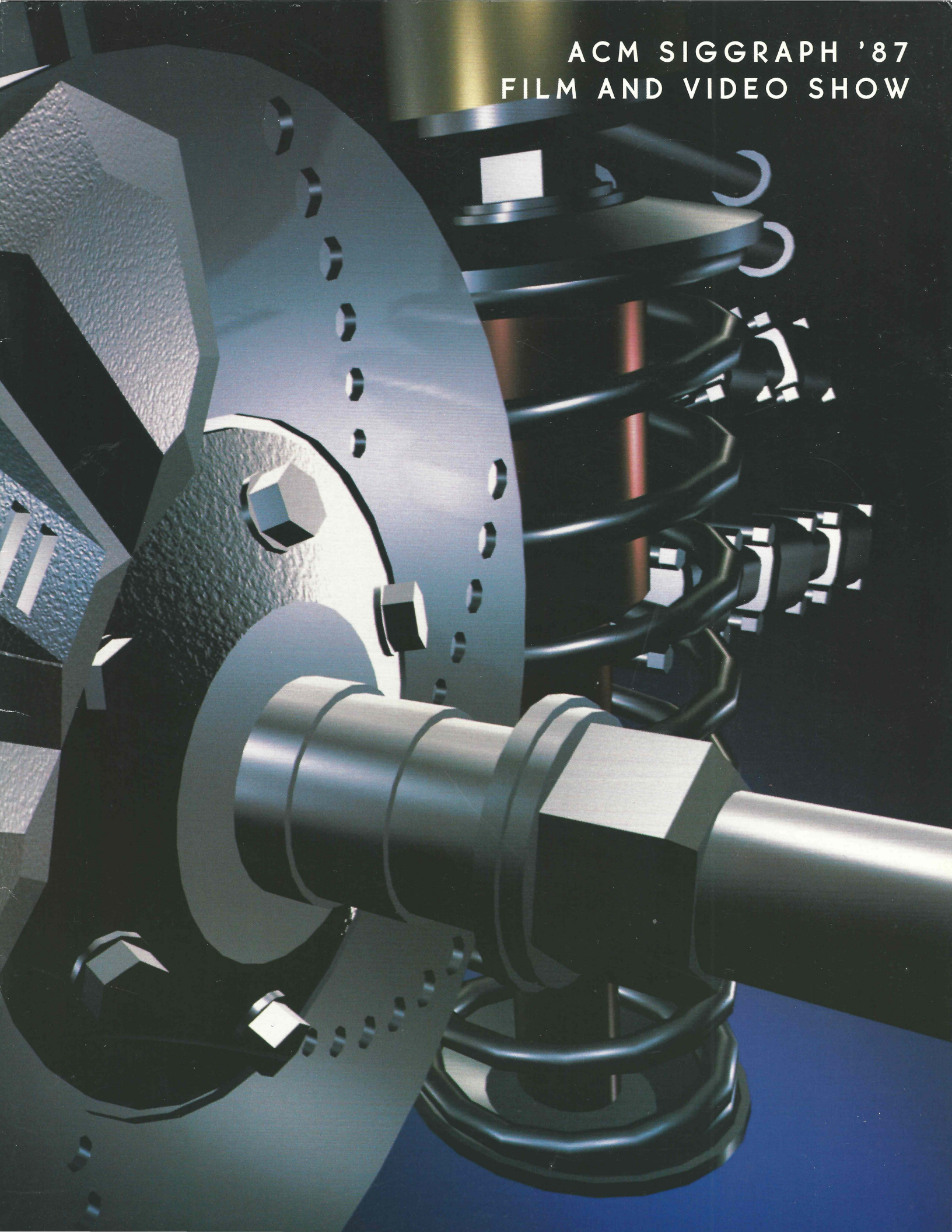


ACM SIGGRAPH '87
FILM AND VIDEO SHOW



14th Annual Conference on
Computer Graphics and
Interactive Techniques
Anaheim Convention Center Arena
Anaheim, California
July 27-31, 1987



Sponsored by the Association for
Computing Machinery's Special Interest
Group on Computer Graphics in cooperation
with the IEEE Technical Committee on
Computer Graphics

CATEGORIES

RESEARCH
CORPORATE COMMUNICATIONS
SCIENCE AND INDUSTRY
BROADCAST
FINE ART
MUSIC VISUALIZATION
THEATRICAL MOTION PICTURES

JUDGES

Ken Knowlton, C.G. Consultants
Larry Elin, Cranston/Csuri Productions
Gunter Sabionski, NASA Interactive Graphics Lab
Dean Eaker, Computer Pictures Magazine
Joanne P. Culver, LAZERUS
Peter Gabriel
Philippe Bergeron, Whitney/Demos Productions
Jeff Kleiser, Kleiser-Walczak Construction Company

SIGGRAPH '87 FILM AND VIDEO SHOW PRODUCTION STAFF

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	Sally T. Beckman, Sirius Communications Group
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	Dennis Doty, Downtown Mars
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JURY TRAVEL ARRANGEMENTS	Joan Collins, Dean Eaker,
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Technical Director	Norm Levin
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Video Engineer	
DECORATOR/DRAYAGE	
PROGRAM CREDITS	Lorraine Nichols, Nichol Graphics
Graphics Design	"F-1 Grand Prix Opening"
Cover Image	Company: Fuji Television Network, Inc.
	Production: Toyo Links Corporation
	E. Jan Hurst Villano
Program Editors	Kathy Davis, KD'esign
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Video Tape Editor	Michael Jackson
Video Tape Operator	Gregory Elwood
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Multi Light Valve Talaria	General Electric
Digital Sound	Hybrid Arts, Inc.
Music/Computer Equipment	ATARI Corporation
MORAL SUPPORT	Bruce Abbott, Michelle Amato, Barb Barker, Dan Boley, Sara A. Bly, Michael H. Bigbee, Maxine D. Brown, Pat Cole, Thomas DeFanti, Denise Gallant, Andy Goodrich, Ellen Gore, Edie Paul, Jack Root, Amie Slate, Jay Wertz, John Whitney, Jr.

**WELCOME TO THE SIGGRAPH '87
FILM AND VIDEO SHOW!**

The SIGGRAPH film and video show is a world-renowned showcase for the most creative and contemporary computer graphics applications. This year, we divided the show into categories which include: research, corporate communication, science and industry, broadcast computer graphics, fine arts, music visualization and theatrical motion pictures. The individual entries are listed in this program by category and order of appearance.

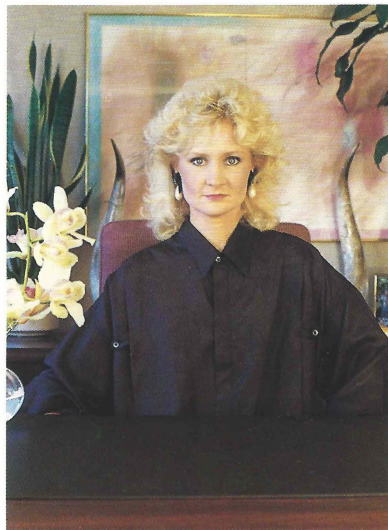
A great deal of work, by numerous people, went into this production. We wish to thank everyone who submitted entries for consideration. We were limited to a two hour show, but we hope that you will be impressed with the final results. To the many people who volunteered their time and considerable talents toward producing what you are about to witness, we send our heartfelt thanks.

And now the SIGGRAPH '87 co-chairs, film and video show production staff, and contributors are pleased to present this year's show.



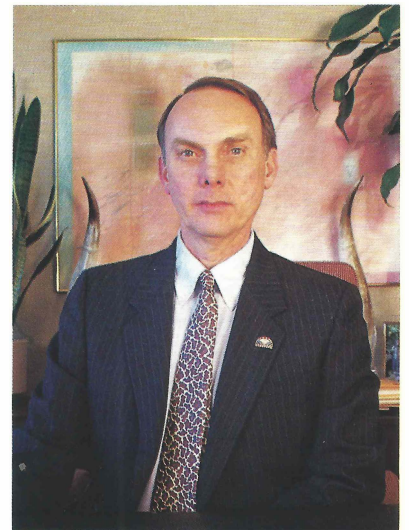
A handwritten signature in black ink that reads "James J. Thomas".

James J. Thomas
SIGGRAPH '87 Co-chair



A handwritten signature in black ink that reads "Joan Collins".

Joan Collins
Film and Video Show Chair



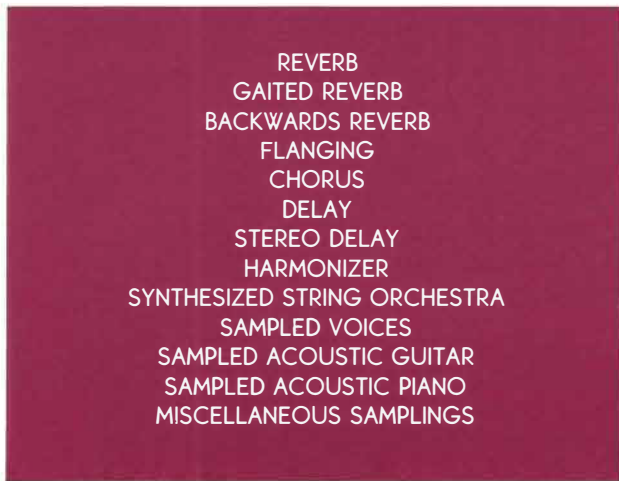
A handwritten signature in black ink that reads "Robert J. Young".

Robert J. Young
SIGGRAPH '87 Co-chair

OPENING SEQUENCE

Hours: Minutes: Seconds

- 00:20:00



WALK-IN MUSIC "AUDIO EDUCATION"

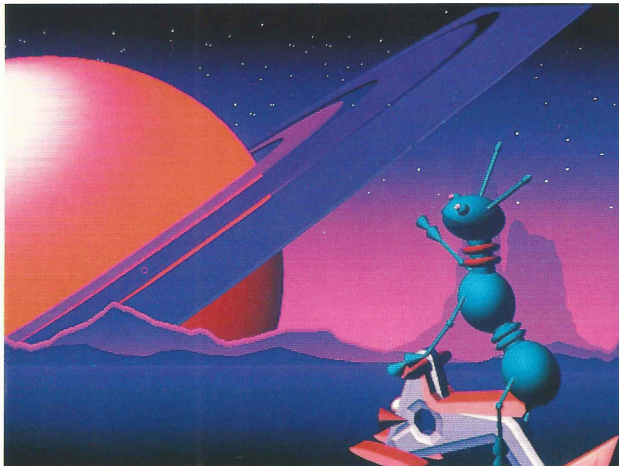
Levin & Many Composing
Burbank, California

OPENING SOUND EFFECTS

Digiffects Sound Library Courtesy of FirstCom
Production Library

The live sound effects sound track is being synchronized to the SMPTE time-code output of a 1" video tape recorder using Hybrid Arts SMPTE Track sequencer and a variety of MIDI instruments (Musical Instrument Digital Interface). The entire track was recorded and mixed in a digital format, stored within the memory of an ATARI ST, and played back live and in synch. All sound effects have been sampled from the Digiffects Sound Library using Hybrid Art's Analog/Digital Audio Processor (ADAP). Sound processing, reverb and special effects were done on a Roland DET-5 and a Yamaha SPX-90.

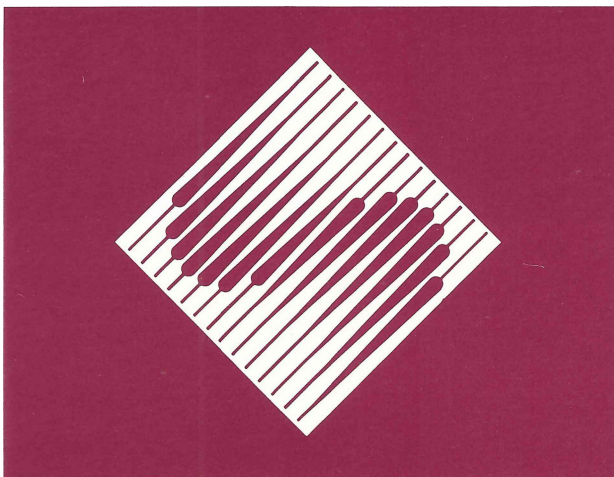
00:00:00



OPENING SEQUENCE WITH BEN BOVA

Joan Collins and Associates, Santa Monica, California
Ron Hays Productions, Beverly Hills, California
Art Center College of Design, Pasadena, California

Two-dimensional backgrounds and three-dimensional models have been designed and drawn on the IBM PC/AT by advanced students in the General Motors Computer Graphics Lab at Art Center College of Design. This sequence is one of the largest computer graphics projections that has ever been created for a SIGGRAPH audience.



SIGGRAPH '87 FILM & VIDEO SHOW LOGO SEQUENCE

Ray Tracing Corporation, Torrance, California
Motion Magic, Hollywood, California

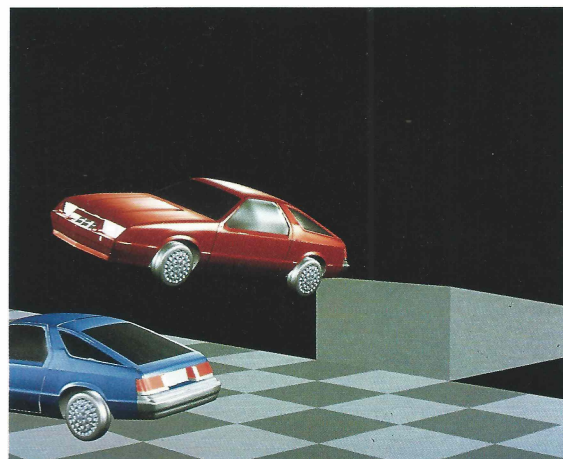
"FAST-FORWARD RETROSPECT"

Edward Arroyo
Pasadena, California

RIGID-BODY DYNAMICS SIMULATIONS

Ohio State University
Advanced Computing Center for the Arts and Design
Columbus, Ohio

The animations are examples of three-dimensional rigid body dynamics simulations calculated using a system under development. The system can accurately model a general class of three-dimensional dynamics processes for arbitrary rigid bodies including articulated figures.

