

PROFITS IN WEDDING VIDEOGRAPHY, PAGE 62

VIDEO TOASTER USER

an avid publications magazine

THE PERSONAL VIDEO PRODUCTION MAGAZINE

AUGUST 1994 • \$3.95 US/ \$5.00 CAN

ROBOCOP PICTORIAL

Professional 3D
Compositing

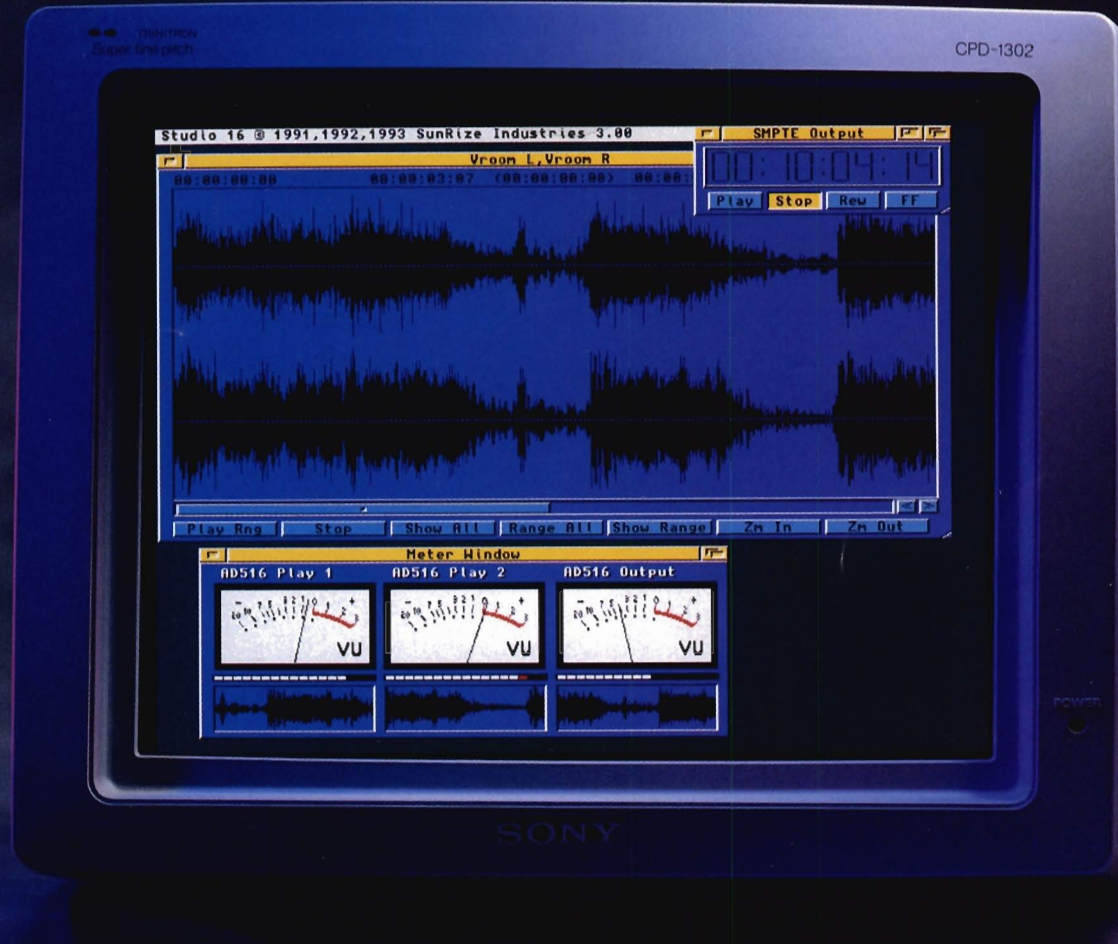
Video in the Courtroom

Wireless Microphones

3D Morph Tutorial



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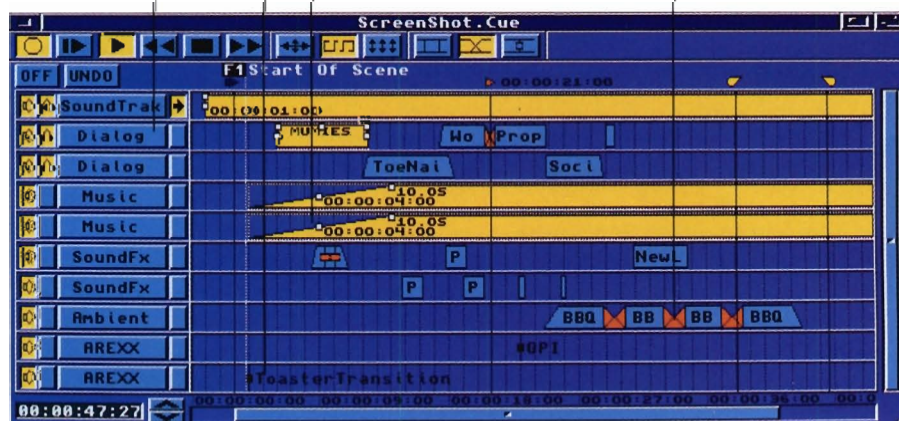
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	POWER Series	Brand X
TBC	Full-Field/3-D Type	16 line*
Full Luminance Bandwidth	YES	NO
Full Linear Audio Response	YES	NO

*Available only in two most expensive models

VIDEO TOASTER USER

AUGUST 1994 ISSUE NUMBER 22

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by Ron Leach

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by Don Pence and Michaela Miller Pence

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JVC. The three most important letters in S-VHS.

FOR INFORMATION CIRCLE 100

*The GY-X2U weight is 13 pounds not including lens and battery.

VIDEO TOASTER USER

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by Frank Kelly

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by Matt Drabick

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by Tim Doherty

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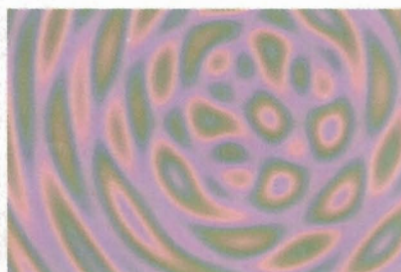
A tutorial featuring tips and techniques used to complete a successful LightWave project.



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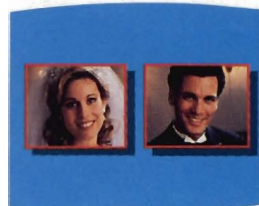
by Jim Plant



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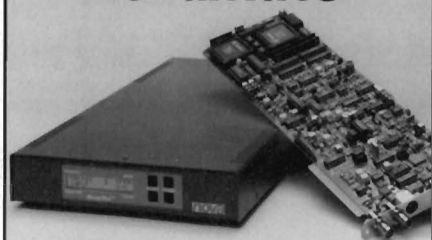
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Direct your Toaster-specific questions to John Gross. Direct your general video questions to Rick Lehtinen. Send your tips to Brent Malnack.

NEW PRODUCTS & UPDATES (PRESS RELEASES)

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Please send a query letter with your article outline and qualifications to the Editor-in-Chief.

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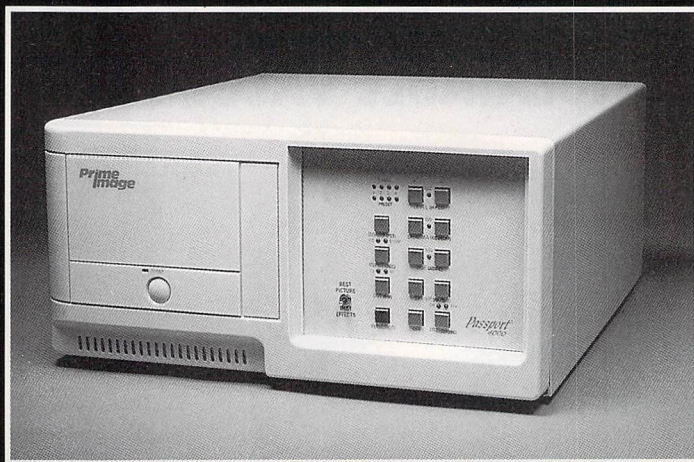
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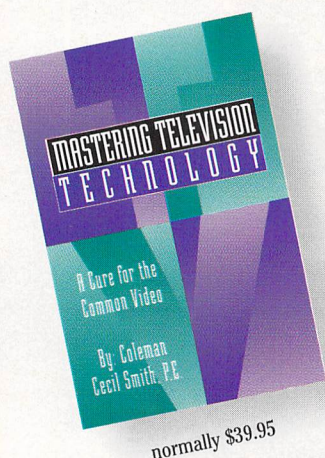
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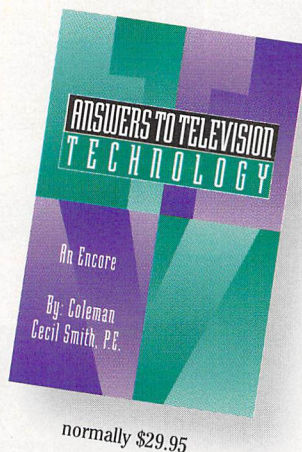
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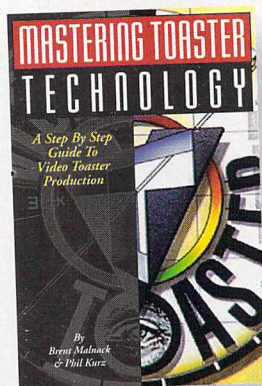


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FOR INFORMATION CIRCLE 136



THE DOMINO THEORY.

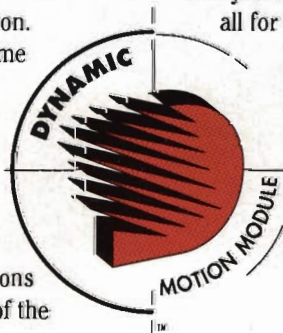


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FOR INFORMATION CIRCLE 136



TOASTER TALK

Business to Business

You Are Not Alone

by Michael D. Kornet



Yes, there have been countless pulse-quickenings over the past few months in the video production market. Since I joined AVID Publications four months ago as Publisher, I have not suffered from a single minute of either monotony or malaise—because we have been experiencing the *good* with the bad. My guess is your summer has been about the same. There are more videographers and animators earning a living with the Video Toaster than all other competitive products (on any platform) combined. There are thousands of video professionals (all of our valued subscribers) who are dealing with the same issues.

Recently, I've had the pleasure of talking with some *Video Toaster User* subscribers at our NAB booth and through the phone calls I've received here at AVID Publications. "How is your business doing?" is a question I always ask, and the answer is almost always positive. After all, you have a solution that works, and with your expertise you bring in thousands of dollars utilizing your Video Toaster. Yes, the Commodore situation has been tumultuous, but as we say in magazine publishing, all problems go away when the number of advertising pages is up. Likewise, when your video sales are up and profits surpass your investment in personal video production products, your experiences lean more towards the *good* than the bad.

An Old Friend

Unless *VTU* provides useful information, our value to you and our relationships with our advertisers would be impaired. *VTU* has been receiving letters lately that show a desire to return to the many tips, techniques and tutorials that were more prevalent in the past. That is why it is with great pleasure and anticipation that I re-introduce to many of you our new Editor-In-Chief, Jim Plant.

For those of you who are new subscribers to *VTU*, Jim founded AVID Publications and was editor from the inception of *VTU* through May 1993, when Phil Kurz assumed the role. After years as an editor for multiple publications and publishing companies, Phil recently decided to make a career change to corporate communications outside of publishing.

Jim Plant is my longtime friend of 14 years, but he is also well known to many of you. In addition to the letters mentioned above, electronic requests have appeared on bulletin boards such as CompuServe and Internet, asking for a return to the kind of focused editorial that Jim founded. Jim has extensive experience in all aspects of the personal video production market,

and is widely respected for his contributions to the Toaster community. He is enthusiastic about resuming a daily interaction with our skilled writers. Look for his unique thoughts in the September installment of Toaster Talk.

Sharing Knowledge

AVID Publications has begun a new level of investment and growth in research that we'll be sharing with you through the pages of *VTU*. With SIGGRAPH '94 at the end of July, it seems appropriate to provide you with some data regarding 3D animation. Burt Wilson, who heads the Video SIG Group of the L.A. Video Toaster Users Group, was one of my first sources of information on how prevalent 3D animation is among Toaster owners.

Wilson said that "50 percent of the L.A. Video Toaster Users Group members *focus* on animation versus post-production." Here at AVID Publications, a national readership study of our subscribers and newsstand buyers has just been completed. When Video Toaster owners were asked what types of work they were producing in their video business, 46 percent of you cited a focus in 3D animation.

The data clearly indicates large numbers of you are finding success in 3D animation. With the pervasive use of LightWave (NewTek's 3D animation software) on television shows, and large 3D animation projects in movies such as *Jurassic Park*, it's an easy prediction to make when I say that many of you will find additional profitable opportunities for your business in this field.

The pattern of young but successful video companies utilizing LightWave 3D animation as their core business is rising; and in an upcoming article *VTU* will focus on an example of a new animation house called Free Range, founded by Brad Carvey and based in New Mexico.

In addition to the animation data, the survey also showed that 41 percent of you mentioned S-VHS as your tape format of choice, and 51 percent stated you do your work on a Toaster 4000 versus a 3.0 or 2.0 Toaster. When it comes to investing in your equipment, 46 percent of our readership stated they are spending \$15,000 or greater on their production system, and 15 percent say they plan to spend \$25,000 or more on video equipment in the next 12 months.

Our continued commitment at AVID Publications with both *VTU* and *LIGHTWAVEPRO* is to provide the information and knowledge you need to bring your business a profitable return on those investments, and to help make those experiences *good* ones. Enjoy!

