followed by a slide presentation and a question and answer period. If you have any questions, please call Diane Blake at (818) 992-1190.

MicroGraphic
IMAGES
CORP.

The cover photo is from a film recorder image created with the Designer's Tool Kit.

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* * A LETTER FROM THE PAST AND PRESENT CHAIRPERSONS * *

In the past three years, our Los Angeles group of ACM/SIGGRAPH has grown by leaps and bounds. What used to be a monthly meeting of not more than a dozen members in attendance has shot up to an average of 80-100 per meeting. Our membership not only includes our diverse Los Angeles talent, but extends through out Southern California.

The greater Los Angeles area has become a focal point where the leaders in the field make exciting imagery happen. Our local SIGGRAPH mailing list reads like the Who's Who in the Computer Graphics industry. We also have the advantage of numerous colleges offering computer graphics courses with highly qualified instructors (see The Gallery, CG Education: Art Center College of Design and CG Education: Educational Institutions in this issue, ed).

The result: an enormous community of programmers, artists, research and developers, etc....that all live and work here. The local SIGGRAPH chapter has the task of networking these talented individuals together. Our events, newsletter and monthly meetings try to keep our members abreast of who is doing what in the greater Los Angeles area. In the 1984-'85 year, the group meetings saw demonstrations from Apple Computer Corp., Digital Productions, Silicon Graphics, Omnibus Computer Graphics Center, and Magi. We had receptions before the preview of "Star Fighter" and the "On The Threshold" event at the Hollywood Palace.

This year's meeting schedule is equally exciting. Already slated is Evans and Sutherland, MicroGraphic IMAGES, Robert Abel / ABEL IMAGE RESEARCH, Magi, Raster Technologies....etc. We also just co-hosted a computer graphics reception at the Show Biz Expo '85 at the Santa Monica Civic Auditorium, on June 29. Nancy Collier and Kathy Davis did a fantastic job putting that one together, as you can see in the above photo taken of some of the members in attendance.

We now have an established office in Santa Monica.....Phone : (213) 392-1074. Please feel free to call for information regarding membership, publications, video tapes or upcoming conferences. And, if you feel there are topics, events, etc...that we haven't covered in the newsletter, or computer graphics facilities where you would like to have a meeting, we need your input. We also need many helpful hands, hearts and time....We are looking forward to a great year....

MOLLY MORGAN
Chairman '83-'85

JOAN COLLINS
Current Chairman '85-'86
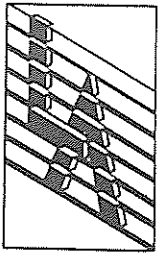
UPCOMING MEETINGS

* * * SEPTEMBER GENERAL MEETING * * *

Our September meeting, at Cal Tech, will be hosted by a new subsidiary of Robert Abel and Associates, ABEL IMAGE RESEARCH, (AIR). This advanced-software and production company uses a straight forward approach to generating, moving and combining realistic computer scenes; based upon the fourteen years of experience Robert Abel has accumulated while winning awards for quality computer animations. In the field of commercials alone, the studio has won twenty-three coveted Clio awards.

In San Francisco, on July 23, Abel Image Research will be formally unveiling their software package. A detailed discussion of this software package will be the basis of the Sept. meeting. For information, call: (213) 462-8100.

* * * OCTOBER and NOVEMBER GENERAL MEETINGS: * * *

Our tentative schedule calls for a discussion of new products by Xerox Corporation in October, followed by Raster Technologies in November.

CONVENTIONS

* * * COMPUTER GRAPHICS '85 EAST * * *

Computer Graphics '85 East will be held August 13-15, 1985, at the Bayside Convention Center, Boston Massachusetts. 5 program areas are offered: Business & Management Graphics, Human Factors & User Interfaces, Industry Standards, Statistical Graphics, Visual Arts & Design.

Two Special Sessions are offered to provide a unique perspective on Business Graphics: "Overview of the Business Graphics Industry" and "What's the Best Graphics Package for the IBM PC: Top Vendors in One Place." The registration Hotline is 1-800-225-NCGA

* * * THE INSTITUTE OF ARTIFICIAL INTELLIGENCE * * *

The Institute of Artificial Intelligence offers (on a year-round basis) two dozen seminars and courses, from one day to two months in length. Upcoming programs include: "Next generation Computer Hardware," "Overview of Machine Vision," "Intelligent Machines" and programing topics AI, logic & LISP. For info call Rina Chow at (213) 201-0106

EXHIBIT - CONVENTIONS

* * * EXHIBIT OF COMPUTER GENERATED ART * * *

The University of Colorado, at Colorado Springs Gallery of Contemporary Art, is organizing a Computer / High-Tech exhibition for Fall 1985 (Oct. 4 - Nov. 30). They are looking for fiber work or other craft media related to computer-generated process or design. Interested artists may submit slides & resume to: UCCS Gallery of Contemporary Art, P.O. Box 7150, Colorado Springs, CO 80933-7150.

* * * SAN DIEGO COMIC - CONVENTION * * *

Are you still a kid at heart? We all remember Comic books, and on these pages you have been informed that Comic art is a growing market for computer graphic image production. LA SIGGRAPH members Mike Amron and Peter Sorensen will conduct a program at the San Diego Comic - Convention entitled "Images of Fantasy: The Fascinating World of Computer Graphics." The program will encompass graphic design, cartoon animation, object animation, visual simulation and computer graphics in the print media. The date/time/place is Friday, Aug. 2, from 5-7 p.m. at the San Diego Convention Center.

Friday is Get-away-Day, and San Diego is a GREAT town for a vacation weekend; sooo... lets go south and visit Mike and Peter. Congratulations, Mike on your first published illustration in Architectural & Engineering Systems Magazine, June 1985. Peter - when can we get your new book?