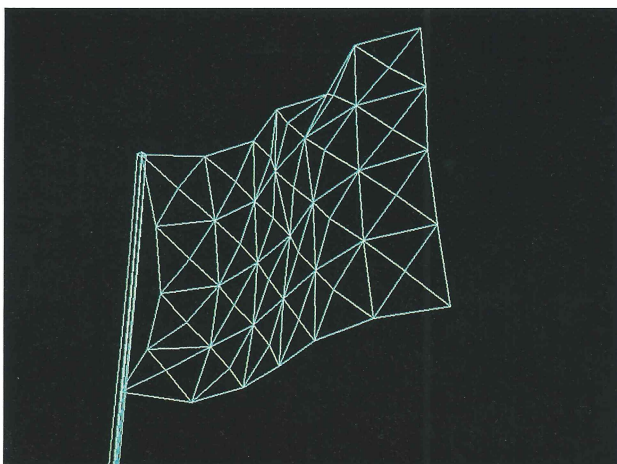


00:05:00

DYNAMIC SIMULATIONS OF FLEXIBLE OBJECTS

Ohio State University
Advanced Computing Center for the Arts and Design
Columbus, Ohio

Using a discrete simulation technique to model the physical properties of objects and interactions with their surrounding environments, realistic motion of a wide variety of flexible objects can be automatically generated. Preliminary motion tests of paper, cloth, flexible spheres, rods, and cables are demonstrated using this technique.

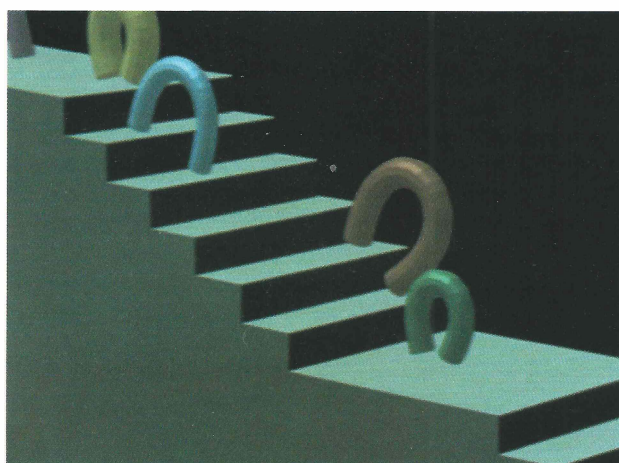


00:07:28

COMPUTER GRAPHICS AND ANIMATION GROUP

M.I.T. Media Laboratory
Cambridge, Massachusetts

Locomotion of the "creatures" in this animated sequence is computed automatically. They can adjust their crawling, walking and "pronking" to adapt to uneven terrain. The "inch worms" use automatic path planning to compute foot placement down the stairs, which may vary in rise and run. Inverse kinematics is then used to control their motion. Likewise, the "walking quadrupeds" and "pronkers" use inverse kinematics to control their leg motion from gait descriptions. The dynamics of motion are computed for the pronkers to simulate their bounding movements.



00:09:05

00:10:41

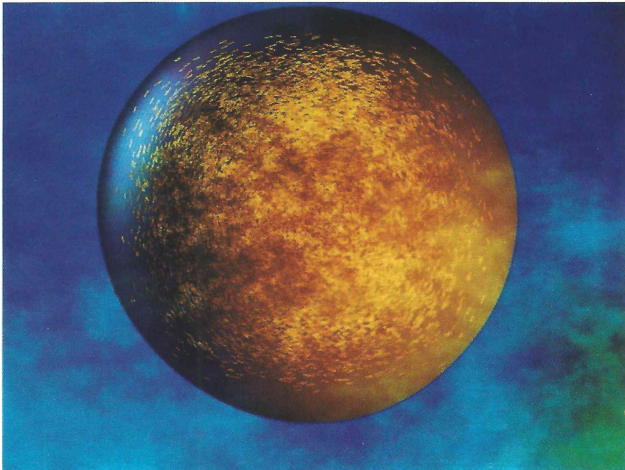


SUN AND SHADE

**Lawrence Livermore National Laboratory
Livermore, California**

The film shows changing lighting effects on three trees, with leaves fluttering in the breeze, as clouds obscure the sun. The moving shadows on the ground include the penumbra from the sun and the effects of illumination from the sky and clouds. They were computed from the point-source shadows by an FFT-based convolution with a combined sun and sky brightness raster.

00:11:28



SYSTEME PARTICULIER

**Studio Base 2
Paris, France**

A particular system of particles and fractal densities.

00:12:27



**TEST OF VOXEL-BASED GROWTH PROGRAM,
SKIRT RESEARCH**

**New York Institute of Technology, Computer Graphics Lab
Old Westbury, New York**

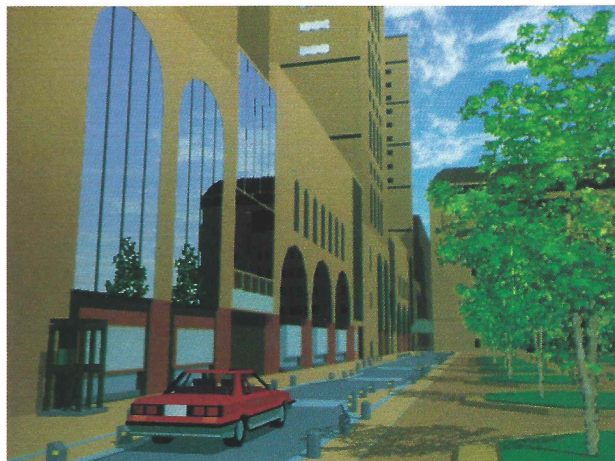
The growth program which produced this animation uses a large voxel array to represent objects in a 3-D environment. Growth of branching organic forms is made to conform to objects in the environment by requiring that growth occur only within a certain proximity of underlying objects.

The modeling and animation of clothing on a moving figure is a challenging problem that not only involves the draping of clothing to conform to the shape of the figure, but the deformation of the clothing due to the forces of gravity and wind resistance. The simplified approach taken here can best be described as "pseudo-dynamics" in which the skirt is a springy mesh which is draped over a z-buffer representation of a dancer.

C.G. TOWN

**Hiroshima University Electric Machinery Laboratory
Hiroshima, Japan**

This work represents the lighting effects of headlights, street lamps, and sky light under cloudy and clear weather, and also represents the motion of clouds when the weather changes to clear. Clouds and trees mapped onto the transparent planes are reflected in the windows of buildings. To represent these effects by using a small computer, the program consists of some modules and employs a montage method.

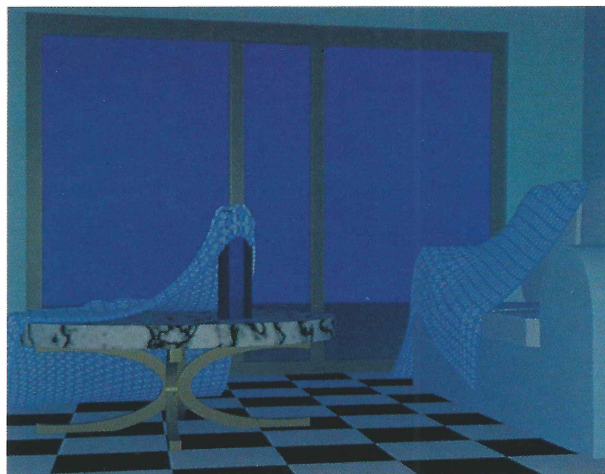


00:14:01

FABRICATED RHYTHM

**AT&T Bell Laboratories
Murray Hill, New Jersey**

This piece illustrates research in the area of animating cloth. Pieces of cloth with varying stiffness and elasticity are blown in the wind, draped over furniture and formed into clothing to the rhythm of the music.

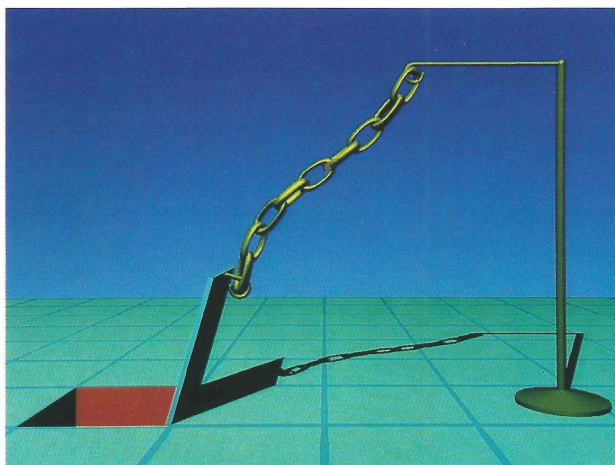


00:15:44

PANDORA'S CHAIN

**California Institute of Technology
Pasadena, California**

A new technique for computer graphics modeling and animation is demonstrated called "Dynamics Constraints." The technique is applicable to simulating the self-assembly and dynamic behavior of mechanical elements, maintaining geometric constraints on the configuration. The constraints are met by applying the appropriate internal forces between the elements of the structures. Constraint-based physical and dynamic modeling tools offer an improvement over conventional modeling techniques, for controlling intricate motions.



00:16:51

00:18:16



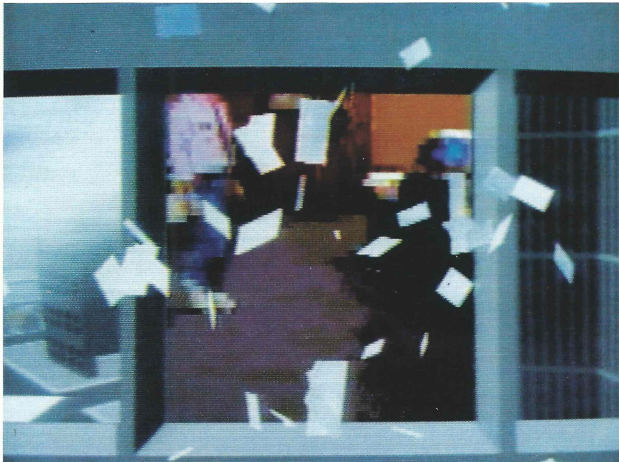
JO, BEAUBERG AND CIO
Thomson Digital Images
Paris, France

JO:
Simulation for the film for the candidacy of the City of Paris for the 1992 Olympic Games.

BEAUBERG:
Promotional film for the 10th Anniversary of the Georges Pompidou Museum.

CIO:
Olympic Rings logo animation for the International Olympic Committee.

00:20:03



XEROX CITY
Sirius Communications Group
La Honda, California

In the opening image, the Xerox logo font grows to 3-D, then metamorphoses into a highrise cityscape. The fly-through the city that ensues approaches a building which displays reflections of the city and clouds. As the window shatters, the office building is entered through the open window. Later, colorful floppy disks are used as tangible representations of the software product.

00:21:38



**COMPUTER ANIMATIONS JAZZ UP
THE ARABIC LANGUAGE**
The Dovetail Group, Inc.
New York, New York

This video is a montage of some of the 104 animations designed and produced by The Dovetail Group for the new Arabic reading series "Al Manaahil." This children's series is co-produced by Children's Television Workshop and Jordani Television. It will be broadcast throughout the Arab Nations. Dovetail spent six months in Amman teaching the Jordanian TV staff the how to's and uses of computer graphics and animation in TV production.

DEMO REEL II, 1987**Synthetic Video****San Francisco, California**

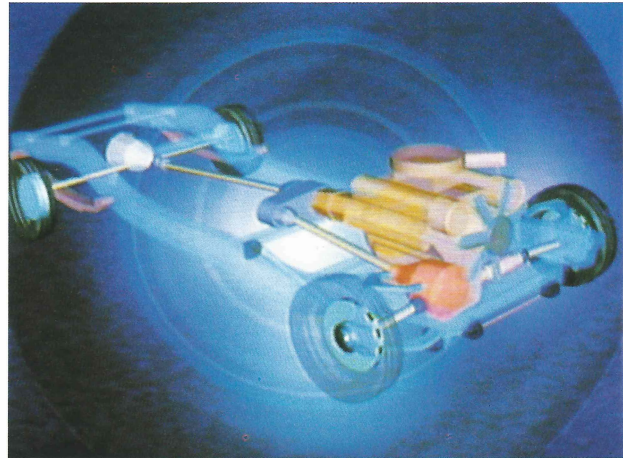
This reel is a sampler of work produced at Synthetic Video during the past year. While the animation, as a rule, was created for clients, a few segments are fruits of "in-house" labors of love accomplished late at night and during week-ends. All work was created on the Synthetic Video Animation System, running proprietary Synthetic Video Animation Software on Apollo and CRDS Computers, Raster Graphics and Number Nine Framebuffers and recorded on an Ampex VPR-80 1" video tape recorder.



00:23:50

1987 CORPORATE MONTAGE DEMO REEL**Animatrix Inc.****Royal Oak, Michigan**

This reel features highlights of many projects Animatrix completed in the first eight months of operation. Located in the Detroit area, Animatrix is geared to the automotive industry. However, this reel demonstrates Animatrix' ability to convey complex topics for audience information and education.



00:26:44

SYNTEX OPENER**LAZERUS****Berkeley, California**

This corporate identification was created for the SYNTEX Chemical Company to head all their training and corporate videotapes. This piece was realized on the LAZERUS 432 which allows shaded true-color models and up to 32 lights to be moved and altered in real-time. Digital matting performed on the LAZERUS 432 was used to composite final sequences. The models of up to 60,000 polygons per frame were interactively Phong-shaded, texture-mapped, positioned and lighted for the art directors consideration and approval.