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FOR INFORMATION CIRCLE 124

NEW PRODUCTS

Compiled by Joan Burke

CD-1401

Dynamic Display

Product: CD-1401
Description: 14-inch color display for Amiga Computers
Price: \$549.00
CD Solutions
2551 San Ramon Valley Blvd.
Suite 214
San Ramon, CA 94583
(510) 820-5400
Fax (510) 820-4115

FOR INFORMATION CIRCLE 1

CD Solutions is now shipping the *CD-1401*, a 14-inch color display that is com-



patible with all Amiga/Video Toaster timings. The CD-1401 features a sharp 0.28 mm dot pitch CRT with high contrast and non-glare glass. The display automatically scans from 15.5KHz to 35KHz and has the ability to size and display edge to edge.

Storing Hard Drives

Product: Storage Path
Description: Storage units for hard drives
Price: \$1,095
SWS Corp.
917 Lawrence Dr.
Newbury Park, CA 91320
(805) 498-6727
Fax (805) 498-8834

FOR INFORMATION CIRCLE 2

SWS Corp. offers *Storage Path*, a solution for Video Toaster users who want to store multiple hard drives of digitized audio/video data. These 9- or 18-bay tower or rack mounted units come

The optional slide-in, slide-out drive storage sleeves allow users to quickly remove or replace disk drives without shutting the system down. It also provides the ability to quickly bring online archived files and transport large data files off the property for security and protection. These systems provide users with complete upward mobility as their requirements for more digitized storage space increase.

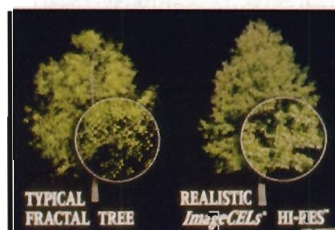
Computer Garden

Product: ImageCELS Hi-Res Botanicals
Description: Global plant collection
Price: \$10 each
Imagetects
7200 Bollinger Rd., Ste. 802
San Jose, CA 95129
(408) 252-5487
Fax (408) 252-7409

FOR INFORMATION CIRCLE 3

Imagetects has released *ImageCELS Hi-Res Botanicals*, a global plant collection that will eventually encompass all commercially-grown species worldwide. The collection includes mature and juvenile trees, large and small shrubs,

indoor plants, perennials, annuals and groundcovers. *ImageCELS Botanicals* are 32-bit color TGA files with alpha



channel masking which provide quality and performance over fractal or procedural plants for the production of graphics and simulations. Each plant comes with detailed description and several hundred species are represented in the database.

Sharing Data

Product: MaxDos
Description: Software package for the Commodore Amiga
Price: \$124.95
Media4 Productions
2800 University Ave.
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West Des Moines, IA 50266
(515) 225-7409

FOR INFORMATION CIRCLE 4

Media4 Productions introduces *MaxDos*, a complete software-only system which allows Amiga users to easily and transparently access Apple Macintosh formatted hard drives and high-density floppies. Designed for video, graphics, database, publishing and more, this software benefits anyone who moves data between Mac and Amiga platforms.

Large volumes of data can be shared by simply unplugging an external hard, optical, floptical, or other standard SCSI drive from one machine's SCSI port and plugging it into the other.

Powerful Zoom

Product: Ah66X13.5ESM
Description: Television zoom lens
Price: Not available
Fujinon Inc.
10 High Point Dr.
Wayne, NJ 07470
(201) 633-5600
Fax (201) 553-5216

FOR INFORMATION CIRCLE 5

Fujinon's Broadcast & Communications Products Division has introduced the *Ah66X13.5ESM*, a 2/3 inch television zoom lens that provides high magnification



and long focal length without sacrificing wide angle performance. The Ah66-X13.5ESM has specifications that would be excellent in a much shorter lens, let alone one with such a broad range of focal length. Minimum focal length is 13.5 mm and maximum focal length is 890



with dual 250 or 350 watt, load sharing and warm swappable power supplies with fault alarm.

mm. The lens also has a built-in protective front glass and desiccant compartment to control moisture.

Affordable Editing

Product: VLab Motion System
Description: Non-linear editing system

Price: \$1,750

NoahJi's

3591 Nyland Way

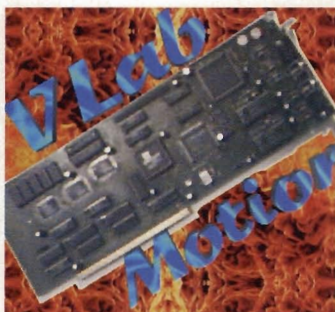
Lafayette, CO 80026

(303) 499-1975

Fax (303) 499-1979

FOR INFORMATION CIRCLE 6

NoahJi's introduces *VLab Motion System* from MacroSystems. The VLab features a digitizer plus video output device with YUV 4:2:2 square pixel quality and embedded hardware scaling as well as a genlock with chroma keying for real-time blue-box effects.



The system also features an interface specifically for allowing output over Video Toaster.

The system also comes with MovieShop, the complete editing software package. MovieShop features a hierarchical editor, B/W or color reference stamps, and a time line editor.

Physics 101

Product: Newton's Law Version 1.0

Description: Advanced physics module

Price: \$249

Cybernetica

310 Haley St.

Santa Barbara, CA 93101

(805) 730-7330

Fax (805) 730-7332

FOR INFORMATION CIRCLE 7

Cybernetica has released *Newton's Law Version 1.0*, a physics module for LightWave. The program has the ability to create more realistic animations by assigning physical properties to objects within a scene and defining the forces which act upon those objects.

Users will be able to define the material that an object is made of by choosing from a materials list included in the program. Once materials are defined, physical properties such as mass, density and friction can be assigned. *Newton's Law* also allows the user to manipulate the placement of objects within a scene directly from the interface.

Satellite Time

Product: ES-185 GPS

Description: Master Clock/Time Code Generator

Price: \$2,495

ESE

142 Sierra St.

El Segundo, CA 90245

(310) 322-2136

Fax (310) 322-8127

FOR INFORMATION CIRCLE 8

ESE introduces the *ES-185 GPS* (Global Positioning Satellite) System Master Clock/Time Code Generator. A six-channel receiver is employed, capable of tracking up to six satellites simultaneously. Accuracy of the clock is better than 300



nanoseconds of UTC. Standard features include a five-hour battery back-up, 1PPS TTL Output, Automatic Daylight Saving Time Correction, Time Zone Offset, Antenna

and a Rugged Rackmount enclosure.

Clear View

Product: LensPen

Description: Lens-cleaning system

Price: \$9.95

PhotoCo

4347 Cranwood Pkwy.

Cleveland, OH 44128

(800) 955-5505

Fax (800) 321-1329

FOR INFORMATION CIRCLE 9

Parkside Ventures introduces *LensPen*, a lens-cleaning system with a retractable brush at one end and a natural chamois pad at the other. The *LensPen*'s retractable brush is used for preliminary removal of dust or hard particles from the lens surface, while the cleaning tip contains a non-liquid compound impregnated into a pad made from nat-



ural chamois leather. The *LensPen*, which is designed to reduce the electrostatic charge on lens surfaces, is safe for use on photographic, video and binocular lenses only.

Expansion Time

Product: Warp Engine

Description: Series of Amiga expansion devices

Price: \$899—\$1,799

MacroSystem Development

24282 Lynwood, Ste. 201

Novi, MI 48374

(810) 347-3332

FOR INFORMATION CIRCLE 10

MacroSystem Development has announced the *Warp Engine* series of accelerators, an Amiga expansion device that comes in three versions for the Amiga/Video Toaster 4000 and three versions for

NEW UPDATE

Elasticity

Product: Elastic Reality for Power Macintosh

Description: Upgrade version of Elastic Reality morphing and special effects software

Price: \$349

Elastic Reality

925 Stewart St.

Madison, WI 53713

(608) 273-6585

FOR INFORMATION CIRCLE 11

Elastic Reality has announced the the *Elastic Reality for Power Macintosh*, which enables almost instantaneous color mixing, brightness and contrast color. The native Power Mac delivers a six-fold increase over Elastic Reality for 680X0 Macintosh machines. Image editing adjustments appear virtually in real time. It also includes a new freehand drawing tool that uses unique curve-fitting technology to achieve the precision of Bezier curves with the simplicity of natural drawing. A variety of pre-produced effects that users can incorporate into their own productions are also featured.

the Amiga 3000. The *Warp Engine* provides high-speed '040 acceleration, up to 128MB of local '040 burst memory and the fastest SCSI-II controller available.

The expansion is all placed on a single board that installs into the CPU slot instead of a Zorro III slot. All *Warp Engines* are upgradable to 40 MHz by changing the CPU and clock oscillator. The *Warp Engine* uses standard

NEW PRODUCTS

72-pin SIMMs and allows the use of up to four different size SIMMs simultaneously.

Automated Mixing

Product: M4000

Description: Fully automated mixing system

Price: Starting at \$30,000

Tactile Technology

13855 Bentley Place

Cerritos, CA 90703

(310) 802-1500

Fax (310) 802-7330

FOR INFORMATION CIRCLE 12

Tactile Technology is now shipping the *M4000* mixing system. It uses a separate control surface resembling a



conventional mixing console that communicates to the rack mount audio processing electronics via RS-422 serial connections. All control functions are automated including Faders, EQ, Aux send, Aux receive, Pan and Routing. Featuring a built-in distributed intelligence computer system, the M4000 makes external computer and monitor screens unnecessary. The M4000 also has a Digital Audio Workstation "throughput," which enables a user to plug stereo digital inputs into the M4000, mix in the master analog mix and output the signal digitally.

Monumental Software

Product: Monument CG

Description: CG/Tilting software package

Price: \$279.95

Spectronics International USA

34 East Main St. #23

Champaign, IL 61820

(217) 352-0061

Fax (217) 352-0063

FOR INFORMATION CIRCLE 13

Spectronics International USA announces the release of *Monument CG*. This software package has a long range of features. It runs on an Amiga with Kickstart 2.x upwards and has timeline-based for editing playback, transitions and order. Monument uses scalable fonts such as AGFA Compugraphic and is compatible with CG fonts used by other applications. Monument uses a new proprietary method of antialiasing for superior results. Imports include IFF and IFF24 with special palette optimizing routines. The package is fully multitasking.

A Fiberoptic First

Product: Mongoose optical fiber cable system

Description: Analog optical transmitter and receiver with fiberoptic cable

Price: Starting at \$125

ASM Labs, Inc.

410 E. O'Dell St.

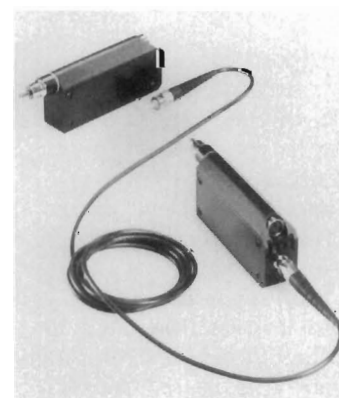
Marionville, MO 65705

(800) 214-9677

Fax (417) 463-7781

FOR INFORMATION CIRCLE 14

By using an innovative laser technology, ASM Labs has developed *Mongoose*, the first fiberoptic cable system for stereos, VCRs and other home audio and video equipment. Mongoose replaces



conventional wire cables and uses analog optical signals. It can convey information more than two miles while elimi-

nating the noise, interference and attenuation associated with wire cables. The Mongoose system incorporates a small electronic transmitter which plugs directly into a component, such as a CD player or VCR and converts the output signal to an optical signal. Information can be carried as far as 2.4 miles in a single uninterrupted run.

Expanding Hard Drives

Product: The Drive-In

Description: Hard drive expansion system

Price: Not available

Desktop Video Systems

14121 West 95th St.

Lenexa, KS 66215

(913) 782-8888

Fax (913) 492-6908

FOR INFORMATION CIRCLE 15

Desktop Video Systems has announced the *Drive-In*, a hard drive expansion system for use with the Video Toaster Flyer and other non-linear based editing systems. The Drive-In features a custom built, FCC certified, hard drive enclosure and power supply that will support up to several Video Toaster Flyer compatible hard drives. The system includes preformatted hard drives and cabling. It is available in either bare bones enclosure or as a delivery ready preconfigured system. Several models of the Drive In are available to the video professional ranging from low-budget desktop to high-end rack mount applications.

Scorpion Sighting

Product: Scorpio Model 1991AV

Description: 5.25-inch disk drive

Price: \$5,455

Micropolis Corp.

21211 Nordhoff St.

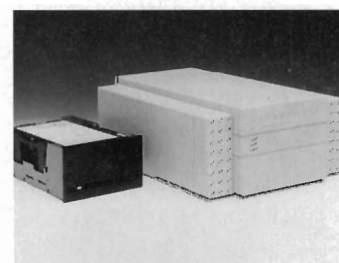
Chatsworth, CA 91311

(818) 709-3300

Fax (818) 709-3497

FOR INFORMATION CIRCLE 16

The Micropolis Corp. has introduced the *Scorpio Model 1991AV*. The 5.25-inch disk drive is designed specifically for enhanced digital and audio performance in applications such as multimedia, desktop publishing, digital video editing and video servers. The Scorpio Model 1991AV features 9.1GB of formatted capacity and an end-user cost per megabyte of less than 60 cents. The disk drive leads the industry in capacity and fast internal data rate. It also employs a prede-



termined audio/video data rate of 4.3MB/s and a maximum sustained transfer rate of 6.4MB/s.

Corrections

In New Products, *Video Toaster User*, June 1994, an incorrect price was listed for the VertiSketch. The retail price of the VertiSketch software is \$995. The software bundled with Science Accessories Corporations' AC hardware starts at \$3,995.