* * * SHOW BIZ EXPO '85 REVIEW * * *

Our thanks to Live Time Prod. for providing the opportunity for an exhibit of computer art and an LA SIGGRAPH reception at the recent Show Biz Expo '85 at the Santa Monic Civic. The show featured all types of computer hardware and software, including CG systems, in use in the entertainment industry. One of the systems on exhibit, from MicroGraphic Images, will be demonstrated at our August meeting.

The SIGGRAPH reception was a cozy affair which featured '85 demo tapes from Omnibus & Robert Abel. Thanks Nancy, Kathy, Joan, Peter, Joy, Lee & everybody else who helped!

* * * A/E SYSTEMS REVIEW * * *

The Architectural / Engineering Systems '85 Coference illustrated a growing interest by vendors in the CAD market. The show, which was held June 3-7 in Anaheim, emphasized the implementation of computers in the architectural and engineering office place. On display, were advances in solid modeling, drafting and P-C based systems. A highlight of the show was the hands-on demon-

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THE LIBRARY

* ART AND THE COMPUTER *

Computer graphics is beginning to provoke the curiosity of
the general public and receive recognition from the pub-
lishing world. A new volume, Art and the Computer by
Melvin Prueitt, extolls the wonders and benefits of our
beloved craft. This book showcases almost 300 full-color
images from a wide range of application areas. Prueitt
attempts to promote computer graphics in science and art
but emphasizes too much the author/artist's computer art-
work and his personal philosophies on the mystique of
technology.

Art and the Computer is divided into two parts: Subject
and Gallery. The subject defines the principles involved
in applying the computer as an art tool for artistic ex-
pression, for the aesthetic display of scientific data and
mathematical formulas, and for art research. The Gallery
is a collection of explanations: the images are arbitrar-
ily grouped according to style, technique, application, or
subject matter. The preface states that the book is "a
report on some of the fine works of art being produced by
artists using computers," that it will educate "the novice
and art professional" and inspire "passive artists" who
have creative imaginations but lack hand-eye coordination.
However, the book extols the abilities of computer pro-
grammer/artists and, at times, tends to be condescending
to unsophisticated lay artists.

The book's appeal is also limited by it's choice of il-
lustrations. Over half the images are by the author,
whose distinctive style is not representative of the com-
puter art world.

Art and the Computer concentrates on the computer as an
art tool. Although it attempts to encourage artists and
art lovers to embrace this new technology, the real heroes
are the computer programmer/artists: "only the program-
mers can fully see the beauty of their work, the labyrin-
thine pathways woven among the subunits of instructions,
the subtle twists in logic, the elaborate sequence of
operations, and the synergism with which all components
function to bring about a final result. Only programmers
know the sweat, toil, and sometimes despair that goes into
a program to make it sound and to free it of bugs that
lurk in logical niches."

Prueitt explains that the computer can emulate techniques
known to artists for hundreds of years: perspective, sha-
ding, color mixing, area perception. He then describes
the concept of a computer program, followed by the types
of programs used to implement these techniques, such as
hidden-line and hidden-surface removal, shading and
shadowing, ray tracing, antialiasing, 2-D key-frame an-
imation, 3-D realtime simulation. Unfortunately, Prueitt
goes to great lengths to oversimplify an explanation of

human visual physiology, asserting that our understanding
of human perception will help us produce better computer
pictures, but makes no attempt to simplify his discussions
of the mathematical algorithms.

One excellent, but all too brief, section explains the
benefits of computer-aided art. Sculptors not only design
three-dimensional objects, but add motion and control and
viewer's pathway around their work. Painters not only
render a scene, but change the viewpoint of the observer,
or the size, shape, position and color of objects. His-
torians preserve art for posterity on tape or disk. Re-
searchers, interested in visual harmony, use the computer
to modify various picture parameters quickly and easily,
to study people's tastes in color, form, mood, and motion.

Art and the Computer attempts to publicize and popularize
aspects of the burgeoning computer graphics industry. The
lack of elementary textbooks that explain computer graph-
ics hardware and software technology in simple verbal and
visual terms has motivated the author to review the basics
quickly in addition to covering his subject. His fault in
this is that he sometimes covers too much in too little
space.

The industry is young, the needs are great, and expecta-
tions are high. Carl Sagan, who authored the introduction
to Art and the Computer, sums it up nicely: "one of the
compensations for living in an epoch as unstable as ours
is the pleasure of witnessing the birth of inventions,
trends, and ideas which, if we are not so foolish as to
destroy ourselves, will be essential integuments of human
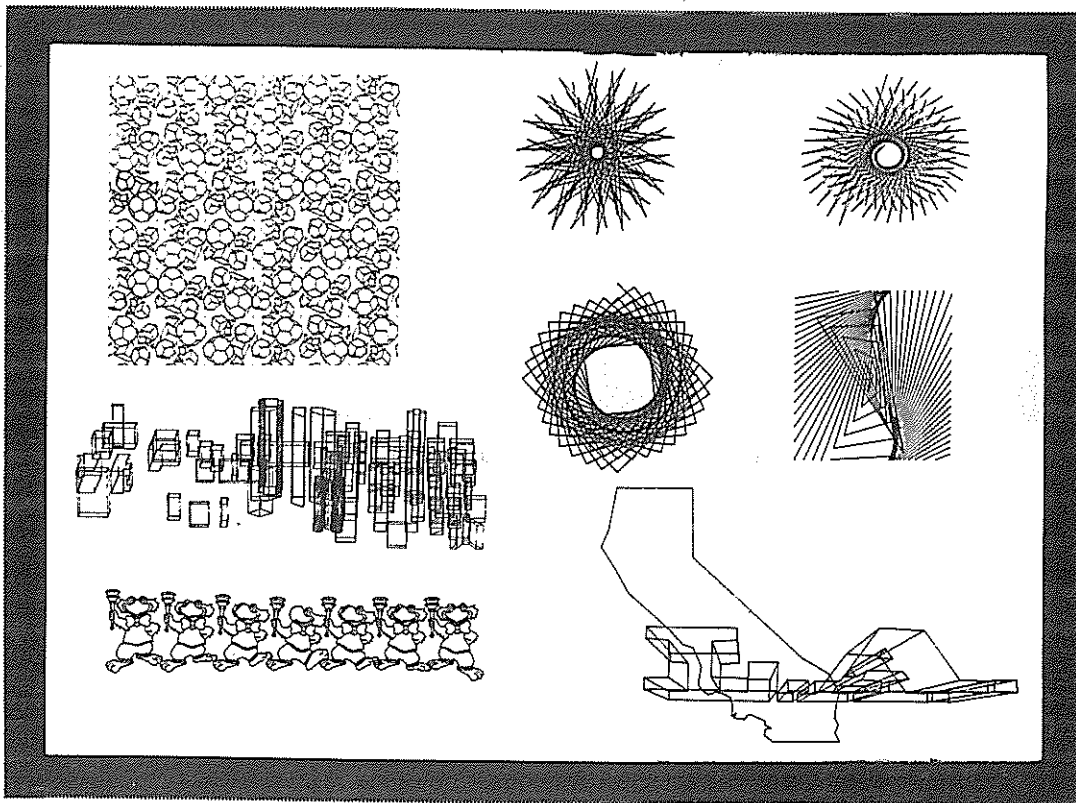cultures yet to come." MAXINE BROWN.