00:28:38

00:29:27

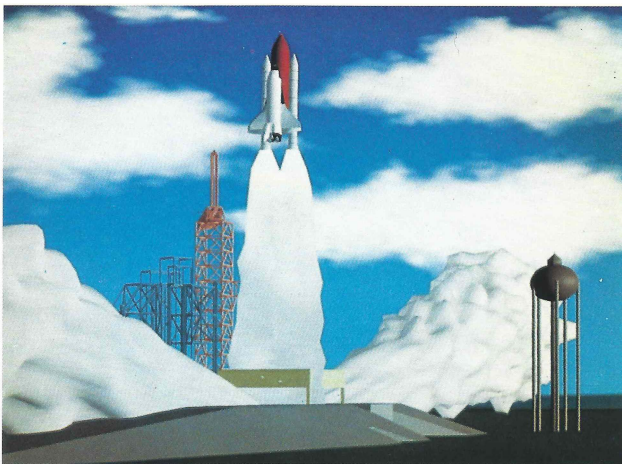


AGUSTA A-129 REAL-TIME SIMULATION

**General Electric Company
Daytona Beach, Florida**

This piece is one of a series of short video presentations designed to demonstrate the capability of G.E.'s COMPU-SCENE IV Visual Simulation System. This video shows a real-time simulation of the Agusta A-129 Helicopter moving through high-detail terrain.

00:31:44

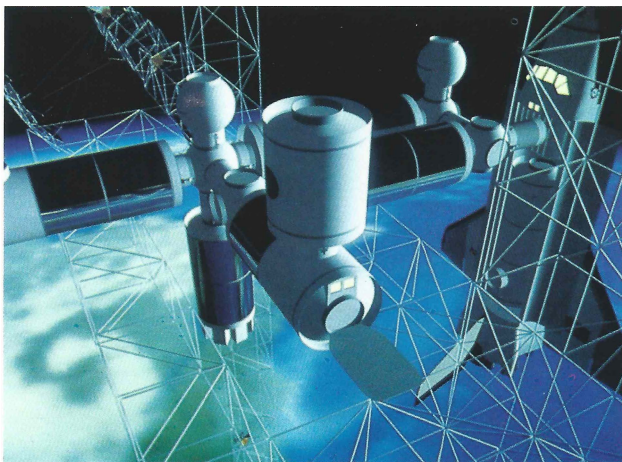


LIFT OFF

**NASA/Johnson Space Center
Houston, Texas**

This is a video of a Space Shuttle launch. The position and attitude data was taken from an actual mission, as well as the audio. The Abel Image Research software was used for rendering. There are about 60,000 polygons, most of which are in the solid rocket motor exhaust plumes. A separate model of the rocket plumes was generated for each frame by means of bandpass filtered noise using Fourier transforms to define the polygon vertices.

00:33:08



SPACE STATION

**Boeing Computer Services
Seattle, Washington**

This animation was created using software developed by Boeing Computer Services for conceptual simulation. It explores the proposed space station in orbit.

TDI SCIENCE AND INDUSTRY

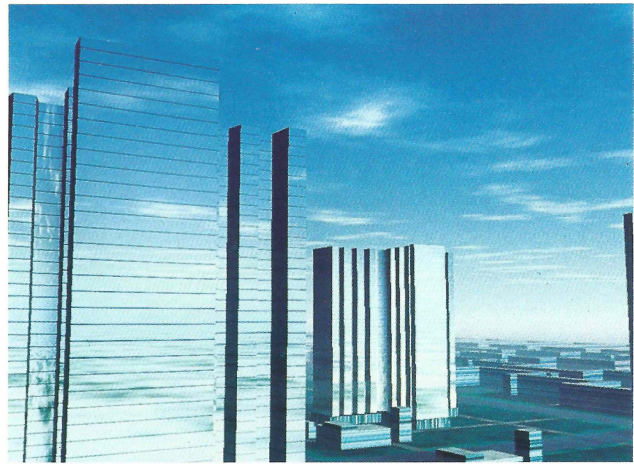
Thomson Digital Image
Paris, France

LE STADE:

Simulation of the Olympic Stadium Project for the Film for the candidacy of the City of Paris for the 1992 Olympic Games.

LE CORBUSIER:

Architectural Simulation scenes of Le Corbusier's City of 3 million inhabitants, for the Le Corbusier Film (1887-1987, centennial of Le Corbusier's birth).

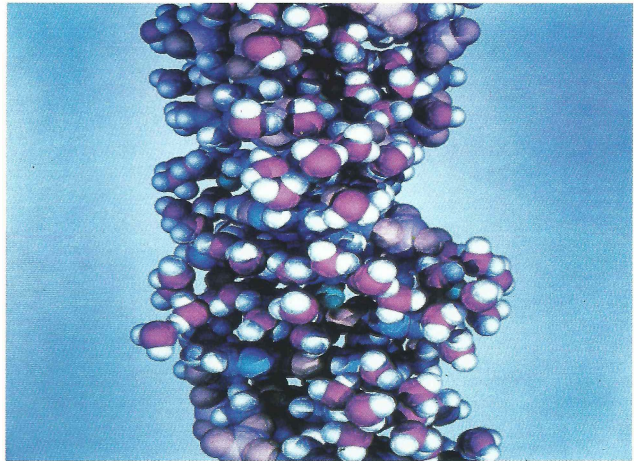


00:34:01

MOLECULAR DYNAMICS OF SOLUTIONS

IBM Corporation
Kingston, New York

This material demonstrates the use of animated computer graphics to represent the results of molecular dynamics simulations of liquids and solutions. The first example presents a simulation of a 0.43 molar solution of lithium formate. The second example is based on a simulation of z-DNA in water. The molecular dynamics calculations employed 1851 water molecules surrounding one turn of z-DNA. The animated graphics show the z-DNA alone and with selected subsets of the water molecules.

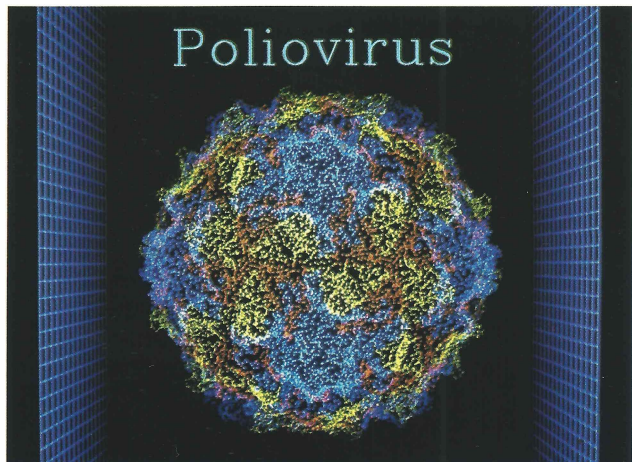


00:38:03

POLIOVIRUS

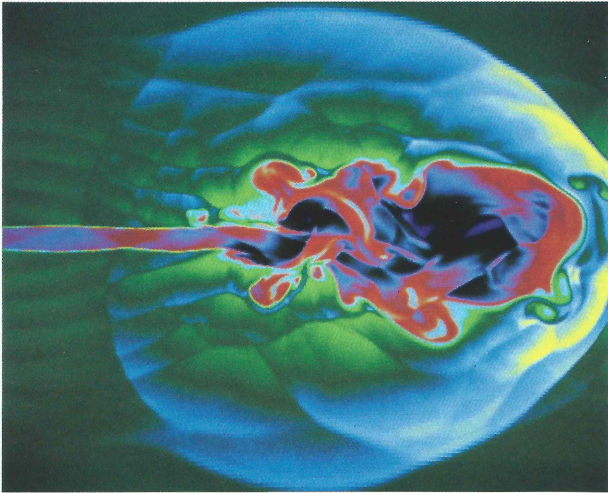
Research Institute of Scripps Clinic
La Jolla, California

This film excerpt describes the recent structural results obtained from the atomic resolution X-ray crystallographic studies of the human poliovirus. It details the particle organization and assembly, the component subunit and the immunologic characteristics of the virus. Information such as that depicted in this film gives a broad range of scientists a deeper understanding of the nature of human viral infection.



00:40:05

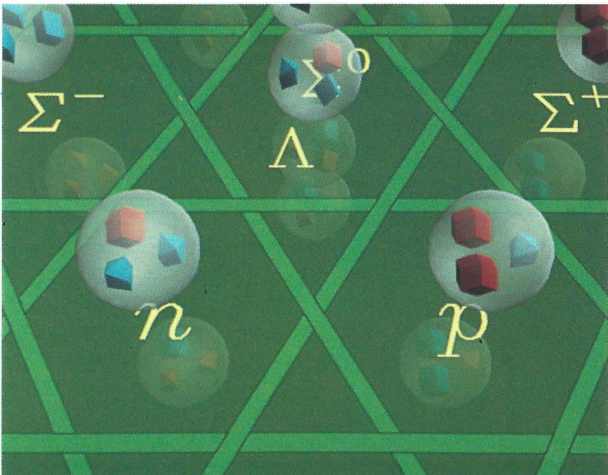
00:42:22



INSTABILITIES IN SUPERSONIC FLOWS
National Center for Supercomputer Applications
Champaign, Illinois

Results of supercomputer simulations are presented which address two long-standing problems surrounding the interpretation of high-luminosity extragalactic jets: 1) propagational stability, and 2) confinement. The effects of both passive and dynamic magnetic fields on the structure and appearance of jets is illustrated. Theoretical and computational challenges posed by constructing self-consistent radio source models are discussed.

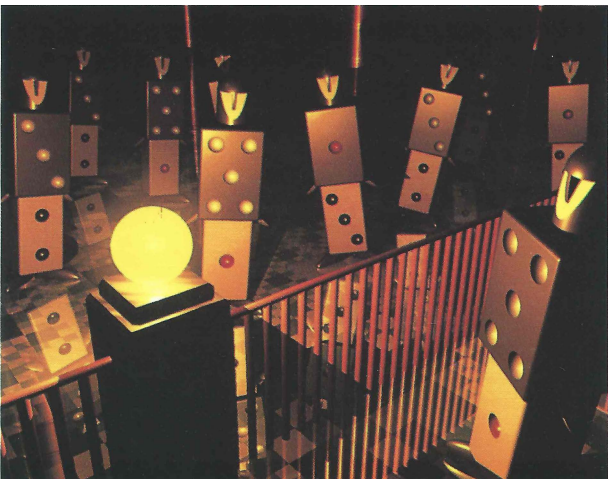
00:43:27



THE QUANTUM MECHANICAL UNIVERSE
Jet Propulsion Laboratory
The Computer Graphics Laboratory
Pasadena, California

The Quantum Mechanical Universe is made up of excerpts from the last three programs of The Mechanical Universe, introducing elementary concepts of quantum mechanics.

00:49:00



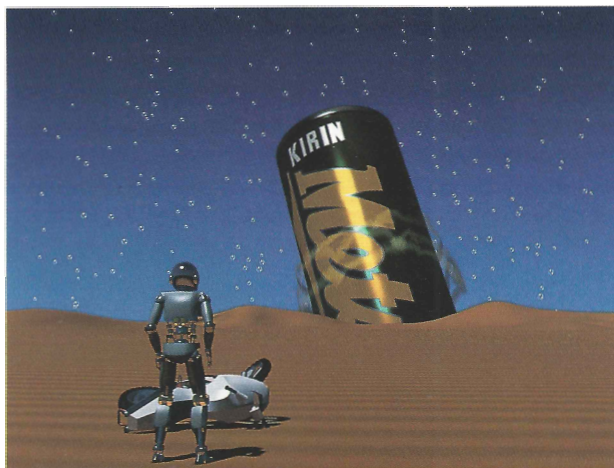
TOYO LINKS BROADCAST DEMO REEL 1987
Toyo Links Corporation
Shinagawa-Ku, Tokyo, Japan

Toyo Links Broadcast Demo Reel 1987 is showing both production methods by the name of TRACY system (ordinary TOYO LINKS Ray-Tracing system) and SCANLINE system (TOYO LINKS and IMAGICA ACME Scanline system united last October).

TV—CF FOR KIRIN METS

Taiyo Kikaku Co., Ltd. Media Mix Room
Minato-Ku, Tokyo, Japan

The refreshing taste of Kirin's soft drink, Mets, is represented as an illusion of water in a hot and dry desert. All sequences are calculated by the polygon-based rendering system with special programming for the minute motion control and the fully anti-aliased mapped texture.

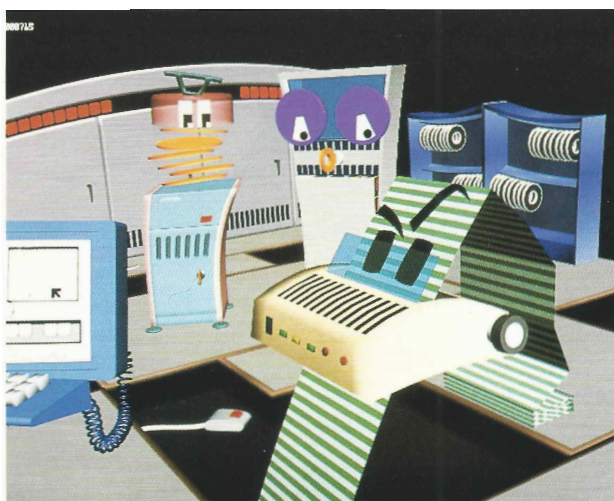


00:51:47

SIGGRAPH '87

Cranston/Csuri Productions
Columbus, Ohio

Cranston/Csuri Productions' team of creative professionals combine talents with clients to design and create internationally recognized computer-generated animation for major national and cable networks, advertising agencies and production houses, as well as the medical industry.

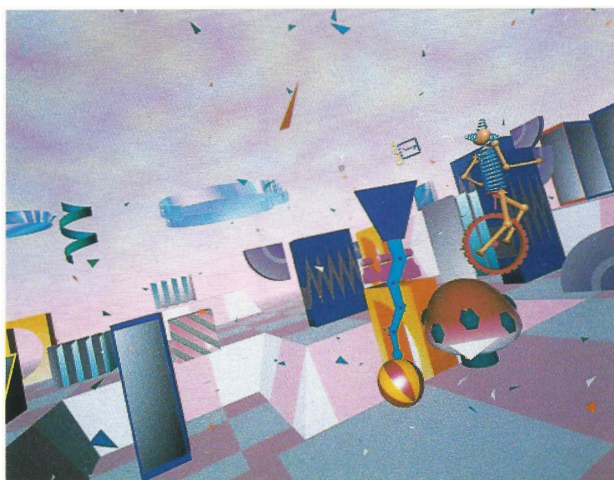


00:52:47

JCGL DEMO FOR SIGGRAPH '87

Japan Computer Graphics Laboratory, Inc.
Toshima, Tokyo, Japan

JCGL is a computer graphics production company which has developed the C.G. System, IMAGE MAKER, including a 36-bit frame memory and marketed C.G. database rental services.