In New Products, *VTU* July 1994, an incorrect price was listed for Technical Aesthetics Operations, Inc.'s StudioNet series. Prices for the device control system start at \$3,495. *VTU* regrets the errors.

Newton's Law

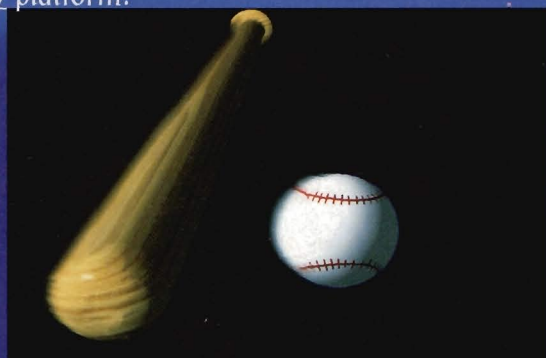
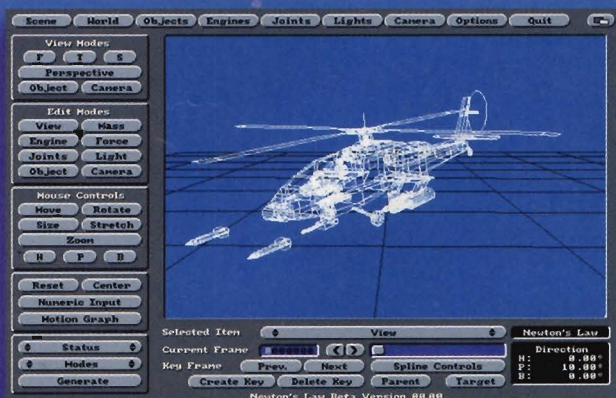
Physics Module



Features:

- Mass
- Velocity
- Acceleration
- Gravity
- Magnetism
- Wind
- Friction
- Envelopes
- Joints
- Engines
- Springs
- Hinges
- Pistons
- Rotors
- Thrust
- Explosions
- Dampening
- Density
- Elasticity
- Rigidity
- Deformation
- Align to Path
- Materials Library
- Inverse Kinematics
- Accurate Collision Detection

- After Frames are generated by Newton's Law, choose to render/raytrace within your preferred graphics package, or on the WARP SYSTEMTM using Cybernetica's LIGHT ENGINETM.
- Use Newton's Law for the fastest and most accurate physics on the Amiga, and add Cybernetica's PHYSICS ENGINETM on the WARP SYSTEM to get the fastest physics on any platform.



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Newton

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FOR INFORMATION CIRCLE 146

TOASTER TIMES

Commodore Update

Douglas Carey

Amid rampant speculation within the industry, the proceedings surrounding last April's voluntary liquidation of Commodore International Ltd. continued into July at a pedestrian pace.

Commodore announced on April 29 that it was ceasing operations and entering a liquidation for the benefit of the company's creditors. Subsequent developments were

slow in coming, and the final outcome was still in question at press time.

Immediately following Commodore's liquidation announcement, the company's assets were transferred to a pair of Bahamas-based trustees, Franklin Wilson and MacGregor Robertson, who began accepting bids from suitors interested in the Commodore technology.

Sources said that bids would be accepted through July 15, at which time the trustees would evaluate the submissions and make their decision public at a date still to be determined. Some reports indicated each bid had to be accompanied by a cash deposit, but that could not be confirmed at press time.

While the anxiety level of Amiga developers and dealers

heightened with each passing week, support for the platform remained strong. Commodore's warranty and repair work was being handled by SMG, which was reported to have a solid inventory of parts, except for motherboards.

In addition, Creative Equipment International—the largest Commodore distributor of Amiga parts in the United States—indicated that its inventory is large enough to satisfy the current demand. Despite Commodore's woes, sales of NewTek's Video Toaster remain surprisingly strong. Sources said the company "sold more Toasters in the month of June than any other month this year."

Doing Business in the Technological Age

Douglas Carey

So it turns out that the information highway starts in Los Angeles, with no shortage of people eager to grab the nearest on-ramp and leave the troubled city behind.

Like many in the entertainment field, Dusty Powers has taken his video production business and left L.A. But Powers, who relocated in 1992, said his move to Wilmington, N.C., was unrelated to any of the city's problems.

"I was looking to start over again with a different viewpoint. I wanted a new challenge," said Powers, who operates both East Bay Video, Inc., and Dusty Powers Video Productions. "I moved to Wilmington to live, not to work."

After a brief transition period, Powers' business opportunities began to thrive in Wilmington. Through the

miracle of modern technology—cellular phones, fax machines and computers—Powers was able to make a smooth transition. To keep in touch with his contacts, he maintained a phone line in L.A. for a year after his move.

"I realized that I didn't have to live in a big city to work," Powers said. "I don't need the headaches. I've made enough contacts (through the years in L.A.) that I could do the same amount of business in Wilmington."

My move to Wilmington had little to do with Los Angeles and everything to do with getting a fresh start," said Powers, who uses the Video Toaster for much of his post-production work. "I just reached a point in my life where I wanted to try a different lifestyle."

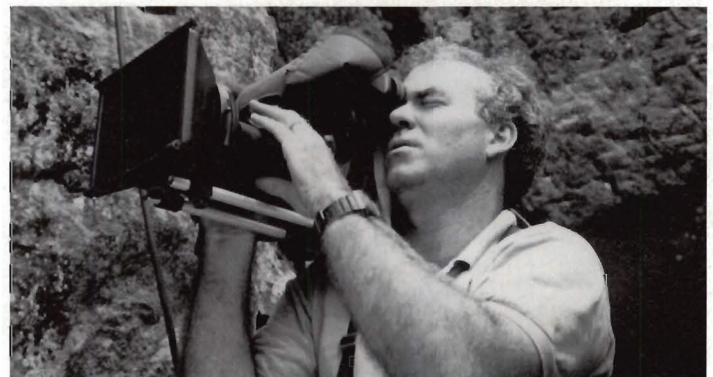
Like Powers, Richard Arsenault looked at a move

from L.A. as a chance for a new beginning. After working six years to expand his company, Pacific Pictures International, Arsenault decided early this year that the

educational video while working toward CD-interactive and feature production.

Arsenault said the decision to relocate to Albuquerque, N.M., was based primarily on his expectations of the company's growth.

"We're at the point now where we're about to grow pretty quickly, and I needed to be in a place where I'm not going to be limited by my environment," he said. "L.A. is a fantastic city for a lot of



Dusty Powers used advanced technology to his advantage during his transition from Los Angeles to Wilmington, N.C.

time was right to leave the Los Angeles area.

Among his first moves was a name change to Pacific Pictures Corporation, which will continue to specialize in

things, but it also tends to be a very expensive place to do business.

"With us sort of forging new ground, it's kind of neat to be in the middle of the

Perfect Timing for Bernoulli Box Winner

Greg Nyman had few expectations when he submitted his entry last March as part of a *Video Toaster User* contest for a free Bernoulli Box 150 Removable storage system.

Nyman, who couldn't remember the last time he won such a contest, decided to enter nonetheless. In minutes, he completed the *VTU* survey included in the March issue and automatically qualified for the drawing.

Less than two months later, the 30-year-old Nyman was selected from nearly 800 entries as the contest winner. And just in the nick of time.

Nyman, who also received five 150MB storage disks with the Bernoulli Box, began working with an Amiga 1000 several years ago and has since immersed himself into LightWave 3D.

In his quest to turn his hobby into a business, however, Nyman's 44MB SyQuest has been filled to capacity



Greg Nyman of El Cajon, Calif., was the winner of the *VTU* Bernoulli Box contest.

more times than not.

"It fills up real quick, and I've been hoping for awhile now to expand my memory," said Nyman, a retail employee from El Cajon, Calif., located about 20 minutes east of San Diego. "Winning the Bernoulli Box came just at the right time."

desert, where we can start anew. Albuquerque happens to be a great place to live and a good place to do business."

While Arsenault agreed with Powers' contention that it's no longer necessary to live near Hollywood to work in video production, he said his company will surely become active frequent flyers.

"We will be going back to L.A. rather frequently for location filming," said Arsenault, whose Educational Video Subscription Series was produced with the Video Toaster. "Essentially, we might be bringing Hollywood to us."

Like Arsenault and Powers, many filmmakers have de-

sired to leave Hollywood and its politics behind for some time now; developments surrounding the highly touted information highway have only expedited the process.

Of course, not everyone is enthusiastic about the trend. Traditionalists still maintain that entertainment can only originate from either New York or Hollywood.

"I've gotten a certain amount of skepticism from Hollywood types," Arsenault said, "but the people who really matter understand how the industry is changing and think it's an unbelievably positive move."

NEWS & notes

LIGHTWAVE UPGRADE

NewTek's LightWave 3D has been upgraded and includes more creative options for Video Toaster owners. The LightWave 3.5 features improvements to LightWave and Modeler only. At press time, NewTek had not set pricing or released an official feature list. The upgrade supports third-party graphics boards and allows users to select different resolutions for the interface. A new feature, Modeler's Metaform function, allows users to create smooth, aerodynamic objects easily. Features such as Bones and Lens Flares have also been improved. Users can now add Child Bones automatically, allowing faster creation of object hierarchies.

VIDEOGRAPHERS' GROUP FORMS

Bill Kronemyer, who serves as president of the New Jersey Videographers Association, was named Executive Director of Professional Videographers Association of America (PVAA). He will be responsible for the coordination, implementation and funding of this new organization. Formed in April of this year, PVAA's mission is to provide information, research, education and support for the advancement of professional videography. The PVAA helps local video associations in the areas of membership, meetings, educational segments and newsletters. Contact PVAA at P.O. Box 450, Ho-Ho-Kus, NJ 07423, or fax to (201) 445-2160.

NOAHJI'S NEWS

MacroSystem GmbH of Germany announces that Noahji's has assumed exclusive distribution of their products. The Retina Z2 and Z3, the VLab Y/C and the Toccata are now shipping in volume in North America. Software updates are available for Retina Z2 owners,

as well as an upgrade from the Z2 to the Z3 for \$399. Contact Noahji's at 3591 Nyland Way, Lafayette, CO 80026. Noahji's can be reached at (303) 499-1975; fax (303) 499-1979; tech support (303) 433-7031.

VIDEO EXHIBITION

The West Virginia Video Toaster User Group and the West Virginia State College Communications Department will sponsor a video exhibition on Sept. 2 and 3 from 7-10 each evening. This first-time event will take place at the West Virginia State College Capitol Center. The exhibition will showcase video productions from across the United States and will include video animation, music videos and video shorts. Entries will be accepted through August 19. For entry forms or additional information call Jamie Cope at Destiny Images (304) 925-4741 or write to WVVUG, P.O. Box 4631, Charleston, WV 25364.

ASDG RENAMED

ASDG Inc., a leading supplier of color imaging and digital video special effects software, has changed its name to Elastic Reality Inc. A company spokesperson said the new name was selected to better reflect the company's core business in digital special effects software and to leverage the success of its Elastic Reality product. Introduced in 1993, Elastic Reality is a special effects and morphing application for Apple Macintosh and Silicon Graphics multimedia computing platforms.

NEWS RELEASES

Send your organization's news items to *Video Toaster User*, c/o Toaster Times, 273 N. Mathilda Ave., Sunnyvale, CA 94086.

Compiled by Joan Burke

TECHNOLOGICAL AGE continued from page 18

Take your Rendering system to Warp Speed with the WarpEngine4040 running a Motorola 68040 at 80/40MHz for over 30 MIPS of Workstation Performance!

LightWave Users - Dramatically Increase your 3D Rendering Speed and reduce your load and save times Dramatically!

You're working on a 3D Rendering for a video and each frame can take an hour or longer to render on your A4000/40. A 30 second commercial with 900 frames will take 38 days to render. Now you can install the WarpEngine 4040 into your rendering system and reduce your rendering time by up to a factor of 3. Now this same spot only takes about 12 days to render. Time is Money and you have just reduced your rendering time by up to 3. Don't wait - Get Warped NOW!

How Fast is the WarpEngine™

Rendering the texture example included
with Light Wave:

A4000/040-25MHz

2 minutes, 40 seconds

A4000Warp40MHz

under a minute - approximately 3 Times Faster!

A4000Warp28MHz

1 minute, 22 seconds - Two Times Faster!

Diskspeed using 2.1 Gig Barracuda Drive: Read from file: 9 Mbytes/sec CPU Available: 94% - Up to 9 Times Faster!

Screen Redraw Time in Light Wave is reduced by up to a factor of Three - Allowing **You** to be more productive

The 40MHz and 33MHz versions include the 040 Processor, four SIMM sockets and the NCR SCSI-2 Fast HardDrive Controller. It is more cost effective to install a WarpEngine 4028 Accelerator if you have an Amiga 4000/040 than to buy a HardDrive controller/memory board or one of each which will take up expansion slots and won't accelerate your Rendering System (Ram speed is actually slower). This will *double* your Rendering Speed!

The WarpEngine™ uses four standard 72 pin SIMMs and allows the use of up to four different size SIMMs at the same time (4, 8, 16, 32MB SIMMs). GVP only has two SIMM sockets onboard and uses much more expensive (up to 1.5 times as much as Warp SIMMs) custom SIMM modules (only 4 or 16 MB SIMMs can be used but not at the same time) which are only available from GVP.

The NCR SCSI-2 Fast 32 Bit DMA Bus Master Processor makes it the *Fastest HardDrive Controller available for the Amiga*. It provides up to 10MB/s Transfers with 90 to 98% of the 68040 CPU Processing Power left available for Rendering! All 4000 WarpEngines include the SCSI-2 HardDrive controller and 128 MB of Ram Expansion, unlike GVP which has an optional SCSI controller and optional Ram expansion board which are still not available!

All WarpEngines are fully upgradable to 40MHz!