"Shoes," a digitized video
image produced with a HP 1000
plotter. DEBBY WINSBERG.

The Gallery continues our education theme, in this issue, by showcasing artists who have worked on CG systems in use at Southern California educational institutions.


A sample of images created by Mike Amron on the HP 1000 system at Cal State Long Beach. "Polygon Tool," upper left or frame, makes use of a module which, when rotated in any direction, fits other modules seamlessly to create a larger design.

"L.A. California," lower right, is a part of an animation project plotted on animation paper and filmed in 16mm. MIKE AMRON.
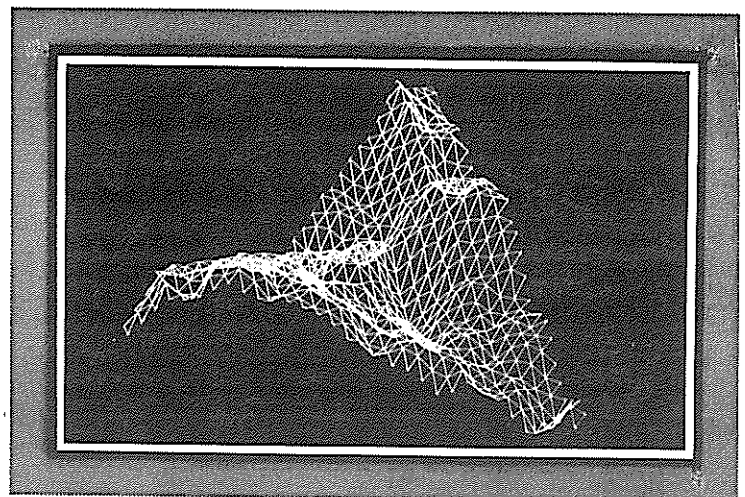