00:55:50

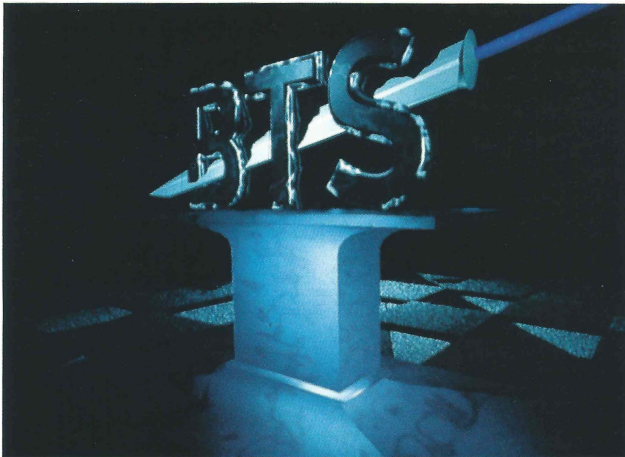
00:59:27



**THE FANTASTIC ANIMATION MACHINE, INC.
SIGGRAPH '87 SAMPLE REEL
The Fantastic Animation Machine, Inc.
New York, New York**

The Clio image is one of several that comprise The Fantastic Animation Machine's sample reel. Produced for the 1987 Clio Awards Opening, the Clio image was created using modeling software to combine cross-section drawings of the statuette into a three-dimensional database. The Fantastic Animation Machine's sample reel consists of projects recently completed for clients in the advertising, corporate, cable and broadcast markets, as well as in-house research and development. The company specializes in the production of high-resolution, digital computer animation directly onto 1" videotape, utilizing proprietary software and a Unix-based computer system.

01:01:59



**FGS-4000 DEMO TAPE
Broadcast Television Systems, Inc.
Salt Lake City, Utah**

The FGS 1987 demo tape is a compilation of work by some of the production facilities using the FGS. The tape was edited from over three hours of material submitted by our customers. The FGS is a turnkey hardware and software system designed by BTS in Salt Lake City, Utah.

01:08:29



**BLACK TRINITRON
Steiner Film
Munich, West Germany**

The idea for this 30-second TV commercial was to present an entirely new type of TV tube (SONY Black Trinitron Technology) on an "old" TV set.

BUD LIGHT VIDEO WARS

Optimus, Inc.
Chicago, Illinois

This 30-second Bud Light commercial was created by combining film, computer animation and paint devices. The film was shot and rough cut, then the animation was choreographed on the Bosch FGS-4000 to match the scene. Space ships were created using the Bosch Off-line Modeling Satellite. After combining the animation and live-action, a Quantel Paintbox was used in conjunction with an Abekas A-62 to add the special effects a frame-at-a-time to the lasers and spaceship streaks.

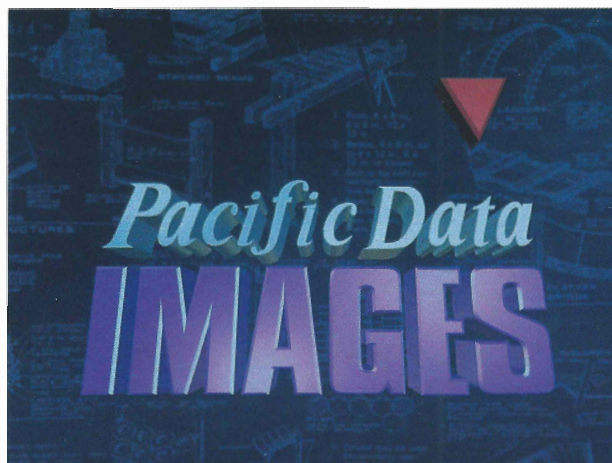


01:09:07

PDI PARTY MIX

Pacific Data Images
Sunnyvale, California

"PDI Party Mix" is a compilation of the best of PDI's 1987 animation. Clients represented on the reel include: ABC Sports & News, Marks Communications, NBC Television, CBS Entertainment, BBDO, New York, HBO, WUSA-TV, KRON-TV & KCBS-TV.



01:09:45

"BLUEPRINT," "ENGINE," "RAPID PROTOTYPING"

Robert Abel & Associates/Omnibus
Hollywood, California

OLYMPIC STAIN BLUEPRINT:

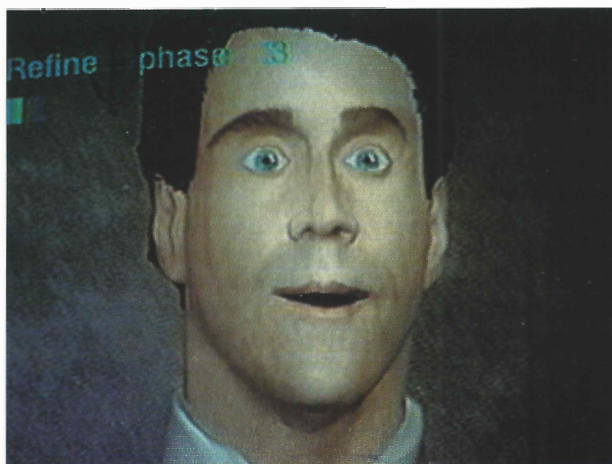
Shows the evolution of a "dream house" from blueprint stage to its realization. Techniques included a three-layer digital composite of live action film elements and a stochastic UV coordinate generator, for natural looking wood texture.

SHELL OIL ENGINE:

Shows the creation of a sports car and the effect that Shell gasoline has on it. The Camaro Z28 was originally modeled in Detroit on an automotive CAD system and was processed through the A.I.R. software system.

TRW RAPID PROTOTYPING:

Graphically demonstrates a software prototyping technique used by TRW. Human facial animation was accomplished using a hybrid of traditional animation techniques, video-based three-dimensional scanning and parametric animation software. Skin textures were scanned, enhanced on a paint system and mapped onto the animating face.



01:12:02

01:13:43



PRUDENTIAL "MOON ROCK;" PRUDENTIAL "CANYON ROCK"

**Digital Productions/Abel/Omnibus
Los Angeles, California**

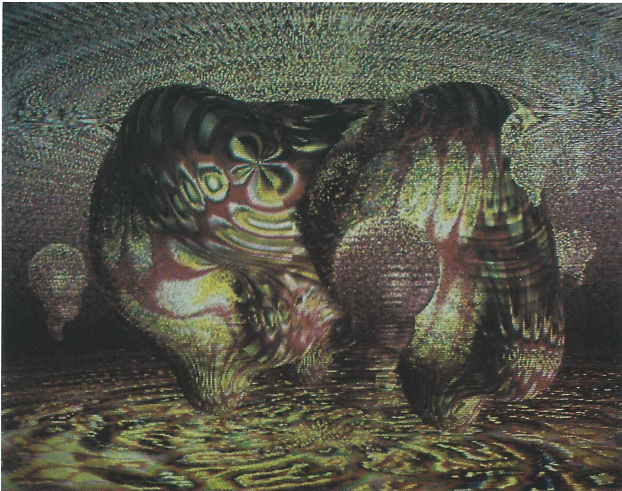
MOON ROCK:

This commercial uses a skillful blend of computer graphics and live action to create a dream-like, yet realistic portrayal of symbols that represent family values. A live action family stands on a computer-generated shore and gazes at the Rock moving majestically through the water.

CANYON ROCK:

This commercial features a long continuous helicopter ride through a computer-generated canyon that is a gallery of financial symbols. The water itself creates a feeling of life in the canyon with its realistic flow, surface ripple effects and the reflection of the canyon in its surface.

01:14:52



ECOLOGY II: FLOAT

**Nippon Electronics College
Shinjuku-ku, Tokyo, Japan**

Primitive lives float in the Paleozoic sea—or is it a scene from the future after the destruction of human beings? This is a prelude to the era of Morpholism.

01:18:54



FAIR PLAY

**Apollo Computer, Inc.
Midnight Movie Group
Chelmsford, Massachusetts**

This film was computed with proprietary 5-D Ray Tracing software (as published in this year's SIGGRAPH paper "Fast Ray Tracing by Ray Classification") and distributed over a network of 1,958 Apollo DOMAIN workstations. Also included are fractal primitives and particle systems.

DEJA VU
4D Art & Design
Brooklyn, New York

Up to now, computer graphics imagery has tended to be very hard-edged, macho and futuristic. The concept is to inject a new sensibility—something softer, more sensuous, lyrical: a piece in which mood and texture take precedence over technology.



01:21:46

MENTAL IMAGES
Mental Images GmbH & Co. KG
Berlin, West Germany

Mental Images is a visual journey that begins on Berlin's underground. The journey continues along the Berlin Wall on a rainy night and ends with a surprise in a strange room next to the border.



01:23:47

PEPPY
Toyo Links Corporation
Shinagawa-Ku, Tokyo, Japan

This is a story about a cheerful, happy, computer-generated character named Peppy, a pineapple in a sombrero who plays the ukulele.



01:25:31

01:27:19

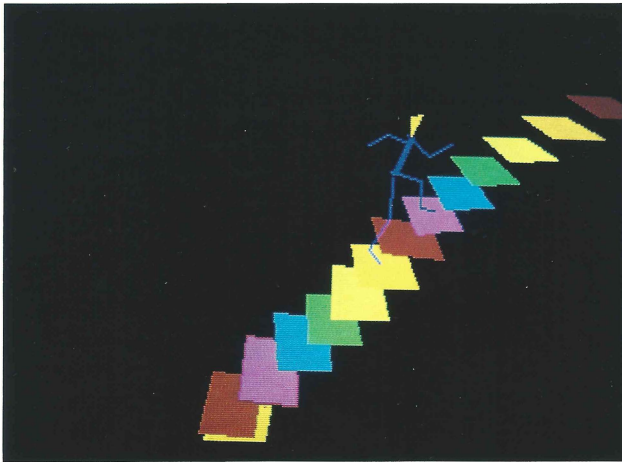


MUSIQUE NON-STOP

**New York Institute of Technology
Old Westbury, New York**

This completely computer-generated music video provided a rare opportunity to collaborate with musicians who are also committed to the artistic exploration of modern technology. As part of the project, three-dimensional parametric models of the four members of the German group, Kraftwerk, were created based on the work of Dr. Fred Parke.

01:31:32

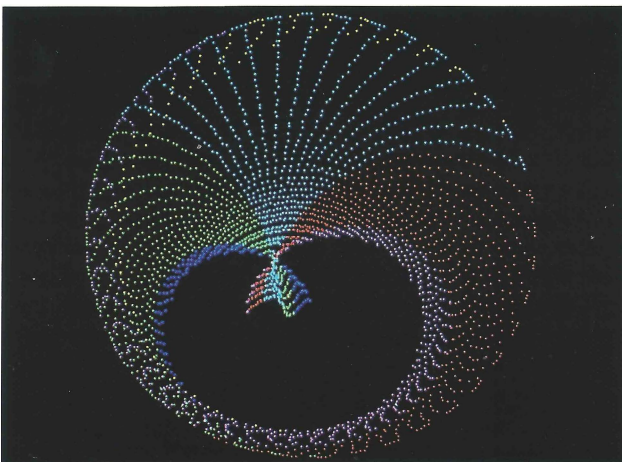


DANCE OF THE STUMBLERS

**Steve Segal
West Hollywood, California**

Two troupes of computer animated acrobats stumble and trip into each other in time to Rimski Korsakov's music.

01:34:07



VICTORY SAUSAGE

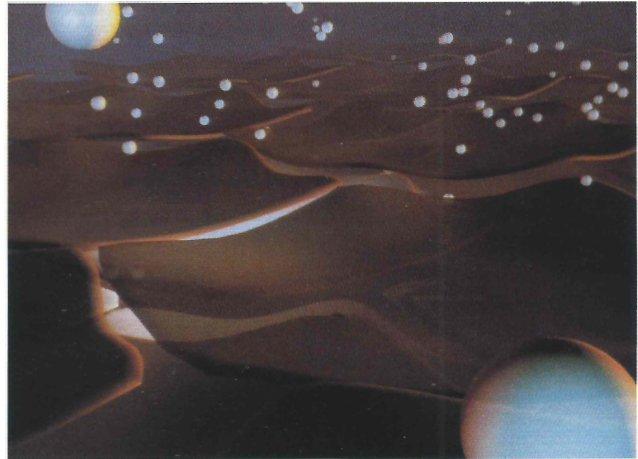
**John Whitney, Sr.
Pacific Palisades, California**

On exhibit is an early composition created expressly for SIGGRAPH '87. This film may be a product of the first fully integrated music/graphic software. The composer set his own values on each parameter in the menu. These allow note-for-note and figure-for-figure composition of both the aural and visual components in time. You cut up time any way you like—like you cut up a sausage. This control of time, tone and color is a long awaited personal victory.

SOGITEC SHOW REEL

Sogitec
Boulogne-Billancourt, France

This is an overview of Sogitec work during the last nine months, including selections from commercials and corporate films.



01:36:44

SIGN OF THE TIMES
MIX EFEX/Pacific Video
Hollywood, California

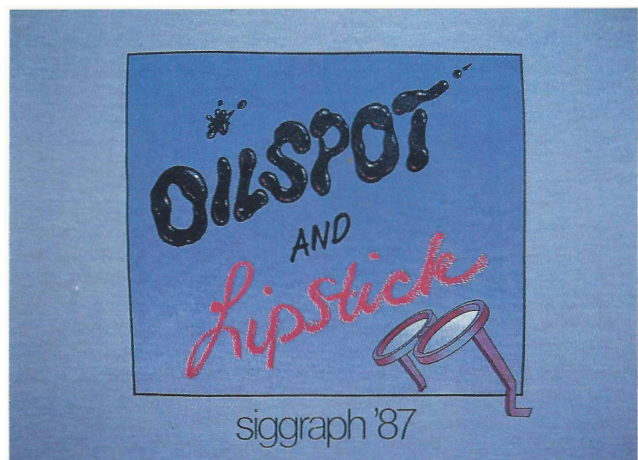
The lyrics of "Sign of the Times" by Prince are computer animated using 2-D characters in a 3-D universe.