MacroSystem Development is committed to providing the Amiga Market with the expansion products that you need to get your job done, now and in the future.

Coming soon from MacroSystem Development:

The A3000 ImpulsEngine 3040 and ImpulsEngine 3050 - 40 and 50MHz 68030 Accelerator cards with onboard high speed Local 030 Burst Memory expansion and socket for 68882 Math Co-Processor for the Amiga A3000. These two products will be priced in the \$400 to \$500 Range.

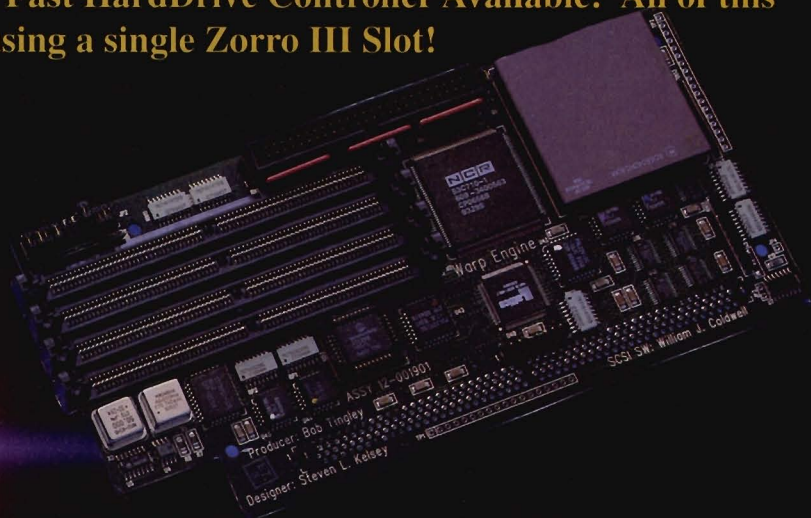
The MSD Network card providing high speed Ethernet Networking capabilities for all Amiga computers with Zorro Expansion slots. This product will be priced in the low \$200 range.

MacroSystem Development, Inc.

24282 Lynwood, Suite 201, Novi, MI 48374 • Ph. (810) 347-3332 / Fax (810) 347-6643

WARP ENGINE

The Complete Acceleration Solution for your Video Toaster/4000. The WarpEngine™ provides the Highest Speed 040 Acceleration available, with up to 128 MegaBytes of Local 040 Burst Memory™ and the Fastest SCSI-2 Fast HardDrive Controller Available! All of this WITHOUT using a single Zorro III Slot!



We have equipped half of our Toaster systems with 40MHz WarpEngines and have seen rendering times triple in throughput speed. Now we are going to install 40MHz WarpEngines in the rest of our Toaster systems.

Lee Wilson
Visual Effects Supervisor
RoboCop: The Series

Call about our competitive Trade-in Offers!

- Increase your Rendering Speed
- Speed up your Image Manipulation using ADPro or ImageFX.
- Reduce Framestore load and save times dramatically.

Compatibility

- Compatible with the Video Toaster, Retina, Picasso, Emplant and OpalVision.
- Works in all 3000, and 4000 series Amigas.
- Requires AmigaDos 2.1 or greater.
- Full Two Year Warranty on Board.

Average Street Price

WarpEngine 4040	
WarpEngine 3040	\$1425.00
WarpEngine 4033	
WarpEngine 3033	\$1195.00
WarpEngine 4028	\$ 799.00
WarpEngine 4028 w/CPU	\$1050.00

The WarpEngine accelerator will pay for itself by saving you your most precious resource - Your time to be Creative. Not to say saving render time isn't great, just take a look at this Space Station Rendering. Originally part of a 30 second commercial (airing on New Mexico cable), the WarpEngine would save a week of machine hours (rendering time). But the place I've felt the biggest change is during the creative process. Some scenes I work on take 20 seconds to redraw in layout mode and modelling that space station, it's a 1.1 meg object, could put you to sleep waiting for it's polygons to get selected. These delays slow creative productivity. But to an animator Warping 20 second redraws into 7 seconds along with harddrive access that feels instantaneous, truly accelerates the creative flow. A WarpEngine will save you rendering time alright, but in saving Creative Time, it's invaluable.

Paul Safr
Media Innovations

This SpaceStation Image took 3 hours to Render with LightWave on an A4000/40 and only slightly over an hour in an A4000 with a WarpEngine4040 installed.



DEAR JOHN

The Toaster Answer Man

Erasing Weeks of Frustration in a Single Column

by John Gross



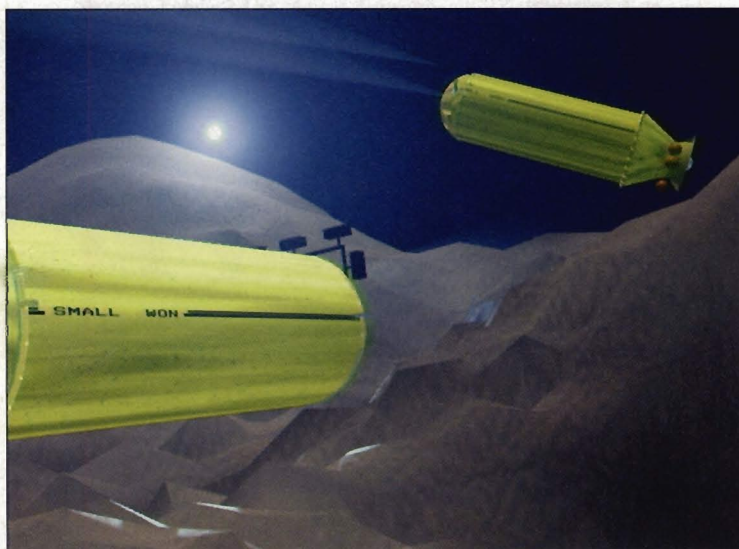
Patience is more than a virtue; it's also the key to solving some of the world's most perplexing Toaster questions. This month's column addresses several of those very questions from one of our readers.

Q: After working several weeks trying to solve some Toaster questions, I have finally thrown in the towel and written to you. I am

currently using an Amiga 4000-'030 with a Video Toaster 4000. Every time I called the Toaster techs they acted like I was a real nut. Last time, I could not locate some objects and texture maps that a Toaster tutorial called for. I was informed by the techs that they were there. Later, through a magazine article, I found out that the objects and maps were indeed missing and NewTek had left them out. I felt better after learning that. I hope you can answer these questions as I do not wish to call tech support again.

1. I would like to play back an animation in low resolution at a 24 frames-per-second film rate. Can this be accomplished within the Switcher, or does it always run animations at 30 frames per second?
 2. When I play an animation from the Switcher, I would like to stop it on the last frame and do a fade or similar transition. I have tried playing the animation while I had a picture of the last frame located in a framebuffer. When the animation finishes, it returns to the last framebuffer displayed prior to its execution. Is there a way to play the animation, have it display the last picture, and then do a transition?
 3. I worked hard to get lighting and shading right for a scene before rendering it in low resolution to verify the settings. When I render the same scene in medium resolution, the lighting is different. I want to check the scene prior to waiting hours for it to render in medium or high resolution. Do you know why the shading looks different? I have enclosed two pictures, one in low resolution and the other in medium resolution, to show the difference.
 4. If I am rendering and a power failure occurs, do I need to restart the rendering session from the beginning, or can I reconstruct the animation in some way?
 5. When I use a background image, it works correctly with my object being rendered in front of the background. If I add fog, the image is rendered on my object, and the object looks like it is no longer in front of the background image. I know the fog is causing the problem, but how can I work around it?
- I'm sure I speak for many Toaster users when I say thanks for sharing your tips and information so freely. I saved and suffered a long time in order to purchase a Toaster and produce something worthwhile. Through individuals like yourself, my hopes and dreams may come to fruition.

P.S. How can I do a looping animation?
John Livingston
King City, Calif.



This image was rendered in low resolution.



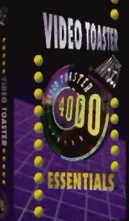


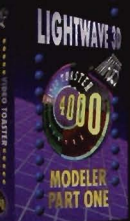

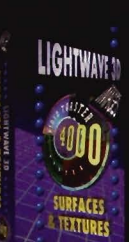



The same image rendered in medium resolution appears to have different lighting.

MAKE YOUR TOASTER SIZZLE




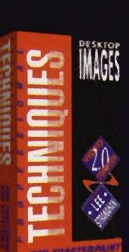


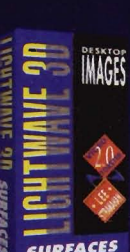



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FOR INFORMATION CIRCLE 108

A: First, you may want to give NewTek tech support another chance. When your letter was received, NewTek was beginning to undergo some personnel and other company changes. One of the items slated for improvement was tech support, and I have heard numerous positive comments recently.

Now to answer your questions:

1. The Switcher only allows for real-time animation playback at 30 frames per second (video speed). You can, however, fake the effects of playing back an animation at 24 frames per second by increasing the number of frames in your animation. When you play this new animation back, it runs slightly slower (which would be the same result as playing it back at a slower frame rate). The conversion factor you need is 1.25.

Once the animation is completed, save it and then perform a Scale All Keys operation (Scene panel) to all the frames in the scene. Enter 1.25 in the Scale Frames by field in the requester. This increases the number

of frames. When it's played back from the Switcher, the animation will run at 24 frames per second.

One final tip: You can check the speed by viewing a wireframe or bounding-box preview playback at 24 frames per second. Do this before scaling the scene by 1.25, or it can throw you off.

2. You have the right idea to fade away the final frame of an animation. Simply render the last frame of your animation and save it as a framestore. Go to the Switcher and load the final frame framestore then select it on the Main bus. Next, load the image for the fade or transition into the other buffer in the Preview bus. Make sure the last frame framestore is selected on Main and the transition image is selected on Preview, then select and load the animation.

Hit the space bar and the animation plays. When it is finished playing, you are returned to the image selected on Main. Since it is the same image as the last frame of the animation, the transition should be seamless. At this

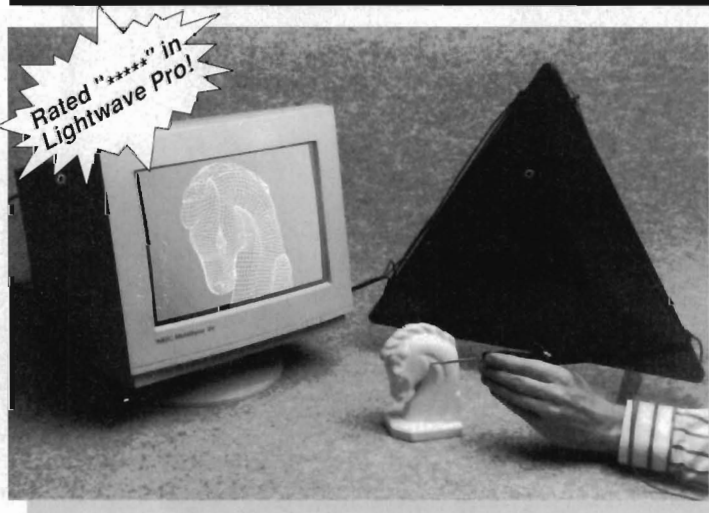
point, select the transition effect you want to use and hit the space bar (or double click the effect crouton); you can transition to the buffer selected on Preview.

To make it quicker, position the mouse over the transition, so when the animation is finished playing, you can quickly hit the effect. Also remember that when you select and execute the effect, the animation is lost in memory.

3. There is no reason (or known bugs) that would change the lighting between an image rendered in low resolution and the same image rendered in another.

After looking at your two pictures, it appears as if a spotlight was enabled in the medium-resolution image. Were the two images the exact same frame? Make sure there aren't any lights that change abruptly in an envelope or be a mistaken frame movement. Also check fog envelopes and ambient intensities. Do not have any keyframes set at 0 and another at frame 1. Also, did you enable ray-traced shadows?

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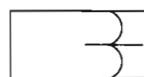
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3D Digitizing System for the Video Toaster

ows for the medium-resolution image? There may be something blocking light in your scene. If everything is normal, send me the scene file, and I'll look into it.

4. If you have a power failure in the middle of a rendering session, simply start the rendering over from the point where it was interrupted by entering a new First Frame value in the Scene panel.

I assume, however, that you are referring to a LightWave animation. If this is the case, there is no way to continue rendering if it is interrupted. You must start again. However, the animation is viewable up to the point it was interrupted by loading it from the Switcher.

5. The problem you're having with fog is because of the Backdrop Fog setting. Fog gives the objects in a scene the value of the fog color. Since it doesn't look realistic to have a background one color and "fogged" objects another, Backdrop Fog was created.

When you use Backdrop Fog, the objects take on the values of the

background whether that background is a set of colors, an image or image sequence.

The problem that you have discovered is when an image is used as the background. The objects in fog appear to turn transparent and the background shows through.

You can get around this by planning ahead and not using the Backdrop Fog setting. If you want to layer an animation by rendering an image or images for the background and then put in more objects, remember the value used for the original Backdrop Color. Enter that same value as the Fog Color for the second animation. Since only one color can be chosen for the Fog, it helps to use a Solid Backdrop for the original images.

If you are using a non-LightWave image as your background, sample the colors in ToasterPaint to find a good value to use as your Fog Color. This can be somewhat tricky, and you may find that objects are turning into a solid color deep in the fog. They may also be visible against a part of

the background image that is a different color. This is why it's a smart idea to plan ahead and perhaps not use fog if it isn't going to work with the particular background image you have chosen.

6. Finally, to generate a looping animation, just choose Loop ANIM from the Record panel before you generate your LightWave animation.