"Mountain" is a 3-D distorted Grid produced on a VAX 11/750 with an Evans & Sutherland PS 300 Calligraphic System at West Coast University. This work is typical of student work from Art 211. PATRIC PRINCE.
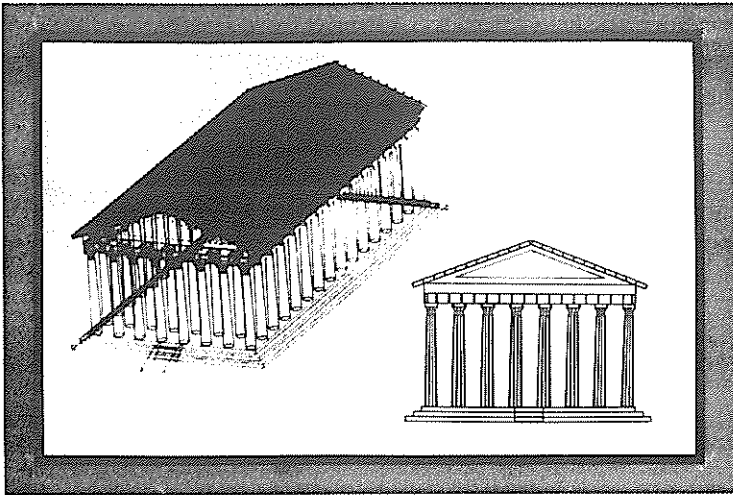
THE GALLERY
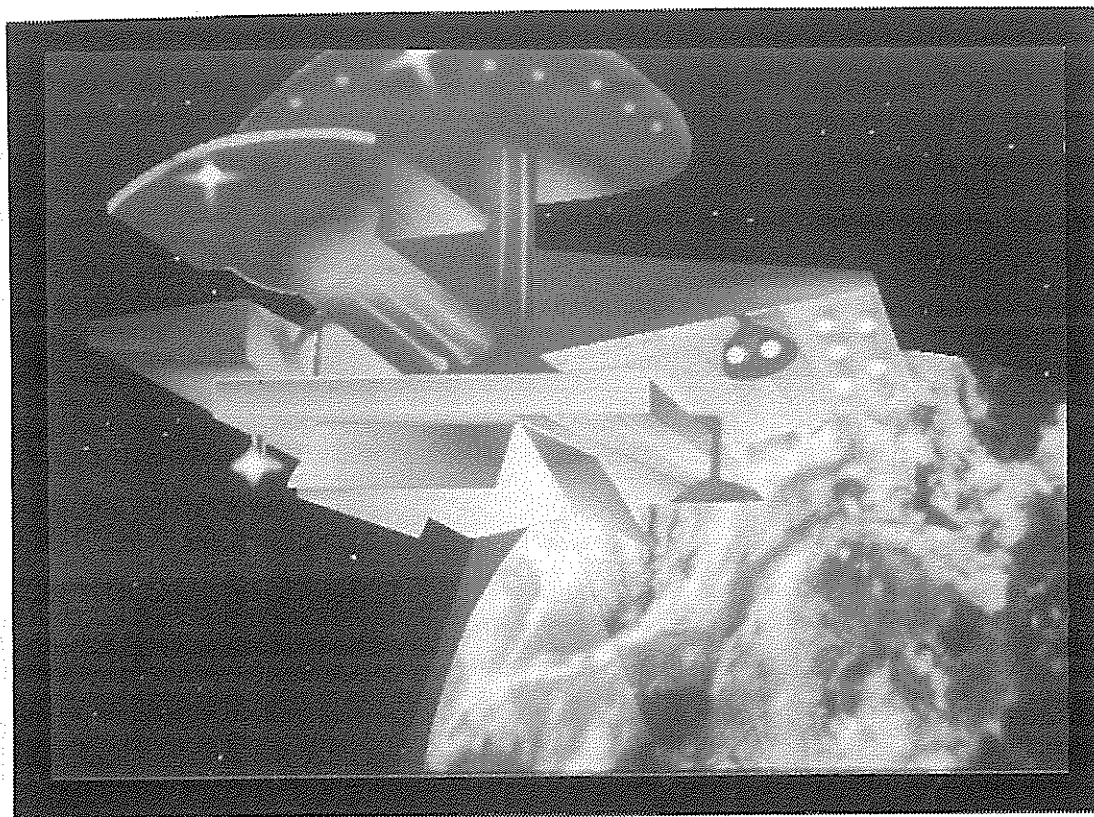
"Synapse" is a frame from an animation piece by Lee Lunday and Alanda McCarley. Created on the CGL Images I paint system at Columbia College, the picture takes advantage of the systems three-frame buffer capacity. The earth was scanned in first and saved separately with a colormap designed especially for it. The UFO was then created by first outlining the main shapes and areas, then filling the areas in with polygons. The entire procedure took about two hours of computer time. LEE LUNDAY.
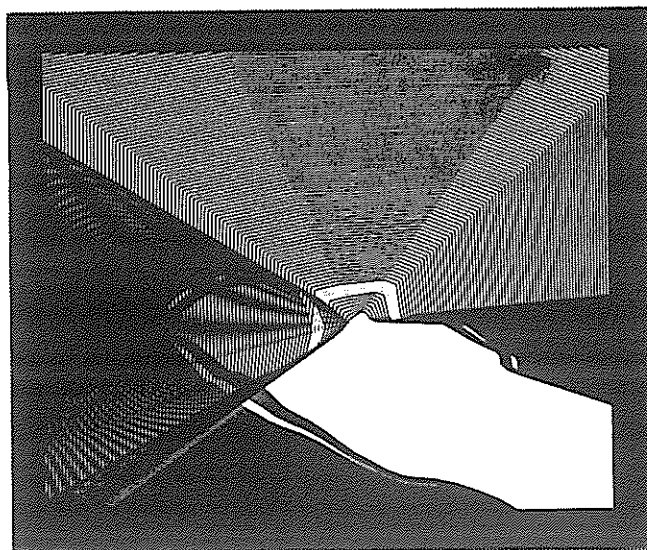

This untitled pice is from an animation study by Debby Winsberg. It was executed, using an interpolation program, on a HP 1000 system at Cal State, Long Beach. DEBBY WINSBERG.

"Parthenon," by Carol Stieglitz, started with research in Athens, Greece. After study of the original architectural drawings, Carol pencil sketched diagrams indicating plotting points and measurements for X, Y coordinates. This data was used to build a model on the Geometric Design Processor (GDP), an IBM Software Research System running on an IBM 4341 at UCLA.
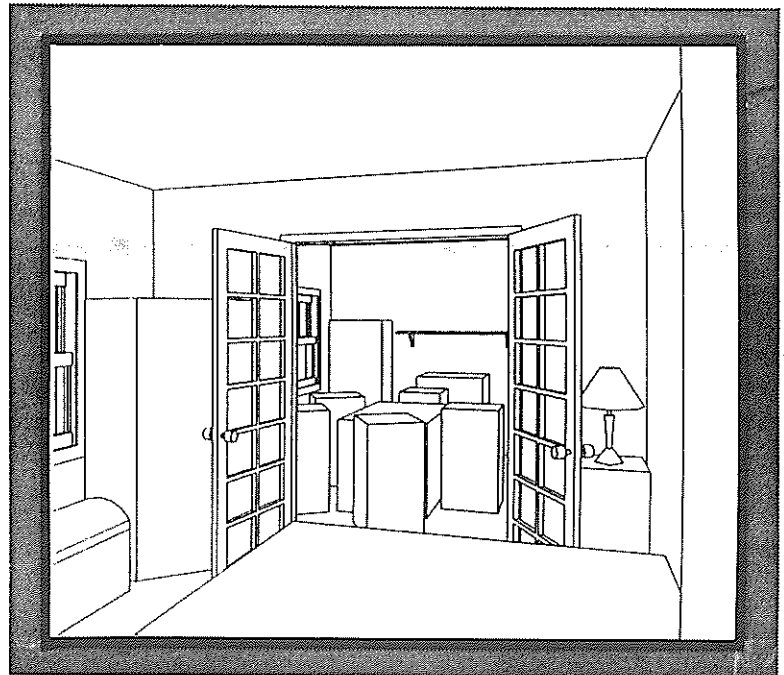
"Interior" is an example of work produced by Karen Guz at the Computer-Aided Design Laboratory in the Manufacturing Engineering Program at UCLA.
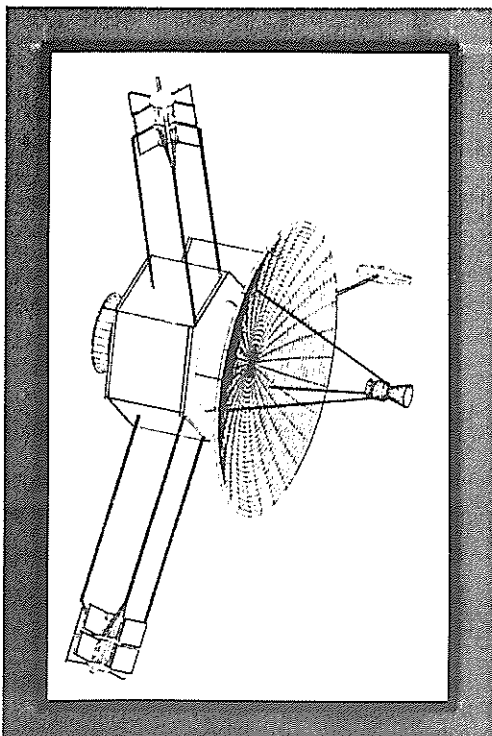
Another example of work from the Computer-Aided Design Laboratory in the Manufacturing Engineering Program at UCLA.