01:39:34

OILSPOT AND LIPSTICK
Walt Disney Pictures
Glendale, California

The Disney Computer Animation, Late Night Group, presents a whimsical visit with man's best friend(s).



01:42:39

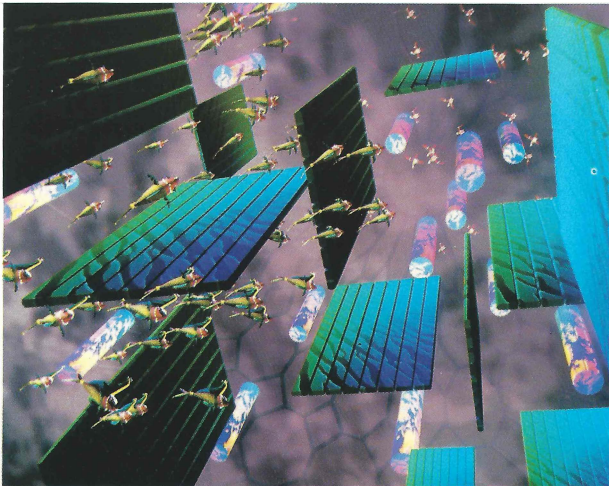
01:45:59



THEATRICAL MOTION PICTURE COMPUTER GRAPHICS
New York Institute of Technology Computer Graphics Lab
Old Westbury, New York

"Strawberry Fields" is a feature film in progress that is slated for a 1988 theatrical release. This film represents a compilation of work done at the New York Institute of Technology, Computer Graphics Laboratory.

01:51:28



STANLEY AND STELLA: BREAKING THE ICE
Symbolics Graphics Division—Whitney/Demos Productions
Los Angeles, California

The motion of the flocks of birds and schools of fish are based on Symbolics' experimental behavioral simulation/animation programs, developed by Craig W. Reynolds. The technical aspects of this behavioral animation simulation are discussed in more detail in the SIGGRAPH technical paper "Flocks, Herds, and Schools: A Distributed Behavioral Model" which was accepted for the 1987 SIGGRAPH technical program.

01:54:33



BALLOON GUY
Ohio State University
Advanced Computing Center for the Arts and Design
Columbus, Ohio

A rubber Balloon Guy is out for a stroll in the clouds. His motion has been generated with flexible dynamics simulation software and spline interpolation software developed at the Ohio State University Computer Graphics Research Group.

RED'S DREAM
PIXAR
 San Rafael, California

What do unicycles dream about on rainy nights?



01:56:14

FINALE
L.A.—THE MOVIE
 Jet Propulsion Laboratory
 Pasadena, California

This computer-generated frame illustrates techniques used by JPL imaging scientists to create "L.A.: The Movie," a two-minute film taking viewers on an aerial ride over a three-dimensional Southern California landscape. Beginning with a single, two-dimensional LANDSAT satellite photo of the Los Angeles area and existing elevation data, image processors used a special computer algorithm to generate 3,336 film frames similar to this view. Vertical scale was exaggerated by a factor of two, so mountains appear twice as tall as they would in reality. Animation techniques developed during the proof-of-concept project will be used by scientists to study the three-dimensional nature of global cloud cover. The research is funded by NASA's Office of Space Science and Application.

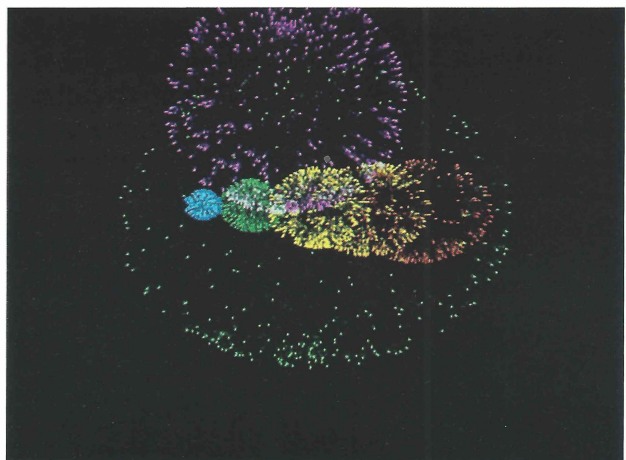


02:00:00

BOOM BOOM BOOM
 Visuals—AT&T Bell Laboratories
 Murray Hill, New Jersey

Audio—Levin & Many Composing
 Burbank, California

This animation is the product of a system for designing computer-generated pyrotechnics. A combination of Particle Systems and Two-dimensional Image Filtering are used to create the images. Each individual sound was placed to digitally trigger against the video picture in this final sequence.



PROGRAM CREDITS:

— 00:20:00

WALK-IN MUSIC "AUDIO EDUCATION"

Levin & Many Composing
Burbank, California

CONCEPT BY:

Frank Foster

MIDI PROGRAMMING:

Jeff Fair, Bob Moore

AUDIO PRODUCER:

Rainer Poertner

SOFTWARE DESIGN:

Stefan Daystrom, Tom Bajoras

COMPOSERS:

Jeff Levin, Chris Many
Levin & Many Composing

STUDIOS:

Main Sound, Juniper Studios

ENGINEER:

Bruce Chianese

EQUIPMENT USED:

Hybrid Arts SMPTE Track, Hybrid Arts ADAP,
Kurcweil 250, Yamaha TX-816, Yamaha DX7
& DX7IID, Oberhiem Xpander, Prophet
2000, Roland D-50, EMU SP-12, Musically
Intelligent Devices—Mega-Mix Computerized
Mixing

00:00:00

OPENING SOUND EFFECTS

Digiffects Sound Library Courtesy of
FirstCom Production Library

CONCEPT BY:

Frank Foster

DIGITAL MIX BY:

Jeff Levin and Chris Many
Levin & Many Composing

OPENING SEQUENCE WITH BEN BOVA

WRITTEN AND NARRATED BY:

Ben Bova

PRODUCED BY:

Joan Collins

DIRECTED BY:

Ron Hays

CONCEPT BY:

Art Center College of Design

FACULTY ADVISORS:

James F. Blinn, Robert Schaff

ART DIRECTOR:

Sylvie Jacquemin

VISUAL CONCEPT:

Stanley Liu

DESIGNED & MODELED BY:

Dan Cook, Gary Glover, Sylvie Jacquemin,
Som Khoe, Lloyd Liguani, Stanley Liu,
Ian MacColl, Walid Saba, Jeanine Tangen,
Sandy Turchyn

DESIGN CONSULTANTS:

Tom Brown, Brent Collins

PHOTOGRAPHY:

Steve Heller

STORYBOARD ARTIST:

Joan Igawa

PANI PROJECTOR TECHNICAL DIRECTOR:

Rick Montgomery

PANI PROJECTORS PROVIDED BY:

Ron Hays Productions

MUSIC & SOUND DESIGN:

Frank Serafine

SIGGRAPH '87 LOGO SEQUENCE

Ray Tracing Corporation

Torrance, California

and Motion Magic

Hollywood, California

RENDERED BY:

Ray Tracing Corporation, Greg Passmore,
Nancy Collier

MODELED BY:

Motion Magic, John Hall, Bob Backstrand

HARDWARE:

Cubicomp for Modeling, Convex C-1 for
Rendering

POST PRODUCTION:

Varitel Video

RETROSPECT IN FAST FORWARD:

Edward Arroyo, Peter Sorenson, Gregory
Elwood

RESEARCH

00:05:00

RIGID-BODY DYNAMICS SIMULATIONS

Ohio State University

Advanced Computing Center for the Arts
and Design

Columbus, Ohio

CONTACT:

James Hahn

FORMAT:

1" NTSC Video

HARDWARE:

Symbolics 3620, Convex C-1

SOFTWARE:

James Hahn

SCANLINE ALGORITHM:

Scott Whitman and Scott Dyer

ANIMATOR:

James Hahn

MODELERS:

Scott Whitman, Tony Lupidi, Dave Novak,
Wilson Burrows

MODELS PROVIDED BY:

Chrysler / Evans & Sutherland

RESEARCH & DEVELOPMENT:

James Hahn

00:07:28

DYNAMIC SIMULATIONS OF FLEXIBLE OBJECTS

Ohio State University

Advanced Computing Center for the Arts
and Design

Columbus, Ohio

CONTACT:

David R. Haumann

FORMAT:

1" NTSC video

HARDWARE:

Symbolics 3670

SOFTWARE:

Written in common LISP by Brian Guenter,
Susan Amkraut

FLEXIBLE DYNAMICS SIMULATIONS:

David R. Haumann

BRIDGE TEST MODEL and PRODUCTION:

Craig Caldwell

RESEARCH & DEVELOPMENT:

David R. Haumann

00:09:05

COMPUTER GRAPHICS AND ANIMATION GROUP

M.I.T. Media Lab

Cambridge, Massachusetts

CONTACT:

David Zeltzer

FORMAT:

1" NTSC Video

HARDWARE:

Symbolics 3600 Lisp Machine with
24-Bit Color

SOFTWARE:

3-D toolkit by Karl Sims and Jim Salem of
Thinking Machines Corporation
Inverse kinematics, dynamics and gait control
by Karl Sims

ANIMATOR:

Karl Sims

01:10:41**SUN AND SHADE****Lawrence Livermore National Laboratory
Livermore, California****CONTACT:**
Nelson Max**FORMAT:**
35mm film, plus video**HARDWARE:**
Cray XMP, Dicommed D48C**EDITOR:**
John Blunden**ANIMATOR:**
Nelson Max**MODELER:**
Jules Bloomenthal**SOUND:**
Andrew Voigt**RESEARCH & DEVELOPMENT:**
Nelson Max**00:11:28****SYSTEME PARTICULIER****Studio Base 2
Paris, France****CONTACT:**
Alain Chesnais**FORMAT:**
1" NTSC video**HARDWARE:**
VAX 8600, VAX 785, Sun 3, Catharsys
frame buffer**SOFTWARE:**
"CAMIL" by A. Chesnais**PRODUCER:**
Studio Base 2**CONCEPT:**
J.C. Meynard**ART DIRECTORS:**
Nicole Croiset, Christine Depraz**SOUND:**
Yves Mesnil**RESEARCH AND DEVELOPMENT:**
Alain Chasnais**00:12:27****TEST OF VOXEL-BASED GROWTH
PROGRAM, SKIRT RESEARCH & CRUNGED
HEADS****New York Institute of Technology
Computer Graphics Lab
Old Westbury, New York****GROWTH PROGRAM****CONTACT:**
Ned Greene**FORMAT:**

1" NTSC video

HARDWARE:
VAX 11/780, Ikonas Frame Buffers**SOFTWARE:**
Ned Greene and N.Y.I.T. animation system**SKIRT RESEARCH****ANIMATOR and MODELER:**
Susan Van Baerle**RESEARCH & DEVELOPMENT:**
Dick Lundin**CRUNGED HEADS****CONTACT:**
J.P. Lewis**SOFTWARE:**
J.P. Lewis and N.Y.I.T animation system**00:14:01****C.G. TOWN****Hiroshima University
Electric Machinery Laboratory
Hiroshima, Japan****CONTACT:**
Eihachiro Nakamae**FORMAT:**
1" NTSC video**HARDWARE:**
TOSBAC Data System 600/80,
Graphica M-508**CONSULTANT:**
Osaka Municipal Government**DIRECTOR:**
Eihachiro Nakamae**SOUND:**
Takashi Ohbayashi and Chikako Ohbayashi**RESEARCH & DEVELOPMENT:**
T. Nishita, T. Ishizaki, S. Takita, Y. Miyawaki,
K. Kaneda, F. Katoh, B.G. Sullivan**00:15:44****FABRICATED RHYTHM
AT&T Bell Laboratories
Murray Hill, New Jersey****CONTACT:**
Jerry Weil**FORMAT:**
1" NTSC video**SOFTWARE:**
Jerry Weil, Don Mitchell**PRODUCED & ANIMATED BY:**
Jerry Weil**SOUNDTRACK BY:**
Donna and Harvey Manger-Weil**00:16:51****PANDORA'S CHAIN
California Institute of Technology
Pasadena, California****CONTACT:**
Alan H. Barr**FORMAT:**
1" NTSC video**CREATED BY:**
California Institute of Technology, Computer
Science Graphics Group: Alan Barr, Ronen
Barzel, Jed Lengyel, John Snyder, Brian
Von Herzen**CORPORATE COMMUNICATIONS****00:18:16****JO, BEAUBOURG, AND CIO
Thomson Digital Images
Paris, France****FORMAT:**
35mm film**HARDWARE:**
IRIS 3130, PC-Based System from
Logigraphics**SOFTWARE:**
TDI Explore**JO****DESIGNED BY:**
Malcolm Pepper**DIRECTED BY:**
TDI/Marialine Prieur**PRODUCED BY:**
Market Place**BEAUBOURG****DESIGNED BY:**
Hans Donner**DIRECTED BY:**
TDI/Dominique Pochat**PRODUCED BY:**
Centre G. Pompidou/CNC**CIO****DESIGNED BY:**
Roger Roozat**DIRECTED BY:**
TDI—Pascal Bap**PRODUCED BY:**
Telvetia**00:20:03****XEROX CITY
Sirius Communications Group
La Honda, California****CONTACT:**
K. O. Beckman

FORMAT:
1" NTSC video

HARDWARE:
Bosch FGS-4000, Ampex ADO,
Quantel Paintbox

SOFTWARE:
Bosch

PRESENTED BY:
Xerox Information Systems Division

DIRECTOR:
K. O. Beckman

PRODUCER:
Mary Kaye Fenwick

EDITOR:
Mike Dennis

CREATIVE CONSULTANT:
Rich Thorne

COMPUTER ARTISTS:
Chris Alsup, Gabriel del Campo

VIDEO ENGINEER:
James R. Cooper

SOUND:
"Blue" Gene Tyranny

PAINT SYSTEM ARTISTS:
Helen Davis, Marcus Drury

VIDEO POST-PRODUCTION:
The Post Group

POST-PRODUCTION CONSULTANT:
Toni Pace Carstenson

00:21:38
COMPUTER ANIMATIONS JAZZ UP THE
ARABIC LANGUAGE
The Dovetail Group, Inc.
New York, New York

CONTACT:
Gerri Brioso

FORMAT:
1" NTSC video

HARDWARE:
Dubner DPS-1 paint system, Lyon Lamb
VAS IV Animation Controller, Sony BVU 850
video recorder.