VTU

John Gross is an animator for Amblin Imaging and Editor of LightWavePRO, the newsletter for serious LightWave 3D animators. Questions can be sent to him care of VTU or electronically on Compuserve at 71740,2357, America Online as Bubastis or via the Internet at jgross@netcom.com.

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TIPS & TECHNIQUES

Experimenting in LightWave

More Time-Saving Advice

by Brent Malnack



It must be 3D season as all of the tips this month are for LightWave 3D. As one of the more complex parts of the Toaster, even the most basic LightWave tips can help a novice user. Our tip of the month comes to us from Positron Publishing's Chuck Wardin, who is the author of the Dynamic Motion Module.

The Ten-to-One Rule

When preparing an animation, you cannot be too careful about checking it out thoroughly before rendering. The following steps have saved me from many headaches:

First, get the scene ready to the point of rendering. Render one or more frames, partic-

ularly rendered. A quick preview in the other views can often highlight errors before rendering.

If you haven't previously checked out the objects carefully, load them into Modeler and look for illegal polygons. Objects with illegal polygons can render fine for some frames, but can also display rendering errors at the proper angle.

Any changes to surface attributes should be saved before rendering. (LightWave saves surface information with the objects, and not the scene file.) This is of great importance when rendering an animation. If the system crashed or a power surge occurred, matching the previous surface settings can be difficult. This would prevent picking up the rendering where it left off.

With any remaining time, I experiment with speeding up the rendering (by reducing polygons or simplifying surface attributes) and work on making a good animation a great animation. For video, I normally use Medium

Resolution with Medium Antialiasing. If the duration of the rendering makes it available well before the due date, increase the antialiasing and lower the Adaptive Sampling value.

Finally, after safely saving the scene and objects, I use the last few minutes to experiment for future projects. If I change the camera position now, I'd have to regenerate all of the wireframe previews discussed earlier. So instead, I move the camera and take notes about what might work in future projects. Additionally, lights, surfaces, spline characteristics and envelopes can be adjusted and examined.

By strictly enforcing the Ten-to-One Rule, I have escaped the old cliché of "not having enough time to do it right, but having plenty of time to do it over."

Math Trouble

Apparently, Boolean Subtract operations in LightWave Modeler are not always squeaky clean. I was plagued with messy cuts (spiked points and actual holes) until I

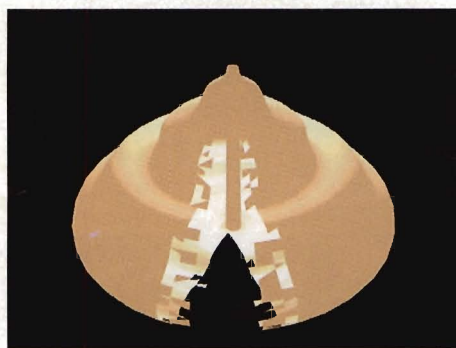


Figure 1: Occasionally, using Boolean tools can produce quality results.

ularly from both complex and simple parts of the animation. Calculate an average time per frame based on the results. Multiply the average frame time by the number of frames to come up with a predicted rendering duration. Next, divide that number by 10 and use that amount of time to double check things and experiment before starting the rendering.

Before adopting this rule, I often had to re-render entire animations because of a simple error I overlooked. With the Ten-to-One Rule, I rarely have to start over. I've listed some of the tests and experiments to run during this time in the following segment.

Make a wireframe preview from all views. Sometimes a scene looks fine in the Camera preview, but contains errors that are obvious when the scene is



Figure 2: Using Boolean Operations properly can produce desirable results.

was advised to simplify my cutter and make certain it had no double-sided polygons. I had the erroneous idea that the more complex the object/cutter was, the cleaner the slice would be.

Another tip I learned was to shift the cutter a bit if the first cut wasn't just right. To a novice, though, the most important tip of all is to stay simple and do your tweaking on the simplest stage of your model as possible.

More Time Savers

Even on my 33MHz '040 system, LightWave rendering can seemingly take forever. Here are a few time-saving tips that can add up on those large projects:

Turn off the "Render to DV1" option in the Record Control Panel. This will save the time it normally takes for LightWave to send the image to the Toaster framebuffer. This is only useful if you are rendering the frames to the Personal Animation Recorder or to the Amiga's hard disk. If you need to record the images directly to tape, you will want to leave the Render to DV1 on. This can save three to four seconds per frame.

You can save another second per frame by shutting down any other programs that normally run in the background such as a virus checker or Workbench management system.

If your system is equipped with a removable drive (like a SyQuest or Bernoulli), render the frames to a drive that has faster access such as an internal drive and transfer the frames later. LightWave must wait until the frame has been written to the hard disk before advancing to the next, so this can end up saving a little time over the course of the rendering.

Some programs (like MorphPlus from Elastic Reality) recommend moving the render screen behind the Workbench screen by doing a left Amiga keystroke during the rendering process. It usually speeds up the rendering process, since screen updates are no longer necessary. For some unknown reason, however, this has the opposite effect in LightWave, actually adding a second or two for each frame.

Multitasking Tips

Novice Toaster users are probably unaware that it is possible to multitask with most of the Toaster software. This allows multiple Amiga programs

to be run simultaneously.

Probably the most widely known is the Switcher. To get to a Workbench screen from the Switcher, simply press the CTRL key twice, followed by pressing the ALT key twice. This will place you at a Workbench screen. The same key sequence will bring you back to the Switcher when ready.

ToasterPaint

In ToasterPaint, multitasking takes place in the traditional Amiga manner of left Amiga and left Amiga key combinations. Because the menu structure in ToasterPaint is layered, it may take a few tries to get to the Workbench. ToasterPaint multitasks quite well, but cannot retain a swap image if you leave it.

CG, ChromaFX

Unfortunately, it is not possible to multitask from either Toaster CG or the ChromaFX module.

LightWave 3D, Modeler

Like ToasterPaint, LightWave and Modeler can multitask quite well using the traditional left Amiga keyboard strokes. This allows other useful 3D utilities such as the Personal Animation Recorder, or Pixel 3D to be run while LightWave is running. LightWave can even multitask during the rendering process, but it can slow the process down and potentially crash the machine.

IDE/SCSI Connection

One final tip stems from a recent project I was working on. My 2000 Toaster card died, and I needed to render an animation with the Raptor. A friend sent me a rather large scene file on a 150MB Bernoulli cartridge. My only other machine was a 4000.

So how do you connect a SCSI drive to a 4000 without adding a new hard drive controller? By networking the two machines. Using Enlan DFS software (from InterWorks), I was able to see the Bernoulli drive on the Amiga 2000 from the Amiga 4000. This enabled me to treat it as though it were in the 4000.

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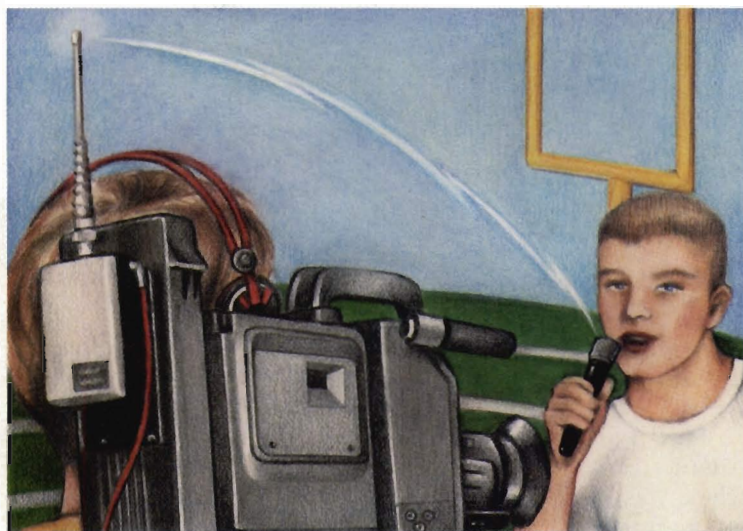
by Cliff Roth



When they're working properly, wireless microphones are a real treat. Whether you're producing reality-based programs such as documentaries, travelogues and wedding videos, or shooting dramatic material on location, you can't beat the potential convenience of a wireless microphone system: No long cable that picks up hum while people are tripping over it; no need for an overhead boom (fish-pole) in dramatic shoots; and the ability to get good clean sound from far away.

But be warned. Wireless microphones can wreak their own havoc. They can be plagued by interference from other radios by reflections of their own signals and changing signal levels that occur when the transmitter moves around a location.

The first rule of using wireless microphones is to always have a regular (wired) backup microphone available, with a cable long enough to accommodate the shoot.



And the second essential rule is: Always wear headphones when recording with a wireless microphone, because you never know when problems can crop up.

The Basics

All wireless microphone systems consist of two parts—transmitter and receiver. The transmitter may be built into the microphone body—typically a cylindrical handheld microphone; or it may take the form of a cigarette box-sized unit attached by cable to a miniature lavalier microphone. These are commonly used on TV talk shows. The microphone is held by a tie clip and the transmitter is worn on a belt or tucked into a pocket.

The receiver may be a portable battery-powered unit

that attaches to the camcorder (using the camcorder's accessory shoe or Velcro strips), or to the camcorder operator's belt. It can also be a larger, AC-powered desktop unit containing multiple antennas and other advanced professional features.

Prices for consumer models intended for use with camcorders range from about \$50 to \$500. Professional units range in price from about \$300 to several thousand dollars. The less expensive consumer systems are generally sold as packages. As prices go up and options vary, transmitters and receivers are sold separately. The most advanced receivers are capable of simultaneously receiving signals from as many as five different wireless microphones. These systems are commonly used in professional theater and night club audio.

Techniques

Although most people associate wireless microphone systems with professional and semi-professional applications, some of the most fun I've had with wireless systems has been shooting vacation videos. While I sit in a cafe with the camcorder (and wireless receiver) propped on the table, a gregarious travel buddy is across the street talking to the crowd and showcasing local points of interest (if I have the energy later, I can walk over to the locations and insert some close-up shots).

A wedding videographer can walk up to each table at the reception, hand the wireless microphone to the nearest person and have it passed around the table, with each guest saying a word or two to the happy couple.

When shooting a dramatic scene, one or two actors can each be wearing a concealed, wireless transmitter. The transmitter is strapped to the waist, and a miniature microphone is hidden beneath a shirt or blouse. This gets the microphone much closer to an actor's mouth than an overhead boom, especially when shooting wide shots. You can, for example, shoot out of a car window while your actors walk down a city street and pick up near-perfect sound.

Wireless microphones can also simplify shooting a public auditorium event such as a school play, speech or political meeting. Just locate the microphone on the stage—at the podium if there will be a single speaker, or at center stage in the case of a play. Then you can move back as far as you want with the camera and receiver. Or, if the event is already being fed through a public address system, you can locate the wireless microphone near a PA speaker (five feet away is usually a good starting point, because it's not too close to cause distortion).

What's the Frequency?

The cheapest wireless microphone systems transmit on a frequency around 49 MHz, but unless you live and work in the middle of nowhere, these units should be categorically avoided. The problem is that the same 49 MHz radio channels are used by cordless telephone systems, so there tends to be a lot of interference and limited range when using these frequencies in urban areas.

Just about all wireless systems selling for more than \$100 utilize VHF radio frequencies in the range of 169 to 216 MHz (usually between 169 and 172 MHz). These frequencies are better than the cordless phone band, but don't kid yourself: In urban areas, they're also heavily populated. Using VHF wireless microphone systems in New York City, I've picked up stray radio signals from delivery trucks, taxicabs and numerous other commercial radio users. And worst of all, these audio offenders can appear and disappear without a moment's notice, as quickly as a cruising delivery van may pass by. This is why headphones are an absolute must.

With more expensive professional gear, you can specify the exact frequency you want your transmitter and receiver tuned to, using plug-in crystals offered by the manufacturer. There are hundreds of channels to choose from, but unless you happen to know that there's a taxi service located down the block using a particular frequency, there's hardly any point picking one frequency over another. Less expensive consumer units usually offer a choice of only two or three channels, selectable by switches on both units (transmitter and receiver).

The ability to pick specific frequencies becomes much more important when you attempt to use two or more wireless microphones simultaneously. If the frequencies are not carefully selected (based on the mathematical principle of harmonics), interference may occur.

Manufacturers of professional wireless systems publish lists of compatible frequencies, and you should choose from such a list when purchasing multiple wireless transmitters. Azden currently makes the lowest cost, dual-microphone (dual frequen-

cy) wireless system on the market. Their AZ1, AZ2 and AZ3 systems are uniquely intended for the semi-professional consumer. Packages of two transmitters and one receiver range from \$375 to \$420, depending on whether you want lavalier or hand-held microphones.

The fanciest wireless microphone systems, selling for more than \$1,000, utilize UHF frequencies between 944 and 952 MHz. Samson's UR-4 systems, selling between \$1,600 and \$1,800 depending on the model, are good examples. There's less interference in this band.

Advanced Features

Radio waves are a funky phenomenon. Anyone who has ever played with a pair of rabbit-ear TV antennas trying to get the best ghost-free reception already knows this. Sure, the main signal gets picked up, but there are also multiple ghost signals caused by reflections of the main signal off walls, beams, buildings, etc. Plus, the human body itself acts as a radio antenna which can help or hurt the situation. If you've ever adjusted a TV rabbit ear antenna for a great picture, only to walk a few feet away from the TV set and see it deteriorate, you know what I'm talking about.

The same problems occur with wireless systems, and they're doubly dastardly when both the transmitter and receiver may be moving about. Each new position of the transmitter or receiver creates a whole new set of ghost signals and interference in getting the signal to flow between them. This means distortion can creep in at any time. Sometimes it will occur just for a fleeting moment, as one half of the system or the other passes through a particular location.