CG Education
* * * Art Center College of Design * * *
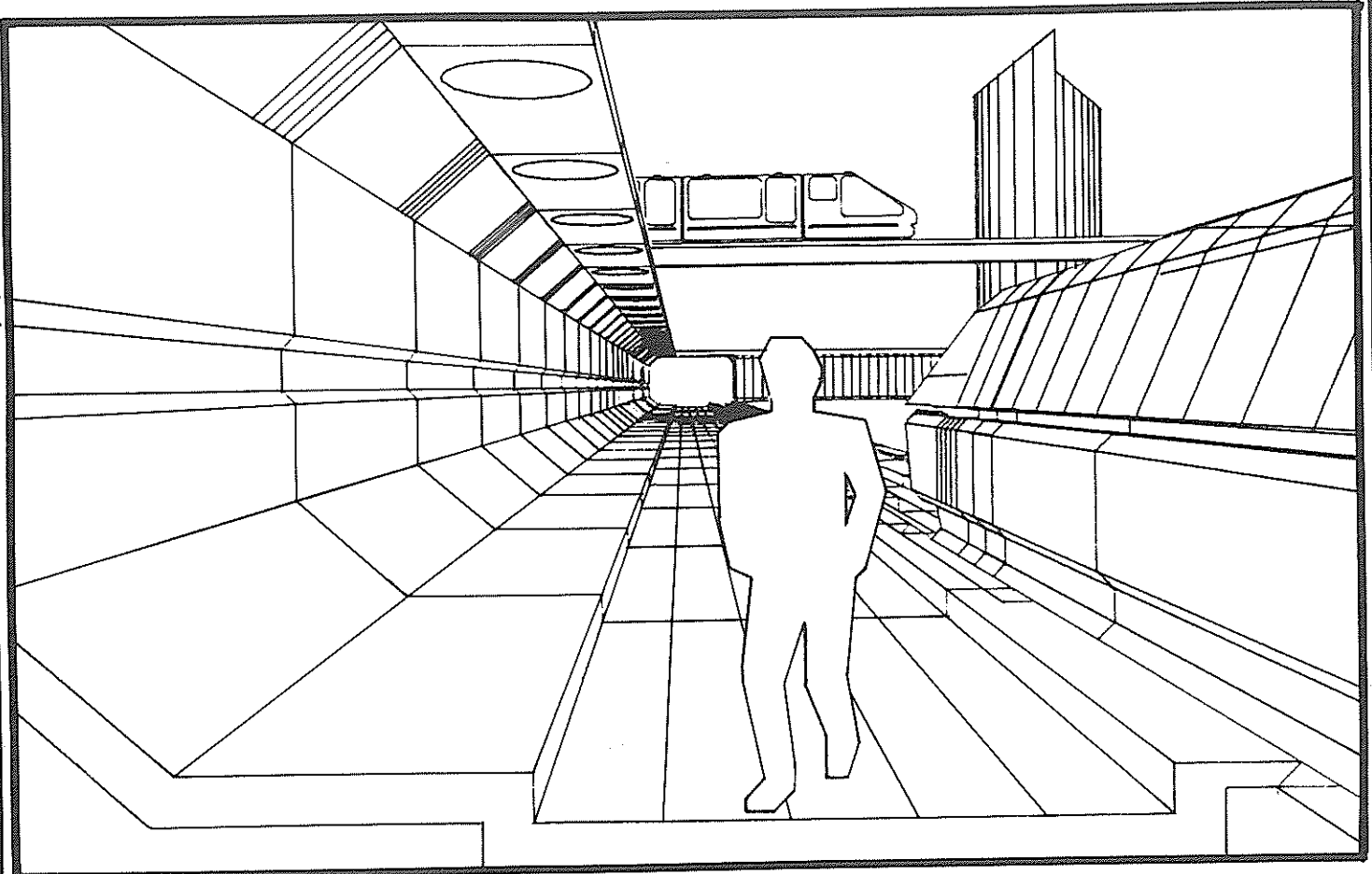
Art Center College of Design is an independent, non-profit four-year college specializing in professional education for the fields of industrial design and the communication arts. Their approach is to treat computer graphics as a set of versatile new tools to be integrated into a well-rounded design education. With this in mind, a formal major in Computer Graphics is not offered; rather, elective classes are open to students of all majors.