CREATED BY:
The Dovetail Group

ART DIRECTOR:
Gerri Brioso

PRODUCERS:
Richard Freitas, Gerri Brioso, Paul Freitas

ANIMATORS:
Gerri Brioso, Cynthia Vasant

ORIGINAL MUSIC BY:
Gerri Brioso, Richard Freitas, Paul Freitas

00:23:50
DEMO REEL II, 1987
Synthetic Video
San Francisco, California

CONTACT:
Lars Tragardh, Marc Gimbreere

FORMAT:
1" NTSC video

HARDWARE:
Apollo Computers, Charles River Data
Systems, Number Nine Frame-Buffers, AT&T
Targa 32, Ampex VPR-80

SOFTWARE:
Synthetic Video Software (EX-2)

CREATED BY:
Synthetic Video Staff

DIRECTORS:
Lars Tragardh, Carlos Arguello

PRODUCERS:
Lars Tragardh, Rebecca Stephenson

EDITORS:
Rick Goldsmith, Paul Meyers

ART DIRECTORS:
Carlos Arguello, David Kawecki, Jim Minton,
Mike Buettner, Michael Tolson

CHOREOGRAPHERS:
Sauveur Chemouni, Carlos Arguello,
Catherine Wagner, Cab Covay

ANIMATORS/MODELERS:
Terry Greene, Nori Tolson, Carlos Arguello,
Catherine Wagner, Cab Covay, David
Kawecki, Michael Tolson, Stanton Stevens,
Sauveur Chemouni

PAINT SYSTEM:
Targa/TIPS

RESEARCH & DEVELOPMENT:
Sauveur Chemouni, Michael Tolson,
Stanton Stevens

VIDEO PRODUCTION:
Lars Tragardh, Paul Meyers

00:26:44
1987 CORPORATE MONTAGE DEMO REEL
Animatrix Inc.
Royal Oak, Michigan

CONTACT:
James P. Lecours

FORMAT:
1" NTSC video

HARDWARE:
Bosch FGS-4000, Sony BVH 2500

SOFTWARE:
Bosch

CREATED BY:
Rahn Dohring—Animation Director

CONSULTANTS:
Craig Handley, Bob McQuiston

PRODUCERS:
Bob McQuiston/Animatrix; Joe Aldini/
Michigan Bell; Julie Johnson/Maritz; Bob
Mrozowski/Ross Roy Advertising

ANIMATORS:
Rahn Dohring, Mike McManus

RESEARCH & DEVELOPMENT:
Rahn Dohring/Animatrix

00:28:38
SYNTEX OPENER
LAZERUS
Berkeley, California

CONTACT:
Joanne P. Culver

FORMAT:
1" NTSC video from Betacam original

HARDWARE:
LAZERUS 432

SOFTWARE:
"RADIANT"

PRODUCED BY:
Christofer Dierdorff
Dan Pinkham
Visual Consulting Associates

DIRECTOR:
Christofer Dierdorff

CONCEPTS BY:
David Lumsdin—VICOM/FCB

DEVELOPMENT:
Joanne P. Culver, Tom Rust

ARTISTS:
Joanne P. Culver, Tom Rust

SOUND:
Earwax Productions

00:29:27
AGUSTA A-129 REAL-TIME SIMULATION
General Electric Company
Daytona Beach, Florida

CONTACT:
Ken Kilner

FORMAT:
1" NTSC video

HARDWARE:
COMPU-SCENE IV Visual Simulation System

PRODUCED & CONCEIVED BY:
Ken Kilner

EDITOR:
Doug Hempel

ANIMATORS:
Kevin Speed, Dimitri Zarboulas

DIRECTORS:
Ken Kilner, Lou Gallo

MODELERS:
Kevin Speed, Clay Taylor

SOUND:
Joe Moore

RESEARCH & DEVELOPMENT:
Michael P. Nelson

VIDEO PRODUCTION:
Lou Gallo

SCIENCE AND INDUSTRY

00:31:44

LIFT OFF

**NASA/Johnson Space Center
Houston, Texas**

CONTACT:
Gunter R. Sabionski

FORMAT:
1" NTSC video

HARDWARE:
Silicon Graphics Iris 2500 Turbo

SOFTWARE:
Abel Image Research

DIRECTOR:
Gunter R. Sabionski

ANIMATOR:
John Rhoades

00:33:08

SPACE STATION

**Boeing Computer Services
Seattle, Washington**

CONTACTS:
Richard Lancaster, Doug Donohue,
Domenick Venezia

FORMAT:
1" NTSC video

HARDWARE:
VAX 750 and MicroVAX II

SOFTWARE:
Boeing Proprietary

PRESENTED BY:
Boeing Computer Services, BACSD
Engineering Animation Group

ART DIRECTOR:
Paul Hudson

PRODUCER:
John Gass

OPERATOR:
Mike Sauer

MODELERS:
Paul Lebovitz, Erich Nielsen

RESEARCH & DEVELOPMENT:
Doug Donohue, Richard Lancaster,
Domenick Venezia

00:34:01

TDI SCIENCE AND INDUSTRY

**Thomson Digital Image
Paris, France**

FORMAT:
35mm film

HARDWARE:
IRIS 3130, PC-Based System from
Logigraphics

SOFTWARE:
TDI Explore

LE STADE

DESIGNED BY:
Malcom Pepper

DIRECTED BY:
TDI/Marialine Prieur

PRODUCED BY:
Market Place

LE CORBUSIER

DESIGNED BY:
Jaques Barsac

DIRECTED BY:
TDI/Marialine Prieur, P. Vuong

PRODUCED BY:
Cine-Service Technique

00:38:03

MOLECULAR DYNAMICS OF SOLUTIONS

**IBM Corporation
Kingston, New York**

CONTACT:
William L. Luken

FORMAT:
1" NTSC video from 3/4" video

HARDWARE:
IBM 308x, 3090 (ICAP Configuration);
TARGA Frame Buffer

SOFTWARE:
In-house molecular dynamics and ray tracing
codes with parallel processing

CREATED & ANIMATED BY:
William L. Luken

PRODUCER:
Enrico Clementi

MODELERS:
Swamy N. Kandadai, Kersti Hermannson,
George Lie

CONSULTANT:
Robert E. Bacon

NARRATION:
Graham Hurst

RESEARCH & DEVELOPMENT:
Robert E. Bacon, Jason Warren

00:40:05

POLIOVIRUS

**Research Institute of Scripps Clinic
La Jolla, California**

CONTACT:
Arthur J. Olson

FORMAT:
16mm film transferred to 1" NTSC video

HARDWARE:
Evans & Sutherland Multi Picture System,
DEC VAX 11/750

SOFTWARE:
GRAMPS graphics language and interface
developed by T. J. O'Donnell and A. J. Olson;
GRANNY molecular modeling system by M. L.
Connolly and A. J. Olson

WRITTEN AND DIRECTED BY:
Arthur J. Olson, Dan Bloch

PRODUCER:
Arthur J. Olson

SCRIPT CONSULTANT:
James M. Hogle

00:42:22

INSTABILITIES IN SUPERSONIC FLOWS

**National Center for Supercomputer
Applications
Champaign, Illinois**

CONTACT:
Donna J. Cox

FORMAT:
3/4" U-matic transferred to 1" NTSC

HARDWARE:
Cray XMP, Silicon Graphics, Abekas

SOFTWARE:
ZEUS original software by Michael Norman

CREATED & CONCEIVED BY:
Michael Norman

EDITOR:
Donna J. Cox

CONSULTANTS:
Phil E. Hardee, David A. Clarke

RESEARCH ARTIST & COLORIST:
Donna J. Cox

ORIGINAL COMPUTER MUSIC:
Brian Evans

PAINT SYSTEM:
 ICARE original software by Donna J. Cox
 VIDEO PRODUCTION:
 Carl Hoyer, Colleen Bannon

00:43:27
THE QUANTUM MECHANICAL UNIVERSE
Jet Propulsion Laboratory
The Computer Graphics Laboratory
Pasadena, California

CONTACT:
 Don Delson
 FORMAT:
 1" NTSC video
 HARDWARE:
 VAX 11/780, Gould IP8500, Evans &
 Sutherland PS-2, Sony BVH 2500

SOFTWARE:
 In-house animation system

CONCEPTS BY:
 J.C. Maxwell, Niels Bohr, Louis DeBroglie,
 Werner Heisenberg, Max Planck, Murray
 Gell-Mann

PRODUCER:
 J. Blinn, assisted by S. Rueff

BROADCAST

00:49:00
TOYO LINKS BROADCAST DEMO
REEL 1987
Toyo Links Corporation
Shinagawa-Ku, Tokyo, Japan

CONTACT:
 Kinji Odaka
 FORMAT:
 1" NTSC video
 HARDWARE:
 Links-1 System, VAX 11/780
 SOFTWARE:
 In house Ray-Tracing and Scanline Software

PRODUCERS:
 Masao Ose, Koji Ichihashi, Shuji Asano

PRODUCTION MANAGER:
 Kinji Odaka

DIRECTORS:
 Takashi Fukumoto, Art Durinski,
 Michiko Suzuki

ART DIRECTOR:
 Mari Fujisaki

TECHNICAL DIRECTORS:
 Kohtaro Abe, Masanori Ihara, Takahiro
 Yamamoto, Ryuji Kitamura

CHIEF DESIGNERS:
 Hiroyuki Hayashi, Midori Yamada

DESIGNERS:
 Taku Kimura, Hideki Nakano, Yuji Hamajima,
 Keiji Yamaguchi

ANIMATORS:
 Eiko Miyabayashi, Chizuko Yamaji

PRODUCTION COORDINATORS:
 Yasushi Nishihata, Hideaki Noguchi,
 Satoko Fujii, Yoko Shinkai

TECHNICAL STAFF:
 Masuharu Endo, Yuki Kasahara,
 Yuhei Yamamoto, Tamotsu Machida,
 Hiroshi Yoshimura

RESEARCH & DEVELOPMENT:
 Toyo Links R&D Division

VIDEO PRODUCTION:
 Imagica Video Center

00:51:47
TV-CF FOR KIRIN METS
Taiyo Kikaku Co., Ltd. Media Mix Room
Minato-Ku, Tokyo, Japan

CONTACT:
 Saburo Yanase

FORMAT:
 35mm film with resolution 600x600

HARDWARE:
 8 SONY NEWS NWS-830 workstations with
 a custom made frame buffer

SOFTWARE:
 Polygon-based Renderer by Masataka Ohta

CONCEPTS BY:
 Hideaki Mano, Saburo Yanase

PRESENTED BY:
 KIRIN BREWERY CO., LTD.

CREATED AND DIRECTED BY:
 Saburo Yanase

ART DIRECTOR:
 Saburo Yanase

PRODUCER:
 Masakichi Abe

ANIMATORS:
 Masahiro Katsuta, Satoshi Tsukamoto

OPERATOR:
 Kazue Tsubo

MODELERS:
 Mitsunori Kataama, software by Kei Yuasa

SOUND:
 A. R. A.

RESEARCH & DEVELOPMENT:
 Masataka Ohta

00:52:47
SIGGRAPH '87
CRANSTON/CSURI Productions
Columbus, Ohio

CONTACT:
 Dobbie Schiff

FORMAT:
 1" NTSC video

CREDITS:
 Michelle Amato, Richard Baily, Teja Betz,
 Murthy Bhetanabhotla, Wilson Burrows,
 Wayne Carlson, Peter Carswell, Ed
 Cheetham, Doreen Close, Michael Coltery,
 Jean Cunningham, Judy Davis, Rebecca
 Denning, Alan F. DiNoble, John Donkin, John
 Gaglione, Gail Hearn, Deborah Holcomb,
 Tom Hutchinson, Douglas Kingsbury, James
 Kristoff, Ruedy Leeman, Kamran
 Manoochehri, Steve Martino, Marsha
 McDevitt, Rebecca McGinnis, Richard McKee,
 John Miller, David Novak, Maria Palazzi,
 Deborah Pritchard, Kevin Reagh, Ron Saks,
 Dobbie Schiff, Paul Schneider, Paul Sidlo,
 Mark Steeves, Don Stredney, Dale Sydnor,
 Jon Townley, John Weber, Andy Whita, Donna
 Yamaguchi, Hurjye Yeh

00:55:50
JCGL DEMO FOR SIGGRAPH '87
Japan Computer Graphics Lab., Inc.
Toshima, Tokyo, Japan

CONTACT:
 Junichi Motoi

FORMAT:
 1" NTSC video

HARDWARE:
 DEC VAX 11/780, Genisco & Ikegami Fbs,
 IMI-500, Evans & Sutherland PS-330, Sony
 BVH 2500, Dicomed 48-S, Sun 3 and NEC
 PC-9801, IMAGE MAKERS Paint System

SOFTWARE:
 JCGL System

CONCEPTS BY:
 M. Kaneko

PRESENTED BY:
 T. Ueno

CREATED BY:
 T. Watanabe

EDITOR:
 K. Suzuki

PRODUCERS:
 K. Kiyono, K. Sugimura, M. Komaarashi,
 N. Sato

PRODUCTION MANAGERS:

K. Watanabe, T. Araki, S. Chamoto

DESIGNERS:

F. Takahashi, F. Watanabe, S. Kondo

ARTISTS:

K. Iuchi, M. Morisugi, T. Kubota

ANIMATORS:

I. Nakayama, Y. Inubushi

DIRECTORS:

M. Shigematsu, T. Ohguchi, K. Suzuki

OPERATORS:

A. Inoue, S. Tanaka, J. Watanabe,
K. Kusumoto, M. Tsuchida, H. Okano,
T. Tsukada, M. Sakakibara

PROGRAMMERS:

T. Kato, H. Miyoshi, A. Murata, T. Shiozawa,
K. Hiraga, H. Kato, N. Saito, T. Murata

SOUND:

PINKS

00:59:27**THE FANTASTIC ANIMATION MACHINE, INC.
SIGGRAPH '87 SAMPLE REEL**

**The Fantastic Animation Machine, Inc.
New York, New York**

CONTACT:

Cathlyn Cantone

FORMAT:

1" NTSC video

HARDWARE:

Raster Technologies Model One/25-S and
One/380 Frame Buffers, Two Unix-based
Edge Vanguard Mini-supercomputers, Sony
BVH 2500 1" videotape recorder.