Keeping the receiver stationary can help eliminate up to half of these transient interference problems. Beyond that, the most advanced professional receivers utilize "diversity antenna" systems. The diversity receiver is connected to two or more different receiving antennas, located a few feet apart from each other. The diversity receiver is constantly comparing the quality of the signals from each antenna and, moment-by-moment, selects which one to listen to based on which is getting the best reception.

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ART BY ARTASIA PRODUCTIONS

SOUND REASONING

noise reduction circuitry, similar to the Dolby and dbx noise reduction systems commonly used in analog tape recording. These noise reduction systems can noticeably reduce the amount of background hiss.

Connections

Because radio transmission is so finicky and any wires in the vicinity of the transmitter can begin acting like an antenna, the less expensive wireless systems often lack a microphone jack. If there is a cord attaching the microphone (such as a tie-clip model) to the transmitter, it is a fixed length. Often this cord also serves as the transmitting antenna. This is the case with Nady's 151 VR system. At about \$180, this is an established workhorse of low-budget wireless. (Other contenders in this category, include Azden's WMS-PRO at about \$150, and Audio-Technica's AT829MW at about \$240.)

Wireless transmitters with professional (XLR) microphone jacks cost more and are often tuned to work with a specific microphone and cable. The professional Samson Stage II and Stage 33 wireless systems, selling for about \$350 to \$800 (depending on options), are customized to work with a choice of Sony, Audio-Technica, Shure or ElectroVoice microphones.

Professional desktop receivers may have line-level outputs intended for use with VCRs and audio mixers; most portable wireless receivers have microphone-level outputs intended for use with the microphone jacks on camcorders. It's always preferable to use the highest possible level that doesn't cause distortion; but, of course, most camcorders don't let you use the line audio input while shooting with the camera, so you're forced to use the microphone jack and the lower level microphone output from the wireless receiver.

Wireless receivers may also have a headphone jack, but you're better off plugging headphones into the camcorder's headphone jack. That way you're certain the signal is arriving at the camcorder and isn't causing distortion at the camcorder's microphone jack (if you plug headphones into the receiver's headphone jack, you'd miss such distortion).

Batteries are the lifeblood of wireless microphone systems and most

require you to purchase expensive alkaline batteries for both transmitter and receiver (rechargeables are rarely used). Take care to turn both transmitter and receiver off after you're finished using them, because they eat up batteries fast. Expect between two to five hours of use in each unit.

Unfortunately, as batteries get weak, the sound usually gets more distorted. The problem can creep up slowly and is easily confused with other distortion problems. So it's a good idea to always have plenty of fresh batteries on hand; you can quickly substitute brand-new batteries when problems arise.

Finally, as mentioned earlier, you should always have a fallback option. If the wireless system proves unworkable for any reason, be prepared to revert back to something a little less complicated.

VTU

Companies Mentioned:

Audio-Technica
1221 Commerce Dr.
Stow, OH 44224
(216) 686-2600

FOR INFORMATION CIRCLE 17

Azden Corp.
147 New Hyde Park Rd.
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EDITORIAL EVALUATION

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VIDEO WITHOUT AMILINK



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DR. VIDEO

Setting Subcarrier Phase

It's All in the Timing

by Rick Lehtinen



Two issues ago, we devoted some space at the beginning of this column to the rewiring of a reader's system based on a submitted sketch. We continued the process last month by showing how to perform the horizontal system timing on the rewired system. This month we can finish the job by setting subcarrier phase for all input sources and checking SC/H phase.

System timing is the art of making sure all the input signals arrive at the input to the switcher in the proper time relationships to each other. This is necessary for the switcher to move from one source to another without a hitch. Some of the Toaster's wildest effects are simply cut rapidly between two inputs so that a pattern forms because of the transition. This requires each of the inputs to be in perfect synchronization.

Synchronization has several components. Keeping signals in sync or synchronous means that the video stays at the same speed. It is worthless for one system

to output 60.01 video fields in the same period an adjacent system outputs 59.98. Both sources must keep in lock step, or they will never stay together (Figure 1).

Once the signals are synchronous, they must begin writing new fields instantaneously through a process known as the vertical phase. Given the size of timing error required to knock a system out of vertical phase, you will probably never have to worry about adjusting it. However, some TBCs include one horizontal line delays (one "h" delays). If one TBC was adjusted extremely early, and the next one extremely late, a vertical phase error could be seen.

Horizontal phase, or h phase, is optimum when all sources begin to write each new TV line at the same instant, as measured at the front of the switcher. This procedure requires a waveform monitor. Subcarrier phase requires the same wiring set up as h phase. Only now the instrument required is a vectorscope. (Figure 2A)

The vectorscope plots the relative phase of the color

continued on page 36

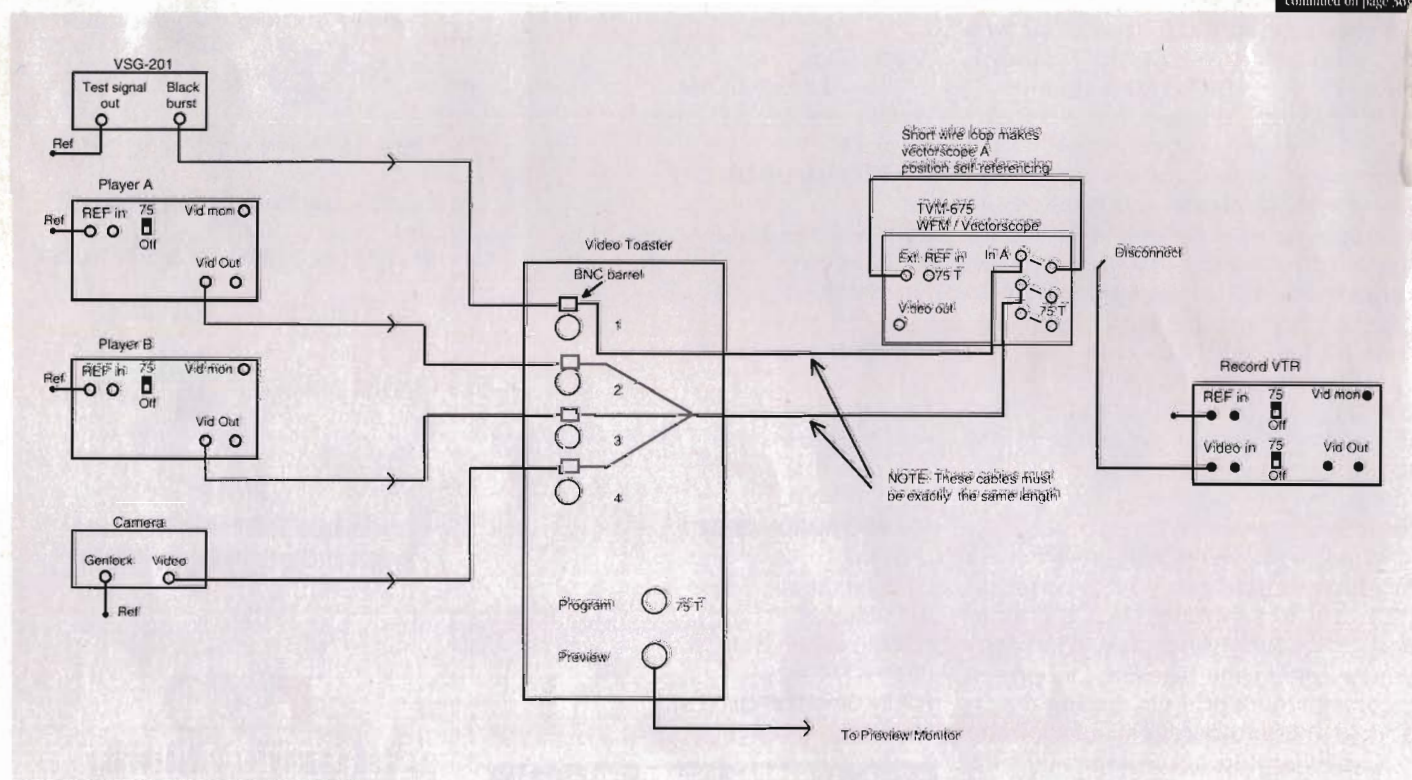


Figure 1: Set the subcarrier phase of a Video Toaster system by wiring it as shown. Set the vectorscope in external reference. Run a short jumper from the loop output of input A to the vectorscope's external reference input. The test cables used can either be the exact cables that will feed the Toaster inputs, or they can be a set of timing jumpers of identical length and type of cable.

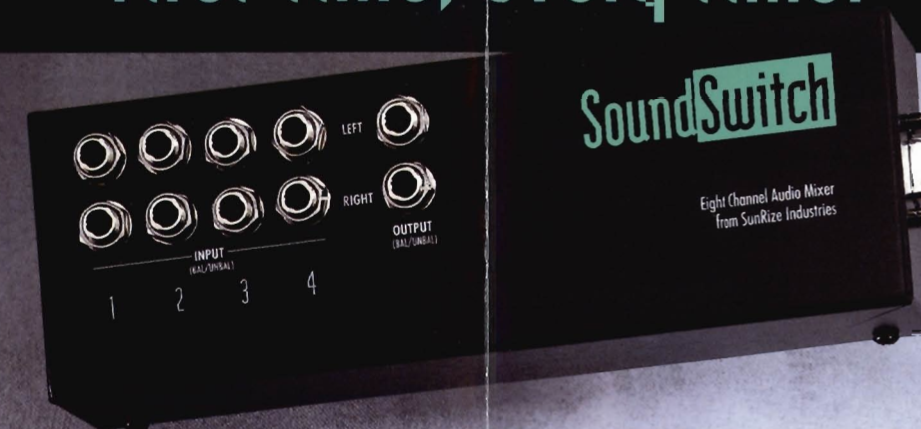
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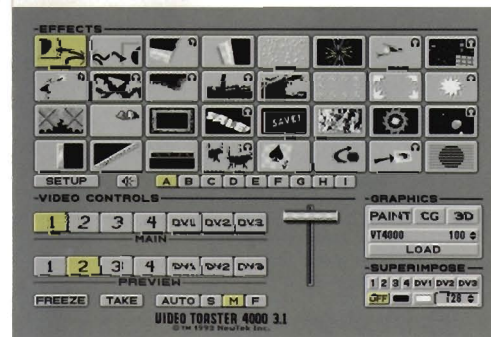
So easy, you can throw away the manual.

You already know how to use it. You already know how to install it. That's how easy



Just plug and play. Just plug SoundSwitch into your floppy disk drive port, run our self-installing software and you're ready to roll.

SoundSwitch is. That's what's possible because of SoundSwitch's seamless integration with your Toaster software. Just click a Crouton, and voila — you've just switched your audio with your video. (Or rather, your Toaster has done it for you.) And, to make it even easier, SoundSwitch requires no extra cords, memory or disk drives. Once again, easy does it.



Even the pros like the sound of this.

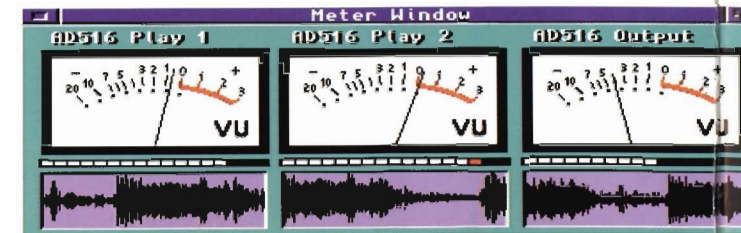
Thousands of products were on display at the National Association of Broadcasters Convention. From them, SoundSwitch was chosen as one of the Top Twenty products for Video Toaster producers. Not only was it recognized as the first-ever way to make your Toaster do sound — the professionals also liked the sound of its performance. Here's why: Dynamic range: 95dB (better than a CD player) • Four sets of stereo inputs, one set of stereo outputs • Auto-detects balanced and unbalanced signals • Completely self-contained, SoundSwitch does not use a Zorro slot or serial port • Interfaces to external floppy disk drive port • Built-in microprocessor handles real-time mixing during Toaster transitions • Synchronizes automated mixing to AmiLink through internal transfer of SMPTE timecode • ARexx controllable.

SYSTEM REQUIREMENTS: If you've got a Toaster, you've got all that it takes!

You get the perfect way to mix, monitor and meter.



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Get ready to fly. SoundSwitch is guaranteed 100% compatible with the Video Toaster Flyer — as well as any edit controller that controls the Toaster, such as AmiLink. Now the promise of one-click, total pre-programmed control of both your audio and your video is a reality. Linked to your other video editing tools, SoundSwitch executes your switches and cross-fades in perfect sequence, with precise accuracy.

And best of all, the price sounds good, too!

The SunRize SoundSwitch is yours for less than the price of a decent mixer. Yet it has everything it takes to deliver true audio-follow-video switching and mixing. There's nothing more to add and nothing more to buy. If all this sounds good to you, then visit your dealer for a free demonstration. You'll see why SoundSwitch is the best switch you'll ever make.

SoundSwitch™

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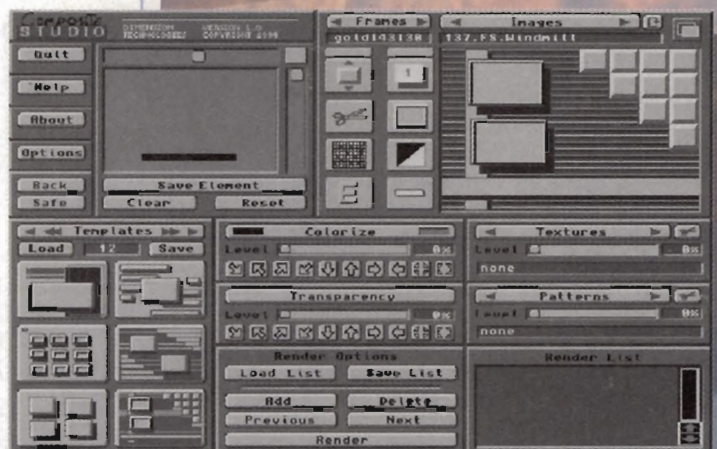
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DR. VIDEO

subcarrier portion of each video signal. The subcarrier phase is represented by a short ray starting at the center of the scope and going to the left. This stands for 0 degrees. Color (chrominance) information is represented on the vectorscope by a series of vectors that point around the vectorscope dial to indicate hue, and extend further from or closer to the display center, to represent chroma gain.