Program Administration and Faculty:

The Computer Graphics program at Art Center is administered by the Academic Studies Department under the direction of Dr. Richard Hertz. Mr. Robert Schaff is the Director of Computer Education Services, coordinating software development and laboratory acquisitions, and serving as the liaison to the Caltech Computer Graphics Laboratory. The program was begun in 1982. Students participating in the program are introduced to a wide range of tools & techniques, beginning with text editors, culminating in 3-dimensional solids modeling & animation.

The program's faculty includes Mr. John Biedenharn, Dr. James F. Blinn, Mr. Larry Burchard, Ms. Sue Dotan, Ms. Tanya Ericson, and Mr. Steve Sherer. In addition, Art Center maintains a formal exchange program with the California Institute of Technology.

Facilities:

A total of ten IBM Personal Computers, including XT and AT models, an ATT Videotex Frame Creation System and terminals, and two Aesthedes CAD machines are used in formal coursework. Graphic and text output is obtained from multi-pen plotters, dot-matrix line printers, a Polaroid video printer, and traditional photographic techniques. In a majority of cases, software has been developed either at Art Center or in collaboration with Caltech, specifically to meet the needs of the artist/designer.

Coursework is geared to providing the student with a variety of fundamental concepts which will find wide application throughout the design community. Art Center recognizes the significant role which computer technology will play in art and design in future years and is enthusiastically preparing to meet this challenge.

Course Curriculum:

Introduction to computers: Course topics include frame buffers, paint programs, elementary image processing, two-dimensional graphic layout and design, digital matting, and color map animation.

Computer Graphics 2: Course topics include three-dimensional coordinate geometry, coordinate transformations, wireframe data base design, articulation, advanced modeling concepts, and an introduction to solids modeling.

Computer Aided Design: This course is taught on two dedicated advanced CAD systems capable of real-time B-spline manipulation and image composition in 2 and 3 dimensions. Course projects include letterform and logo design, industrial design, transportation design, package design.

Independent Projects in Computer Graphics: Course is conducted at Caltech in a seminar format with joint participation by Art Center and Caltech students. Coursework is supervised by instructors from both schools. Course projects can encompass three-dimensional solids modeling, full-color shaded rendering, image composites, graphic layout and design, ray-tracing of selected images, animation, and development and testing of new software techniques in computer graphics. Class enrollment and hours by instructor's permission.

Electronic Media - Videotex: This course gives students the opportunity to explore the Videotex frame creation system as well as the current and future applications of this system to the advertising marketplace. Students learn about Gateway Videotex, a test market in Orange County initiated by AT&T and the Times-Mirror Corporation. The class serves as an introduction to new electronic media, which will have significant impact on the marketing and merchandising of products through consumer's home television sets.

ANNONCEMENTS

* * * THANKS ARE IN ORDER * * *

This double issue is posible only because of time & hard work volunteered by SIGGRAPH members who have come forward to contribute something to our organization. These people include: Mike Amron, who has pushed for more graphics & has taken over the supervision of paste-up. Lee Lunday stays in the background, but gets things done. Her art work appears in this issue, she did much of the physical paste-up and the majority of the phone calls. Ed Harrison provides us with a home base & a hard disk for our files. The newsletter is now sent over modem to Ed for file maintinance and print-out. Contributors are encouraged to send files over the phone lines, rather than sending hard copy. Dorothy Savay has researched articles &, along with Lee Lunday, typed them into the computer. Carol Stieglitz & Christa Schubert are CG artists who have contributed ideas & artwork. Christa's designs have been seen in the last 2 issues, Carol did the cover design for this issue. Execution of the cover logo, borders and other art was done, by Randy Randall, on the Macintosh & LaserPrinter thru the gracious donation of Richard Iredale and Apple Computer Corp. Thanks to every one! RANDY RANDALL.

* * * QUANTEL PAINT SYSTEM FOR SALE * * *

A local SIGGRAPH member has a Quantel Paint System for sale, with software and bit pad. If you are interested, contact Randy Randall, LA SIGGRAPH Editor.

WILL THE SELLER ALSO CONTACT ME, your name and phone no. disappeared when a briefcase was stolen from my car.... (Ed.). RANDY RANDALL.

* * * ARTISTS NEEDED * * *

Trivek needs volunteers to use their new PC based color vector computer system to create images for a company demo. Facility is available to capture images, off the screen, so that artists may add to their portfolio. Please contact Tim Sakash at (714) 893-4944. NANCY COLLIER.

* * * MICRO SYSTEM TUTORING * * *

Ed Arroyo, an LA SIGGRAPH member, is offering tutoring on a midrange, 640 x 400 Res, IBM PC system. It has graphics and digitizing capabilities with matting ability. Contact ED ARROYO at (213) 441-3895.

* * * NEW CG MAGAZINES SEEKING CONTRIBUTIONS * * *

Architectural & Engineering Systems Magazine is seeking writers for their new magazine. Send articles on CADD, computing in the office or other issues of interest to the architectural and engineering community to Architectural & Engineering Systems Magazine, Mark Brownstein, Executive Editor, 123 Richmond Street, El Segundo, CA 90245; or call (213) 322-5434. MIKE AMRON.

The Visual Computer, International Journal of the Computer Graphics Society (CGS), is also seeking contributions. Information reguarding submissions may be obtained from Randy Randall, LA SIGGRAPH Editor, 9703 Washington Blvd., Culver City, CA 90232, (213) 665-3835.

The IEEE is also introducing a new publication, Computer Graphics and Applications. The focus will be computer workstations, expert systems, surface modeling, microcomputer graphics, art and animation, medical applications, electronic designs and videotex. Write to IEEE Computer Society, 10662 Los Vaqueros Circle, Los Alamitos, CA 90720 for information.