SOFTWARE TEAM:

Serge Sretschinsky, Mark Voelpel,
George Wolberg

PRESENTED BY:

James Lindner, Suzanne Gavril

PRODUCTION COORDINATOR:

Gayle Reznik

PRODUCTION MANAGER:

Victoria Schwaid

01:01:59**FGS-4000 DEMO TAPE**

**Broadcast Television Systems, Inc.
Salt Lake City, Utah**

CONTACT:

Susan Crouse-Kemp

FORMAT:

1" NTSC video

HARDWARE:

Bosch FGS-4000

SOFTWARE:

Bosch proprietary

CREDITS:

Animatrix, BTS Broadcast Television Systems,
Inc., Computer Art & Animation, Computer
Generated Imagery, Dallas Post Production
Center, Editel Inc., Gateway Studios,
Genesis, Third Avenue Productions, KUSA,
Modern Telecommunications Inc., Modern
Video Productions, NBC, Pace Video Center,
Polycom, Post Group, Systems Impact,
TransAmerica Video, Videofonics Inc., Z-Axis,
Animatica, ARRI Video, Gastown
Productions, Greenlight Video, Le Studio,
Moving Picture Company, Rushes,
Sonicvision, Videolab, Videotime

01:08:29**BLACK TRINITRON**

**Steiner Film
Munich, West Germany**

CONTACT:

Thomas Noack

FORMAT:

1" NTSC video

HARDWARE:

Gould Povernode, E&S PS300, Silicon
Graphics Iris 3030

SOFTWARE:

Abel Image Research

DIRECTOR:

Siegfried Steiner

CONCEPTS BY:

Ernst and Partner, Agency Dusseldorf

PRODUCER:

Elfie Schau

ART DIRECTORS:

Alder, Johannison, Ronspeck, Whitmore

TECHNICAL DIRECTOR:

Tom Noack

ANIMATOR:

Ken Wesley

MODELERS:

Tom Noack, Michael Hunger

LIGHTING:

Tom Noack

RESEARCH & DEVELOPMENT:

Ken Wesley

VIDEO PRODUCTION:

Steiner Film

CAMERA:

MATRIX 3000

01:09:07**BUD LIGHT VIDEO WARS**

**Optimus, Inc.
Chicago, Illinois**

CONTACT:

Patrick Garvey

FORMAT:

1" NTSC video

HARDWARE:

Bosch FDL 60, Corporate Communications
Sunburst Color Corrector, Ampex ATX-100,
Bosch FGS-4000, Quantel Paintbox, Abekas
A-62, Ampex ACE, AVC33, VPR-3's

SOFTWARE:

FGS Trajectory Editor

CONCEPTS BY:

Troy Hayes, DDB Needham Worldwide

PRESENTED BY:

John Greening

PRODUCER:

Ed Larson, DDB Needham Worldwide

FILM DIRECTOR:

Bob Eggers, Eggars Films

ART DIRECTOR:

Troy Hayes, DDB Needham Worldwide

ANIMATOR:

Rich Bobo

FILM EDITOR:

James Yamus Mudra

VIDEO EDITOR:

Joseph Malecki

SPECIAL EFFECTS:

Ann Smeltzer

TALENT ARTIST:

Michael Winslow

SOUND:

Ed Golya

SOUND EFFECTS:

Michael Winslow

PAINT SYSTEM:

Ann Smeltzer

COPYWRITER:

Allen Rubins, DDB Needham Worldwide

01:09:45**PDI PARTY MIX**

**Pacific Data Images
Sunnyvale, California**

CONTACT:

Shari Folz

FORMAT:

1" NTSC video, recorded at 60 fields per sec.

CREDITS

HARDWARE:

20 Ridge Computers, Raster Technologies
Frame Buffers, Sony Videotape Recorders

SOFTWARE:

In-house proprietary

PDI INCLUDES:

Carl Rosendahl, Richard Chuang, Glenn Entis, Thaddeus Beier, Adam B. Chin, Jim Ward, Shari Folz, Joe Palrang, Roger L. Gould, Richard Cohen, Nick Ilyin, Delle Maxwell, Howard Baker, Mary Keenan, Larry Lessler, Jim Dixon, Michelle Tsui, Dick Walsh, Bill Foss, Pat Maslyn, Jim Rygiel, Henry Anderson, Steve Goldberg, Larry Gutermann.

01:12:02

OLYMPIC STAIN "BLUEPRINT," SHELL OIL "ENGINE," TRW "RAPID PROTOTYPING"

Robert Abel & Associates/Omnibus
Hollywood, California

CONTACT:

Robert Abel

FORMAT:

1" NTSC video

"BLUEPRINT"

HARDWARE:

Gould PN9080, Culler PSC, Celerity 1260

SOFTWARE:

AIR Software System. CAMCON, PIX, McStick(SM)

DIRECTOR:

John Nelson

TECHNICAL DIRECTORS:

Charles Gibson, John Hughes, John Nelson, Neil Richmond

EDITOR:

Rick Ross

ART DIRECTOR:

Steve Beck

CHOREOGRAPHER:

John Nelson

ANIMATORS:

Con Pederson, Neil Eskuri

MODELERS:

Con Pederson, Neil Eskuri, John Nelson

RESEARCH & DEVELOPMENT:

Charles Gibson, Con Pederson, Paul Alan Newell

"ENGINE"

SOFTWARE:

AIR Software System. CAMCON, PIX

ART DIRECTOR:

Cliff Boule

TECHNICAL DIRECTORS:

Ann Kerbel, Neil Richmond, Kathy White, John Hughes, Charles Gibson

EDITOR:

Rick Ross

CHOREOGRAPHER:

Ann Kerbel

ANIMATORS:

Con Pederson, Neil Eskuri

MODELERS:

Debbie Krikun, Kevin Barnhill, Neil Eskuri, Di Piepol

RESEARCH & DEVELOPMENT:

Keith Goldfarb

"RAPID PROTOTYPING"

HARDWARE:

E&S PS2, Cray XMP

SOFTWARE:

AIR Software System. CAMCON, PIX, DP3D

DIRECTOR:

Dana Duff

ART DIRECTOR:

Nenny Mirman

TECHNICAL DIRECTORS:

Charles Gibson, Brad Hunt, Neil Richmond, Michael Limber

CHOREOGRAPHER:

Neil Richmond

ANIMATORS:

Chris Bailey, Neil Richmond, Brad Hunt

MODELERS:

Aung Min, Don Smith, Tom Betts, Di Piepol

RESEARCH & DEVELOPMENT:

Brad Hunt, Charles Gibson, Michelle Feraud

01:13:43

PRUDENTIAL "MOON ROCK," PRUDENTIAL "CANYON ROCK"

Digital Productions/Abel/Omnibus
Los Angeles, California

CONTACT:

Sherry McKenna

FORMAT:

1" NTSC video

HARDWARE:

Cray X/MP, IMI 666

SOFTWARE:

DP3D

CONCEPTS BY:

Ted Bates Advertising, New York

"MOON ROCK"

DIRECTOR:

Jim Rygiel

ART DIRECTORS:

Jim Rygiel, Bob Saltzburg

AGENCY PRODUCER:

Elaine Gold

CREATIVE DIRECTOR & COPYWRITER:

Mike Cherney

TECHNICAL DIRECTORS:

Jim Rygiel, Rebecca Hiner, Eric Guaglione, Peter Farson

EDITOR:

Marie Davis

CHOREOGRAPHER:

Jim Rygiel

LINE PRODUCER:

Ellen Sommers

ANIMATOR:

Chris Cassady

MODELERS:

Aung Min, Tom Betts, Beth Leitner, Kathy Prestera, Dianne Piepol, Mike LaFayve

LIVE ACTION:

Bruce Dorn

CAMERA:

John Graham

"CANYON ROCK"

PRODUCER:

Ellen Sommers

ART DIRECTOR:

Jim Rygiel

TECHNICAL DIRECTORS:

Peter Farson, Rebecca Hiner, Eric Gauglione, Jim Rygiel

CHOREOGRAPHER:

Peter Farson

EDITOR:

Marie Davis

ARTIST:

David Drain

ANIMATOR:

Chris Cassady

MODELERS:

Aung Min, Tom Betts, Beth Leitner, Kathy Prestera, Don Smith, Mike LaFayve

CAMERA:

John Graham

01:14:52

ECOLOGY II: FLOAT Nippon Electronics College Shinjuku-ku, Tokyo, Japan

CONTACT:

Yoichiro Kawaguchi

FORMAT:

1" NTSC video

HARDWARE:

Links-1

SOFTWARE:

In-house and Links software

OPERATORS:

S. Katsuma, H. Imagawa, Y. Nidaira

ELECTRO SOUND:

Kazutaka Tazaki

FINE ART

01:18:54

FAIR PLAY

Apollo Computer, Inc.

Midnight Movie Group

Chelmsford, Massachusetts

CONTACT:

Michael Sciulli

FORMAT:

35mm film

HARDWARE:

Apollo DOMAIN Workstations

SOFTWARE:

5-D Ray Tracer

CREATED BY:

Michael Sciulli, Mellisa White, August Coppola, Mark Marderosian, Bob Palmer, Peter Toohill

TECHNICAL STAFF:

Jim Arvo, Nancy Benovich, Joe Bowbeer, Chris Bremser, Terry Crane, John Francis, Jeff Graber, Joe Gilby, Burt Hashizume, David Kirk, Olin Lathrop, Kevin Lefebvre, Al Lopez, Ralph Morrison, Phillip Neale, Vic Odryna, Jimm Parsons, Eric Peters, Steve Reber, Gary Rose, Cary Scofield, Ken Severson, Melinda Shebell, Nancy Zawistowski

MUSIC BY:

Greg Hawkes, Andy Topeka

MORAL SUPPORT:

Mary Allard, Andy Marcuvitz

01:21:46

DEJA VU

4D Art & Design

Brooklyn, New York

CONTACT:

Elyse Vaintrub

FORMAT:

1" NTSC video

HARDWARE:

Gould Sel 6240

SOFTWARE:

Syntha Vision

CREATED AND PRODUCED BY:

Elyse Vaintrub

SOUND:

Granger Variations on Gershwin

01:23:47

MENTAL IMAGES

Mental Images GmbH & Co. KG
Berlin, West Germany

CONTACT:

Rolf Herkin

FORMAT:

1" NTSC video

HARDWARE:

Silicon Graphics IRIS 3030, GEI Celerity C1260 mainframe, Eikonix Camera (2Kx2K), Ampex VPR-6 Videotape Recorder, Dunn Film Recorder 8000 with DEC 11/73 File Server

SOFTWARE:

Wavefront and programs developed by Mental Images, software support by Axel C. Dirksen, Christian Hege, Robert Hoedicke, Wolfgang Krueger

CREATIVE & TECHNICAL CONCEPTION:

John A. Berton, Rolf Herkin

TECHNICAL REALIZATION:

John A. Berton, Rolf Herkin, Uli Weinberg, Roger Wilson

CONSULTANTS:

Vera Braun, Silvia Hanko, Ingrid Rieck, Jim Tucker

MUSIC:

Arnold Schoenberg, String Quartet No. 2, op. 10

MUSIC PERFORMED BY:

The Juilliard String Quartet

SOUND:

Ulrich V. Weinberg

SYSTEMS ENGINEERING:

Axel C. Dirksen

01:25:31

PEPPY

Toyo Links Corporation

Shinagawa-Ku, Tokyo, Japan

CONTACT:

Kinji Odaka

FORMAT:

35mm film

CREATIVE STAFF:

Koutarou Abe, Shuji Asano, Art Durinski, Masuharu Endo, Mari Fujisaki, Takashi Fukumoto, Hiroyuki Hayashi, Masanori Ihara, Yuuki Kasahara, Taku Kimura, Eiko Miyabayashi, Tomoko Myochin, Hideki Nakano, Shinji Santoh, Michiko Suzuki, Keiji Yamaguchi

PRODUCED BY:

Toyo Links Corporation

SOUND EFFECTS BY:

Sound Craft

SPECIAL THANKS:

Pink Dragon

MUSIC VISUALIZATION

01:27:19

MUSIQUE NON-STOP

New York Institute of Technology
Old Westbury, New York

CONTACT:

Rebecca Allen, Los Angeles

FORMAT:

1" NTSC video

HARDWARE:

VAX 11/780, Ikonas Frame Buffers, Evans & Sutherland Multi-picture System II

SOFTWARE:

Proprietary NYIT CGL Inc. 2-D & 3-D modeling and animation

CONCEPTS BY:

Kraftwerk and Rebecca Allen

CREATED BY:

NYIT CGL Inc.

PRODUCER:

Computer Graphics Lab, New York Institute of Technology, Research Development CGL Inc.