When a set of color bars is hooked to the vectorscope, each color vector should sit squarely in the center of a box painted on the vectorscope graticule. (A correct display for color bars is shown in Figure 2B.)

We begin by calibrating the vectorscope. With the scope set for external reference, select the A input using the front panel push buttons. Rotate the vectorscope phase control until the display resembles Figure 2B. Next, connect the test cable going to the vectorscope B input to the first source you want to test; for example, the device feeding Toaster input 2. Play back a tape that is a good recording of color bars.

For the time being, ignore the part of the display around the vector boxes. Concentrate on the subcarrier vector. Note if there is a difference between the subcarrier vector when you switch between the vectorscope A and B inputs (Figure 2A). Don't touch the vectorscope phase control, since you have just calibrated it. Instead, move the subcarrier phase adjustment on the TBC of the VTR being tested (you'll probably need a small screwdriver to make this adjustment). Maintain this until the subcarrier vector stops changing when you click between the A and B channels.

Once the subcarrier phase is set, you can put the vector dots in their boxes. The chroma phase or hue controls allow you to get the direction of the vectors right (Figure 3A). Use the chroma gain or saturation controls to set the amplitude, or how far out from the center the dots go (Figure 3B). You will likely find yourself going back and forth a few times between these controls.

Repeat these procedures for each source you wish to test. When all input sources look like Figure 2B, you're almost finished.

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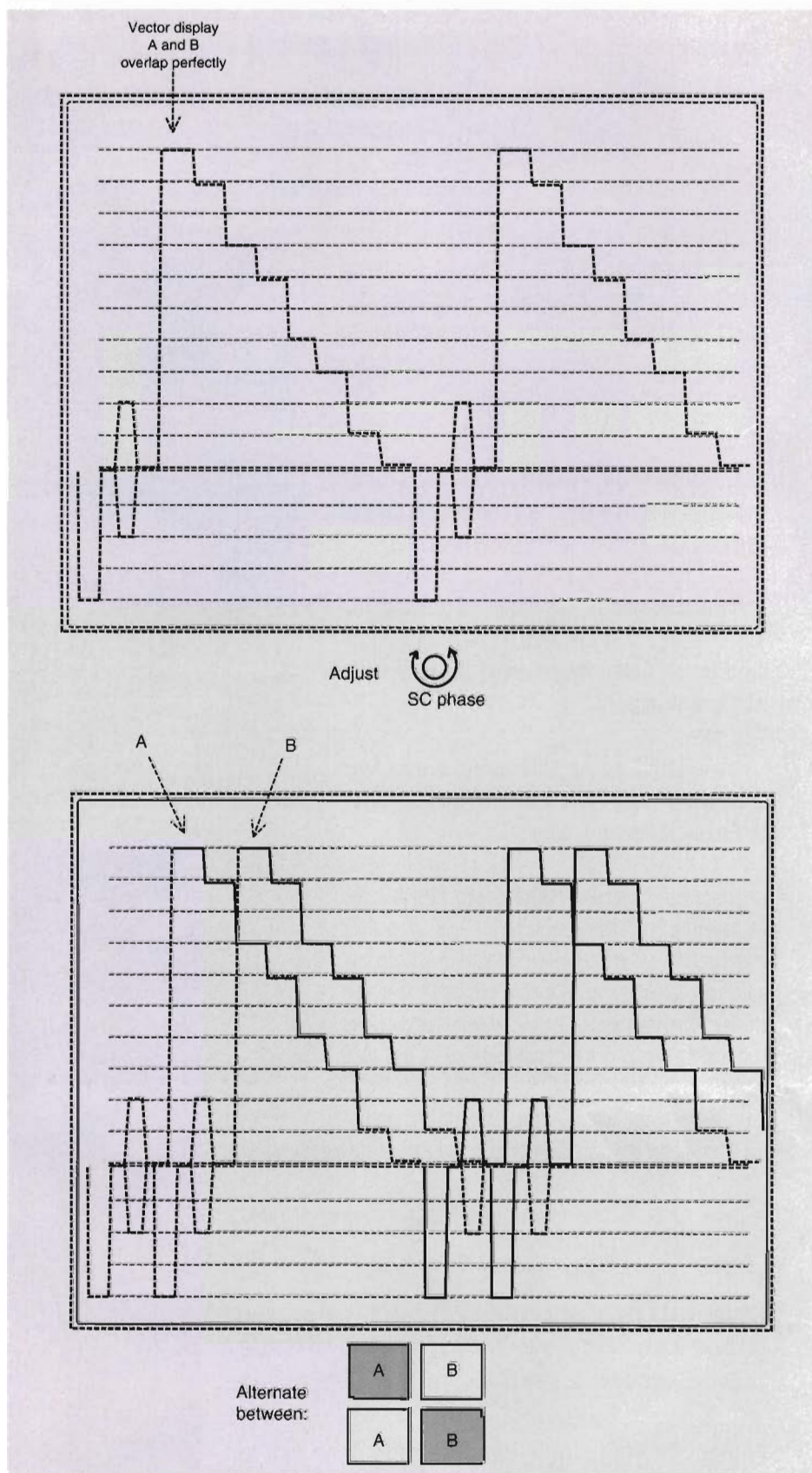


Figure 2A: Set the subcarrier phase of sources feeding the Toaster by first calibrating the waveform in the A position. Do this by rotating the waveform phase control until the subcarrier extends straight to the left. Without touching the waveform phase control, use the waveform B channel to set subcarrier phase on sources 2, 3 and 4 in turn, by clicking between the A and B buttons on the scope. Adjust the subcarrier phase control on the source you are testing until the subcarrier on both A and B buttons match.

Picasso II

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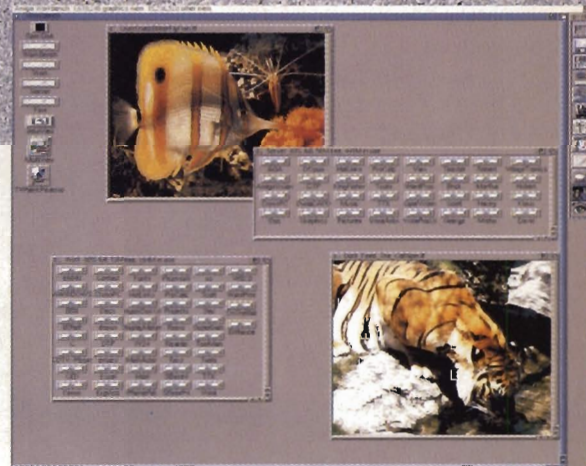
Picasso II RTG means No Waiting for Specially Programmed Versions of Your Favorite Software.

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Picasso II RTG means Hi-Performance.

The Picasso II has an on-board Blitter which supports drawing speeds up to 30 megabytes per second. The Picasso II Blitter has been fully integrated into the RTG emulator. Any program running under the RTG emulator will automatically take advantage of the Blitter. Off screen displays are moved into Picasso II display memory using the Blitter for super fast screen updates.

1280 x 1024
256 color
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Picasso II RTG means No More 'Chip Ram Blues'

The Picasso II RTG emulator has been designed so that it uses no chip ram for its emulation. Only the currently visible display is kept in the Picasso II display memory, all other screens are stored in standard system memory. This means that all system memory can be used as graphics memory. A system equipped with 16 megabytes of ram would be like having a 16 megabyte graphics board!

Picasso II RTG means Maximum Compatibility.

The Picasso II RTG emulator supports Workbench 2.04, 2.1, 3.0, and beyond. The Picasso II is compatible with any Zorro II or Zorro III equipped Amiga system, such as the A2000, A3000, or A4000.

Picasso II AutoSwitch means One Monitor.

The Picasso II comes with a built in electronic switch that automatically routes the proper signal to your monitor. When the AutoSwitch detects non-Picasso II screens, such as those used by games and older software, it automatically routes the signal directly to your monitor. When the AutoSwitch senses a Picasso II screen mode, it will automatically switch back.

The Picasso II comes packaged with TVPaint Jr. (24 Bit Paint Program), and drivers for ArtDept Professional, ImageFx, ImageMaster, and Real 3D 2.0.

***Re-tar-get-ab-le Gra-phics adj.:** The ability to run software on any third party graphics board. See also: Picasso II.



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Setting SC/H

There is a precise relationship between subcarrier phase and h phase. When everything is set up correctly, the leading edge of each line's horizontal sync pulse is 19.5 cycles of subcarrier away from the first cycle of burst that makes it over the 50 percent point. (If you look at the color burst signal closely, you will see that it is a burst, about eight to 10 cycles, of subcarrier. It sometimes takes a cycle or two to get to full strength.)

This adjustment is quite detailed, but it is important. Fortunately, most vectorscopes include an SC/H provision that signals if you are in correct SC/H phase when you stop fiddling with h phase and subcarrier controls. If you are out of SC/H phase on one source, carefully repeat the timing procedure for that source, and hope it comes in the second time. If not, look for an SC/H invert switch or jumper and see if that brings it in. Some editing systems will do this for you.

Many editing systems simply will not work if the SC/H is not dead on. The software prohibits them from making incorrect edits, and the system

aborts during the pre-roll. Although this is rather inconvenient, it keeps the system from making edits that may jump or roll and protects the manufacturers' reputations.

All that is needed now is to restore to system to its original state before we changed it around for testing (Figure 4).

Readers have already sent several schematics of their systems that include possible wiring problems. We will begin tackling those systems next time. We probably won't repeat this material on system timing, so write if you have questions.

Q: I am very concerned about the future of the Amiga computer. What will happen to my investment in my Video Toaster?

R.K.
Raleigh, N.C.

Rx: There is good news and there is bad. Let's start with the bad. I am not sure that anything can be done to save the Amiga. Reported sightings of an Amiga solution may buoy our spirits, but they

will do little to ease the hard facts of life. The platform died, not from our neglect, but from a little bit of mishandling by those who should have done a better job.

Even though the Video Toaster rides in an Amiga, it makes perfect sense to consider it as a free-standing piece of video equipment. Ignore the computer around it, and the Video Toaster is still one of the finest video switchers ever made.

By the same token, it's suggested that you secure enough Amiga parts to keep your Toaster(s) warm and dry until a new version of the Video Toaster comes out. I cannot figure out if the prices for used Amigas will go down, as loving aficionados gradually let go, or if prices will stay high, as the base of Video Toaster users line up enough hardware to see them through the coming dark days.

Q: You mentioned that some new cameras will have anamorphic lenses. What do you mean, and where can I get such a lens?

M.N.
Westfield, N.J.

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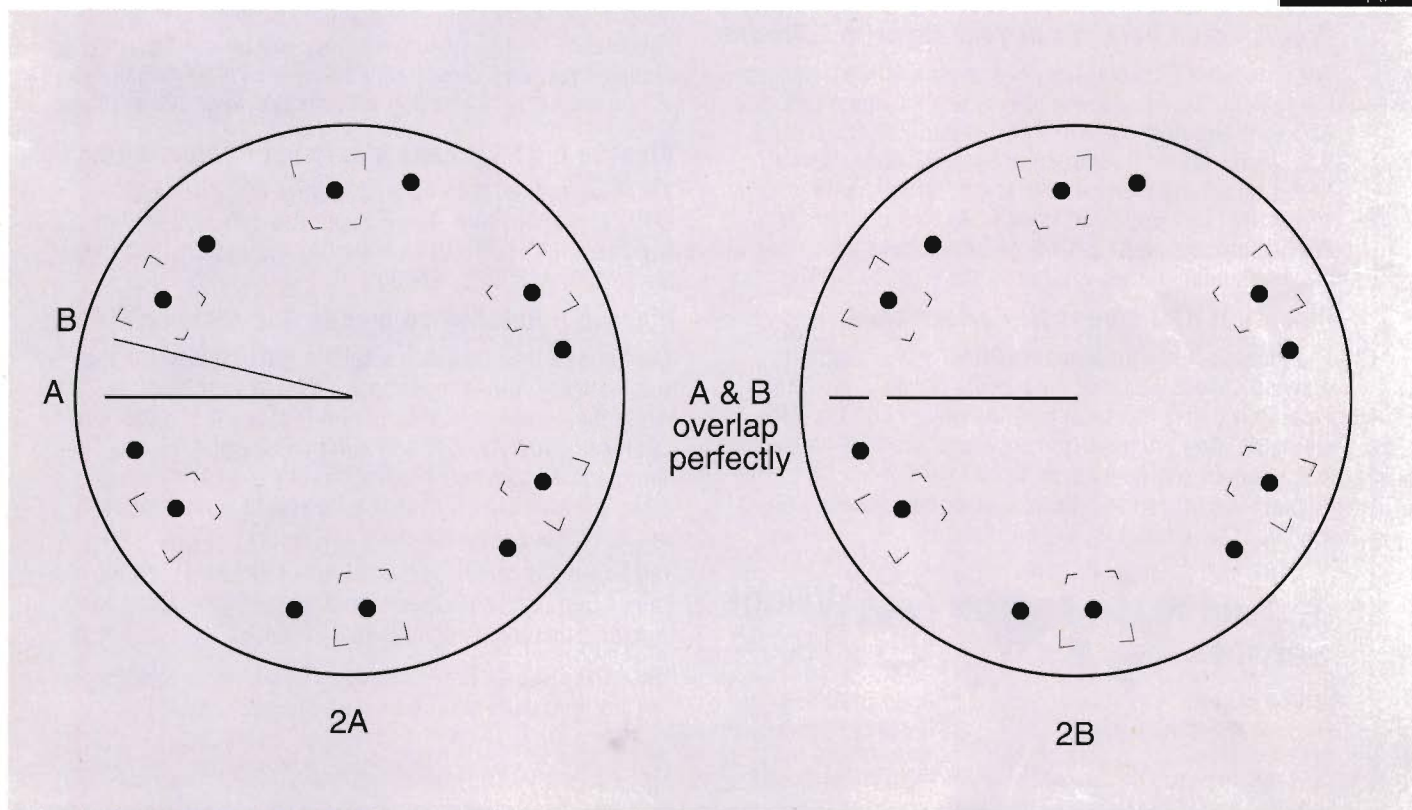


Figure 2B: When the source is correctly timed, the subcarrier vector extends straight to the left, and each color vector is squarely in its box.