THE DREAM IS ALIVE

A NOTE FROM THE EDITOR: The noble dream of further research and exploration of the space frontier is alive, and can be experienced here on earth. The Threshold Corp. has produced a new IMAX(r) film, sponsored by the Smithsonian Institution's National Air and Space Museum and Lockheed Corp. It is entitled "The Dream Is Alive." This film is unique & historic because several astronauts were trained to operate the IMAX camera, NASA provided the opportunity for its use aboard three Shuttle flights in 1984, and this is the only actual live footage from space in this most dramatic film media.

The IMAX image has six times the negative area of conventional films released in theatrical 70mm format and, in the special IMAX theaters, the screen is much closer to the average viewer. In addition, in my experience at MGM, I have encountered few individuals with the skill and dedication to quality of David Keighley, of David Keighley Prod., Ltd., post production consultant on "The Dream Is Alive." The result is an experience which even the astronauts claim is as close to the real thing as you can get, here on earth.

I encourage you to attend a screening of this historic film at the Museum of Science and Industry in Los Angeles. It will be playing daily thru December. For schedule information call (213) 744-2014; for ticket info, (213) 744-2015. RANDY RANDALL.
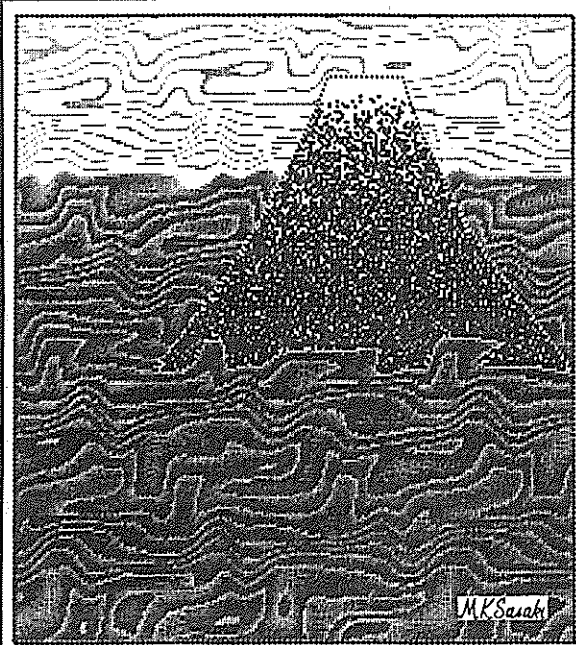
"Mt. Fuji in Cloud Sea". made in 1984.

****REPORT FROM CG TOKYO '85****

I had the honor and pleasure to be invited by Computer Graphics Tokyo '85 to present a paper on my work: "Vector Graphics for the Graphic Designer and Artist". I was one of 28, and one of 2000 visitors the conference attracted this year. Under Dr. T.L. Kunii, President of the CG Society, and conference co-chair Dr. David F. Rogers from the US Naval Academy, Annapolis, Maryland, a 4-day program was developed in the following groupings and topics:

Keynote Lectures: "Future Directions of 3D CAD/CAM: A Perspective on FA" (Tony C. Woo, Univ. of Michigan, USA); "Technical Trends of Computer Graphics" (Michael J. Wozny, Rensellear Polytechinic Institute, USA); "Technical Trends in 3D Graphic Display" (Louis J. Doctor, Raster Technologies, USA).

Tutorials: "Procedural Elements for Computer Graphics" (Dr. David F. Rogers, US Naval Academy); "Geometric Modeling: Data Structures and Applications" (Tony C. Woo, Univ. of Michigan); "Do It Yourself 3D Animation" (Dr.Nadia Magnenat-Thalman and Dr. David Thalman, Univ. of Montreal, Ca.).

Technical Sessions: Advanced Graphics Technology:"DYNA-MOVIE BYU: High Performance Calligraphics: Union of Hardware and Software" (D.R. Jones, G.L. Marchant, M.B. Stephenson, Brigham Young Univ., USA); "Accelerated Ray-tracing" (A. Fujimoto, K. Iwata, Graphica Computer Corp., Japan.); "Clustering Geometric Objects and Applications to Layout Problems" (F. Dehne, H. Noltemeier, Univ. of Wuerzburg, W. Germ.).

Geometric Modeling: "A Hierarchical Space Indexing Method" (K. Fujimura, T.L. Kunii, Univ. of Tokyo, Japan.); "Invertible Set Operations for Solid Modeling" (H. Toriya, T. Satoh, H. Chiyokura, K. Ueda, Ricoh Co. Ltd., Japan.). Industrial Directions of CG: "Advanced Systems Integration Management via CAD Graphics" (Robert T. Bannon, A T & T Communications, USA); "Communication and Graphics" (M.G. Rawlins, V. Uttley, Graphic Software Systems Inc. ,USA); "Designing a Personal Computer-based CAD/CAM Workstation" (S. Tsurumi, J. Yamada, Hitachi Ltd., Japan.).

Graphic Standards: "Considerations in Developing High-Performance Systems with Standard Graphics Software" (James R. Warner, Precision Visuals, USA); "A Formalization for the Specification and Systematic Generation of CG Systems" (T. Onodera, S. Kawai, Univ. of Tokyo, Japan.).

Human Interface: "Graphics Interface Tool Development in a Problem Solving Environment" (Kenneth I. Joy, Univ. of Ca., USA); "The Interactive Interface of the CADME System (C. Bizzozero, U. Cugini, Polytechnic of Milan, It.); "Icons and User Interface Communication" (Alice Bernhard, Bernhard Design, USA); "Videographic Query Facility for Database Retrieval" (Nancy H. McDonald, Computer Technology Planning Inc., USA).