DIRECTOR:

Rebecca Allen

TECHNICAL ASSISTANT:

Steve Di Paola

ART DIRECTOR:

Rebecca Allen

ANIMATORS:

Steve Di Paola, Peter Oppenheimer, Amber Denker, Rebecca Allen, Paul Xander Jr., Glen McQueen

MODELERS:

Steve Di Paola, Peter Oppenheimer, Robert McDermott, Rebecca Allen, Hank Grebe

MUSIC BY:

Kraftwerk (Warner Bros./EMI)

VIDEO PRODUCTION:

NYIT Video Center: Steve Stankowski, Frederick Staab, Joseph Napodano, Stephen Uzzo

01:31:32**DANCE OF THE STUMBLERS****Steve Segal****West Hollywood, California****CONTACT:**

Steve Segal

FORMAT:

16mm film transferred to 1" NTSC video

HARDWARE:

Amiga Computer

SPECIAL HARDWARE BY:

David Curlender

SOFTWARE:

"AEGIS ANIMATOR" by Jim Kent

CREATED & ANIMATED BY:

Steve Segal

DIRECTOR:

Steve Segal

TECHNICAL ASSISTANT:

Dave Curlender

SOUND:

Music by Rimski Korsakov

01:34:07**VICTORY SAUSAGE****John Whitney, Sr.****Pacific Palisades, California****FORMAT:**

35mm film

HARDWARE:

IBM PC/AT, Roland Midi Processor,

Yamaha DX7

SOFTWARE:

Music and graphics composer's program created and copyrighted by John Whitney, Sr. and Jerry Reed

CONCEPTS BY:

Computer music and computer graphics composition created by John Whitney, Sr.

PRODUCER:

John Whitney, Sr.

MUSIC DUBBING:

Hybrid Arts

FILM LAB:

Alpha Cine

01:36:44**SOGITEC SHOW REEL****Sogitec****Boulogne-Billancourt, France****CONTACT:**

Xavier Nicolas

FORMAT:

35mm film

HARDWARE:

Perkin-Elmer 3200 MPS/Raster Tech./ESS

SOFTWARE:

Sogitec Software

CREATED & DESIGNED BY:

Sogitec team

ORIGINAL SCORE BY:

Angelique and Jean Claude Nachon

01:39:34**SIGN OF THE TIMES****MIX EFEX/Pacific Video****Hollywood, California****CONTACT:**

Clayton E. Whitney

FORMAT:

1" NTSC video

HARDWARE:

Bosch FGS-4000

EDITOR:

Post facilities by Pacific Video

PRODUCER:

Janet Flora, Flora Film Productions

DIRECTOR:

William Konnersman

ART DIRECTOR:

William Konnersman

ANIMATORS:

Scott Bergman, Clayton Whitney,

Steve Williamson

CONSULTANT:

Computer animation by MIX EFEX

THEATRICAL MOTION PICTURES**01:42:39****OILSPOT AND LIPSTICK****Walt Disney Pictures****Glendale, California****CONTACT:**

Dave English

FORMAT:

35mm film

PRODUCER:

Dave English

DIRECTOR:

Mike Cedeno

CREATIVE CONSULTANT:

Burny Mattinson

STORY DEVELOPMENT:

Mike Cedeno, Bruce Morris, Gary Trousdale

ORIGINAL CONCEPT:

Lem Davis

MUSIC:

Jay Ferguson

ANIMATORS:

Rueben Aquino, Mike Cedeno, Tony DeRosa,

Tina Price, M. J. Turner

EFFECTS ANIMATOR:

Barry Cook

ASSISTANT ANIMATORS:

Brian Clift, Jim Houston

LAYOUT ARTIST:

Fred Cline

BACKGROUND ARTIST:

Brian Sebern

PRODUCTION GRAPHICS:

John Emerson

SOUND EFFECTS:

Robby Weaver

VIDEO EDITING:

Bob Lambert

FILM EDITING:

Dave Wolf

PRODUCTION MANAGER:

M. J. Turner

TECHNICAL DIRECTORS:

(Production and Animation) Tad Gielow,

M. J. Turner

TECHNICAL DIRECTORS:

(Compositing and Effects) Lem Davis, David

Coons, Jim Houston

SYSTEMS MANAGEMENT:

Tad Gielow, Mark Kimball, Vahe Sarkissian,

M. J. Turner

PRODUCTION AUDITOR:

Jeff Bush

STILL PHOTOGRAPHER:

Jim Elliot

WAVEFRONT CONSULTANT:

John Grower

FILM RECORDER OPERATOR:

Mike Keeler

SPECIAL THANKS TO:

Wavefront Technologies, Inc.—Loan of production software

Edge Computer Corporation—Loan of hardware for production

PIXAR, Inc.—Loan of hardware/software for animation tests

01:45:59

**THEATRICAL MOTION PICTURE
COMPUTER GRAPHICS**
New York Institute of Technology
Computer Graphics Lab
Old Westbury, New York

CONTACT:

James Calciano

FORMAT:

35mm film and 1" video

HARDWARE:VAX 11/780, Evans & Sutherland
Multi-picture System, Ikonas Frame Buffers**SOFTWARE:**

NYIT 2 Buffer Based Polygon Rendering

CONCEPTS BY:

Peter Oppenheimer, Susan Van Baerle

PRESENTED BY:New York Institute of Technology, ITC
Productions, Vestron Video, CGL Studios**PRODUCERS:**Strawberry Fields; Alexander Schure, Louis
Schure, Al Brodax**DIRECTORS:**

Dan Hopen, Susan Van Baerle

COMPUTATIONAL GEOMETER:

Robert McDermott

CONSULTANTS:Glenn McQueen, John Lewis, Peter
Oppenheimer**ART DIRECTORS:**Steve Di Paola, David Lubell, Susan
Van Baerle**CHOREOGRAPHER:**

Susan Van Baerle

ARTISTS:

Strawberry Fields: David Lubell, Rick Geary

ANIMATORS:Dan Hopen, Peter Oppenheimer, Susan
Van Baerle**RENDERING:**

Steve DiPaola

MODELERS:Dan Hopen, Dick Lundin—modeling
software, Susan Van Baerle, Cyberware,
Paul Xander**SOUND:**

Dan Hopen, music by Dan Conti

PAINT SYSTEM:

Strawberry Fields: Pam Spertus

VIDEO PRODUCTION:

Norma Sundy, Steve DiPaola

CAMERA:

Ariel Shaw

01:51:28

**STANLEY AND STELLA:
BREAKING THE ICE**
Symbolics Graphics Division
Los Angeles, California

CONTACT:

Michael Wahrman

FORMAT:

1" NTSC video

HARDWARE:

Symbolics 3600 Workstations

SOFTWARE:

Symbolics Animation Software

PRESENTED BY:Symbolics Graphics Division,
Whitney/Demos Productions**DIRECTORS:**Larry Malone, Michael Wahrman, Craig
Reynolds, Philippe Bergeron**BEHAVIORAL ANIMATION:**

Craig Reynolds

CHARACTER ANIMATION:

Philippe Bergeron

EXECUTIVE PRODUCERS:

Tom McMahon, Gary Demos

ART DIRECTORS:Larry Malone, Robert Fussfield—Hitman
of Design**DESIGN:**

Ann Monn, Dean Foster,

RENDERING:Joseph Goldstone with the East Coast
Rendering Unit, Sue Simms, Charles Hornig,
Kenny Byrne, and Symbolics Chatsworth**MODELERS:**Richard Baily, Larry Malone, Mary Ann
Morris—Whitney/Demos Productions**SOUND:**

Richard Baily, Dave Bluefield, Bob Mithoff

RESEARCH & DEVELOPMENT:

Rendering software by Kevin Hunter

Animation software by Larry Malone

POST PRODUCTION SUPERVISOR:

Jim Ryan

LIGHTING:

Ken Brain

ADDITIONAL TECHNICAL DIRECTION:

Andy Kopra

SPECIAL THANKS TO:Symbolics Graphics Division, Westwood
California, and Whitney/Demos Productions**01:54:33**

BALLOON GUY
Ohio State University
Advanced Computing Center for the Arts
and Design
Columbus, Ohio

CONTACT:

Chris Wedge

FORMAT:

1" NTSC video

HARDWARE:Convex C-1, Hardware Support by
Jeff Campbell**SOFTWARE:**Written at Ohio State University, Advanced
Computing Center for the Arts and Design,
software/system integration by John Donkin
and Scott Dyer**CONCEPT BY:**

Chris Wedge

CONSULTANTS:Flexible dynamics simulation by David
Haumann, 3-D cloud textures by James Hahn
and Marla Schweppe**PRODUCER:**

Chris Wedge

01:56:14

RED'S DREAM
PIXAR
San Rafael, California

CONTACT:

Ralph Guggenheim

FORMAT:

35mm film

HARDWARE:Pixar Image Computer, Dunn Instruments
635 Compactcolor Camera**SOFTWARE:**

ChapReyes and Volume Rendering

WRITTEN, DIRECTED and ANIMATED BY:

John Lasseter

TECHNICAL DIRECTORS:

Eben Ostby, William Reeves, H. B. Siegel

MODELING and ANIMATION SOFTWARE BY:

Eben Ostby, William Reeves

MODELS:

John Lasseter, Eben Ostby, William Reeves

REYES/MIRACLE TILT:

Robert L. Cook

CHAPREYES:

Tony Apodaca, Charlie Gunn, H.B. Siegal

SMOKEY SPOTLIGHT:

Bob Drebin

CREDITS

LASER SCANNING:

Don Conway

SOUND:

Gary Rydstrom, Sprocket Systems

MUSIC ARRANGED and PERFORMED BY:

Jeffery Mock

MUSIC RESEARCH:

Forrest Patten, Kaleidosound

COMPUTER SUPPORT:

Bill Carson

PRODUCTION COORDINATORS:

Susan Anderson Catmull, Ralph Guggenheim

POST PRODUCTION COORDINATOR:

Craig Good

02:00:00

L.A.—THE MOVIE

Jet Propulsion Laboratory

Pasadena, California

CONTACT:

Kevin Hussey

FORMAT:

1" NTSC Video

CREATED BY:

Kevin Hussey, Bob Mortensen, Jeff Hall

VIDEO PRODUCTION:

Digital Image Animation Laboratory

(DIAL/JPL)

ACKNOWLEDGEMENTS:

Original (3-D) algorithm; M. Kobrick

MIPL OPERATIONS:

R. Bambery, S. Fullner, T. Greer,

W. Stromberg

TECHNICAL SUPPORT:

W. Tuk, J. DiStefano

FINALE

BOOM BOOM BOOM

Visuals—AT&T Bell Laboratories

Murray Hill, New Jersey

Audio—Levin & Many Composing

Burbank, California

CONTACT:

Gerald Weil, AT&T

FORMAT:

1" NTSC Video

SOFTWARE:

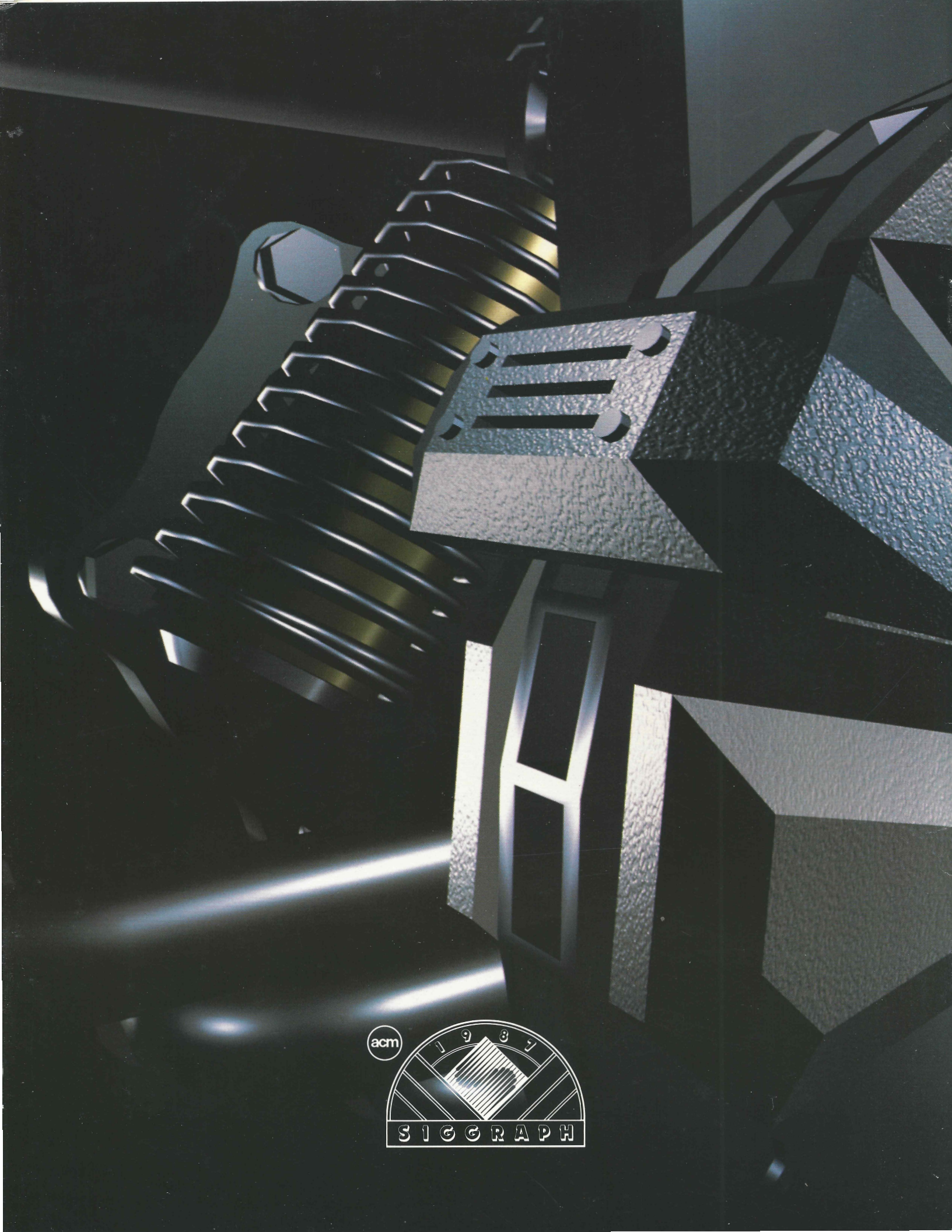
Gerald Weil

PRODUCED & ANIMATED BY:

Gerald Weil

ADDITIONAL DIGITAL AUDIO:

Levin & Many Composing



acm