Graphics Application: "Three-Dimensional Display of X-Ray CT Image-Extraction and Display of Cerebral Ventricle" (Y. Suto, M. Kato, T. Ozeki, Toshiba Corp.; and M. Ueda, T. Izumida, K. Tarota, Kozo Keikaku Engineering Inc., Japan.); "Color Blindness Tests by Color Graphic Display" (G. Tomisawa, Y. Ban, K. Takahashi, H. Mieno, Science Univ. of Tokyo, Japan.) ; "Developing a Cartographic Geo-Code System (CAGES)" (Robert T. Bannon, AT&T Communications, USA); "Computer Animation in Engineering" (David Muir, Failure Analysis Assoc., USA); "A High-Performance Graphic System for VLSI Design" (T. Watanabe, S. Inoue, T. Nakashima, Atsugi Electrical Communication Lab. N.T.T., Japan.); "A Raster Display Graphics Package for Education" (S.D. Rogers, US Naval Academy; D. Rogers, Annapolis Computer Graphics, USA).

Graphic Network: "Crossover Net: A Graphics/Video Crossover LAN System" (T.L. Kunii, Y. Shirota, Univ. of Tokyo; H.S. Kunii, Ricoh Co. Ltd., Japan.).

Tools for Graphic Artists: "Vector Graphics for the Graphic Designer and Artist" (Christa Schubert, Quikdata-Telecomputing, USA); "Single and Multiple Virtual Movie Cameras for Special Cinematographic Effects" (N. Magnenat-Thalman, D. Thalman, Univ. of Montreal, Canada.); "Production of Artistic Images with the 'Art Processor'" (M. Takakura, Y. Noguchi, H. Takemura, K. Iwasaki, Y. Yamane, K. Katakenaka, N. Kako, Sharp Corp., Japan.); "Art III: a Computer Art System Generating Mathematical Patterns" (Mutsuko and Tateaki Sasaki, Institute for Physical and Chemical Research, Japan.).

Special Sessions: each with several speakers, covered subjects such as: "Present Status of Graphic Standards"; "AI, Expert System and Computer Graphic Standards"; CAD/CAM, Robotics"; "Man-Machine Interface of Data Input for 3D Modeling"; "Personal Computer Based CAD"; "Engineering Workstation".

There were two evenings of video showings featuring a mixed bag of work from industry, commercial studios, NHK, and the US. CHRISTA SCHUBERT.

CG EDUCATION INSTITUTIONS
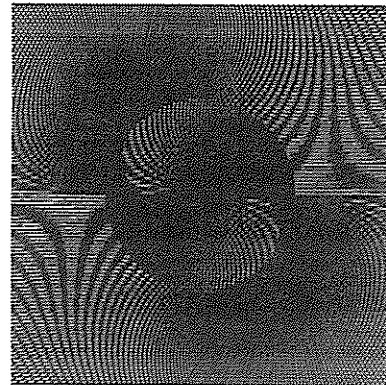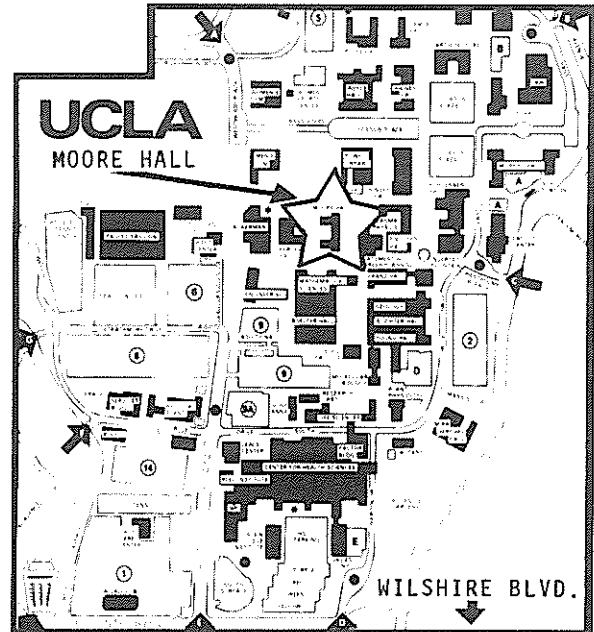
* * * CG EDUCATION * * *

EDUCATIONAL INSTITUTIONS OFFERING CG COURSES
IN THE LOS ANGELES AREA:

1. Art Center College of Design, Pasadena
   Bob Shaft, Director, Computer Education Services
   (818) 577-1700

2. California Institute of the Arts
   Valencia, CA 91335
   Ed Emswiller, Vibeke Sorenson
   (805) 255-1050

3. California State Polytechnic University
   Pomona, CA 91768
   Lazquar Janicin
   (714) 598-4182

4. California State University, Long Beach
   Long Beach, CA 90840
   Dr. Gilpin
   David Solomon, Eng. & Computer Science Departments
   (714) 498-4382

5. California State University, Northridge
   Northridge, CA 91330
   Eudice Fedrer
   (818) 885-3398

6. California State University, Los Angeles
   Los Angeles, CA 90032
   Tony Longson (213) 224-3521
   Art 254L: Survey: The Artist and the Computer
   Art 380: Intro. to Computer Graphics: BASIC, GiGi
   Art 480: Advanced Computer Graphics: "C", DEC Rainbow

7. Columbia College
   Los Angeles, CA 90025
   Debbie Krikun
   (213) 851-0550

8. Orange Coast College
   Costa Mesa, CA 92628-0120
   Donna Westerman
   (714) 432-5629

9. West Coast University
   Los Angeles, CA 90020
   Tony Longson, Director, Computing Center
   (213) 487-4433
   5 Course Certificate Program

   Art 110 : Survey of Computer Graphics
   Art 210 : Programming for Artists and Designers
   Art 211 : Advanced Programming for Artists & Designers
   Art 310 : Computer Graphics Application Packages
   Art 311 : Team Projects .

10. UCLA
    Westwood, CA 90021
    (213) 823-8503
    14 Course Certificate Program

MAP: NEXT MEETING

UCLA
MOORE HALL

WILSHIRE BLVD.

Crista Schubert

Los Angeles ACM / Special Interest Group on Computer GRAPHics
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