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CYBERSPACE

PD on CD

Now Is the Time to Purchase a CD-ROM Player

by Geoffrey Williams



Getting public domain and shareware software via the Internet, commercial or local bulletin board systems allows you to have access to the very latest and greatest. It becomes a problem, though, when you encounter endless lists of 3D Objects for LightWave, Postscript fonts or pictures. You can't know if they are useful until you download them, and even if your on-line time is free, the process could take hours. It is possible to get these items on floppy disks, but to compile a reasonably sized collection would take a large number of disks and wind up costing a lot of money for software that is supposed to be inexpensive.

to your advantage to get on board now and discover all of the benefits currently available.

There are several companies that distribute PD software on CD-ROM, and this month we'll look at some of the best of them and a few of the utilities that may come in handy if you own a CD-ROM.

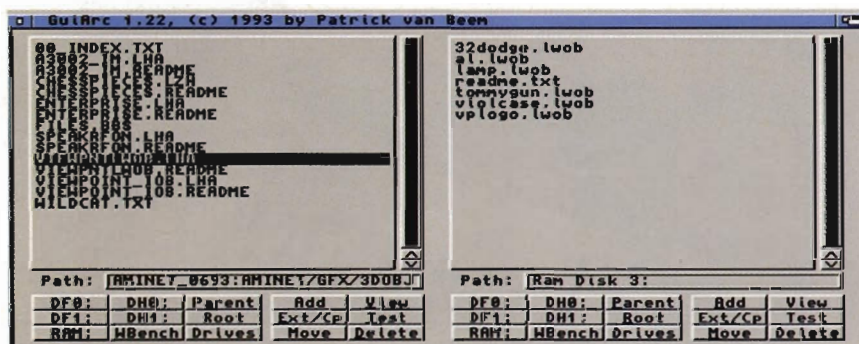
There are a couple of things to know about buying CD-ROMs. Even if they were made for another computer, chances are that you will be able to access them, as the CD-ROM format is a universal standard. Some Macintosh-oriented disks use a proprietary HFS Mac format, rather than the universal ISO-9660. Fortunately, most Amiga CD-ROM drivers support this format too.

Of course, you can't run an IBM program on an IBM CD-ROM disk, but things such as type 1 or type 2 fonts, clip art collections or even sound and MOD files may be usable to you. Most graphic and some animation formats can be converted to the Amiga (see Cyberspace, March 1994 *VTU* for graphic conversion, and the Cyberspace, May 1994 *VTU* for animation conversion). Sound files for other computers can also be converted, a subject to be covered in the next column.

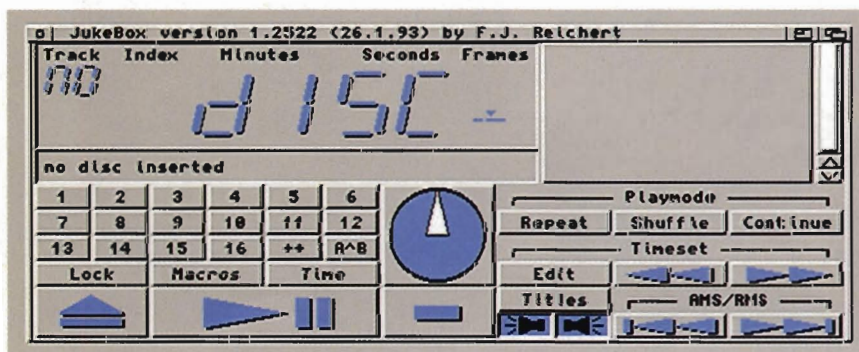
Some CD-ROMs are called BBS-ready. What this means is that each file, along with its documentation and support files, have been compressed into a single, significantly smaller file. This means much more fits on each disk, but using these files is a little more difficult. I have found Patrick van Beem's GUIArc indispensable for accessing this type of CD-ROM. It lets you easily list the files. Double-click on text files to read them using the More text displayer, click on a file and select a destination to extract its contents to. Double-clicking on an archive will list its contents, and you can then select individual files from the archive to decompress. It's great, and while mine is set up to handle Arc, Zoo, LHA, LZH, and DMS, it can be configured to handle any format with the addition of an external decompressor, most of which

are available on any general CD-ROM of freely distributable programs.

By the way, the text displayer More is not recommended. You can easily replace it, however, by finding it in the Utilities directory and renaming it OldMore. There are many good text displayers. I use Jonathon Potter's Fullview on my distributable disks because it can display Powerpacked compressed text and show



Patrick van Beem's GUIArc is an indispensable resource for accessing a BBS-ready CD-ROM.



F.J. Reichert's JukeBox enables users to add better music control to AmiCDROM.

The real solution is CD-ROM, and if you do not have one, I urge you to buy one as soon as possible. It is the best investment you can make. It will also be important for Toaster users in the near future, since NewTek plans to make collections of objects, Toaster transitions and clip art available on CD-ROM. The Video Flyer will require a CD-ROM player, as well. Since CD-ROM distribution is the way of the future, it's

standard Amiga pictures (as an older program, it does not support AGA resolutions). It also has a search function so that you can look for key words in the long text contents files on many CD-ROM disks that tell you what is on them. I copied it to my Utilities drawer and renamed it More, so that GUIArc and any other program that defaults to using More will use it instead.

Fred Fish has been collecting and distributing the latest and greatest freely distributable software since the earliest days of the Amiga. His entire library of 1,000 disks is now available on a double CD-ROM for \$19.95, one of the best deals around. The Gold Fish CD-ROM is available directly from Fred Fish (Amiga Library Services, 610 N. Alana School Rd., Ste. 1B, Chandler, AZ 65224, include \$3 S&H) or from your local dealer. There is also an archived version for use on bulletin boards. You can subscribe to his regular releases on CD-ROM directly for \$20 per issue, each of which has some 50 to 150 megabytes of new material. The focus is on programs and utilities rather than clip art or music files, and there is no better source. The best programmers send their latest creations along to Fred for him to include in his much respected library.

Walnut Creek (4041 Pike Lane, Ste. D-351, Concord, CA 94520, 510-674-0783) makes a number of CD-ROMs. Their new \$39.95 GIFS Galore contains thousands of photographs and drawings in the GIF format, which is easily converted into an Amiga format. The pictures are in color and can be used for clip art or backgrounds. Their Aminet CD-ROM contains files from the Internet, with more than 4,000 files. The older (pink box) edition has more MOD files and pictures than the latest

edition (black box), which contains more of the latest utilities. These files are BBS ready.

MOD files are music files of remarkably good quality, and there are hundreds of them on the boards. An older CD collection called the Ultimate MOD Collection is hard to find, but a new collection from Finland called EuroScene-1 has an abundance of MOD files, along with Eurodemos and animations. It is available in the U.S. for \$15 from Northwest Public Domain (P.O. Box 1617, Auburn, WA 98071, 206-351-9502).

If you are looking for scalable fonts, there are a number of collections available. Make sure to get Adobe fonts instead of other formats such as TrueType, which you may not be able to convert. One collection I looked at titled Too Many Typefaces came from Chestnut CD-ROM (P.O. Box 360, Cambridge, MA 02141, 617-494-5330). It has fonts in several formats, including nearly 400 Adobe fonts. They

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CYBERSPACE

also publish the Clip Art Warehouse, which has more than 11,000 PCX and TIFF format images for \$29.95.

For 3D objects, there is no better place to turn than the excellent Syndesis 3D-ROM (235 South Main St., Jefferson, WI 53549, 414-674-5200). For \$199.95, you receive more than 500 3D models, each in LightWave, DXF, Wavefront, Imagine and other formats. You also receive 400 seamless, tileable 24-bit texture maps. The

models come not only from the many freely distributable models, but also include user submissions as well as demo objects from ViewPoint, Noumenon Labs, Imagination Works and VRS Media.

I hope I've managed to convince you to purchase a CD-ROM player. There are a lot of them available. Unfortunately, the really cheap ones only work with PCs, since they use a proprietary controller card. What you

want is either a SCSI compatible drive if you have SCSI hard drives, or an Alfa Data's Tandem Controller, a \$139 IDE controller that lets you hook up a Mitsumi CD-ROM drive.

The Tandem unit comes with driver software, but SCSI users will need driver software. Fortunately, Frank Munkert's freely distributable AmiCDROM will do the trick. This software package supports ISO-9660 as well as the Macintosh HFS and the Rock Ridge Interchange Protocol (a file format designed to overcome the ISO limitations on filenames). It has been tested with a wide variety of controllers and CD-ROM drives. It allows you to read CD-ROM disks just like any other device in your system.

AmiCDROM has a number of advanced features. If a CD-ROM has music tracks, a CD-DA icon will appear. Clicking on it starts playing the music, beginning with the first track. A second click stops the music. You can also link it to more sophisticated music playing programs. It also includes the ability to convert Macintosh text files (which use a slightly different character set) into compatible Amiga text format. It is compatible with multisession disks and drives.

JukeBox is the best option for adding better music control to AmiCDROM, and it is compatible with its CD-DA icon. Written by F.J. Reichert, it comes with a full intuitionized control screen, as well as control through ARexx. It displays current information on the track, index, minutes, seconds and frames of the current CD. You can play a single track, mark sections, play some tracks at random while blocking out other tracks, or have an ARexx-compatible Multimedia program take complete control of the music playback as part of a multimedia presentation.

JukeBox requires that your CD-ROM drive have some way of playing music, either through phono jacks or a headset. If you have a Toshiba 3401 or an Apple CD-300, you can play music directly through your Amiga's speakers. All you need is Frank Munkert's PlayCD-DA, and since he also wrote AmiCDROM, it is also compatible with the CD-DA icon.

I wrote in a previous column about the PhotoCD format, and at the time of that report it was difficult to find



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Dealer inquiries welcome

processors who would take a roll of film and transfer it to the PhotoCD format. I finally found a place that has about the best price I have seen anywhere. Photo Drive-Up Imaging Centers (1900 Camden Ave., San Jose, CA 95124, 408-559-7846) charge \$11.95 for a roll of 24, and \$18.95 for a roll of 36. There is also a \$5 charge for the disc, but you can get up to 100 images on a single disk. You send them the rolls of film and they dump them to a PhotoCD disc. On a recent project, I shot a lot of film and transferred it all to PhotoCD for further processing. Until digital cameras come down in price, this is a great way to go.

If you already have prints of the images, the same company will scan them in for 59 cents an image, with a 30 image minimum and the \$5 cost of the disk. This is the lowest price I have seen, although you can pay quite a bit more. Not long ago it cost a couple of dollars per scan, so prices are coming down.

I wrote about a PhotoCD conversion utility awhile back, but if you have the commercial image processor ImageFX (and after hearing about some of the features in the next release, I think you will want it) there is a much easier way. Gunnar Nicalse wrote a PhotoCD loader for it that makes it as easy to load a PhotoCD image as it is any other image format. The current version I have is pretty fast, loading the near Toaster resolution images in about 20 seconds. It is the best way for Toaster users to access PhotoCD images.

There are an increasing number of service bureaus that support PhotoCD, and you may be able to find local providers by checking into local pre-press publications or companies. Many service bureaus are also adding CD-ROM transfers for as little as 20 cents per megabyte plus the cost of the recordable CD-ROM disc. If your LightWave images are starting to clog your storage, you might look into dumping them to PC-formatted SyQuest cartridges and having them transferred to a CD-ROM. You can have more than 600MB of stored information for just a little more than the cost of an 88MB cartridge. You can't write to it, but it is a handy way to store images, clip art and archival data.

As usual, if you want all of the freely distributable utilities mentioned this month, including GUIArc setup with

archivers for several archiving formats, send \$5 to: Geoffrey Williams, CDROM Disk Offer, 1833 Verdugo Vista Dr., Glendale, CA 91208.



Editor's note: The e-mail addresses listed in June's Cyberspace column for both the LightWave and Toaster mailing lists have since been discontinued. If and when the services are reinstated, check this column for the new addresses.

es. In addition, Geoffrey Williams' Internet address was incorrectly printed in the June issue. His correct address is gwilliam@netcom.com. VTU apologizes for any inconvenience this may have caused.

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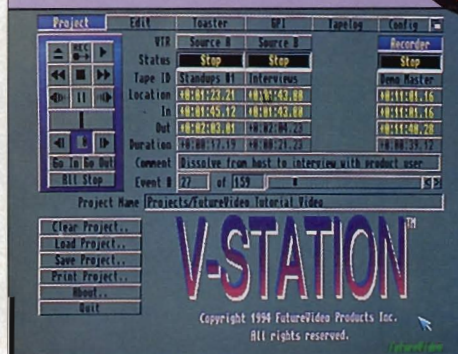
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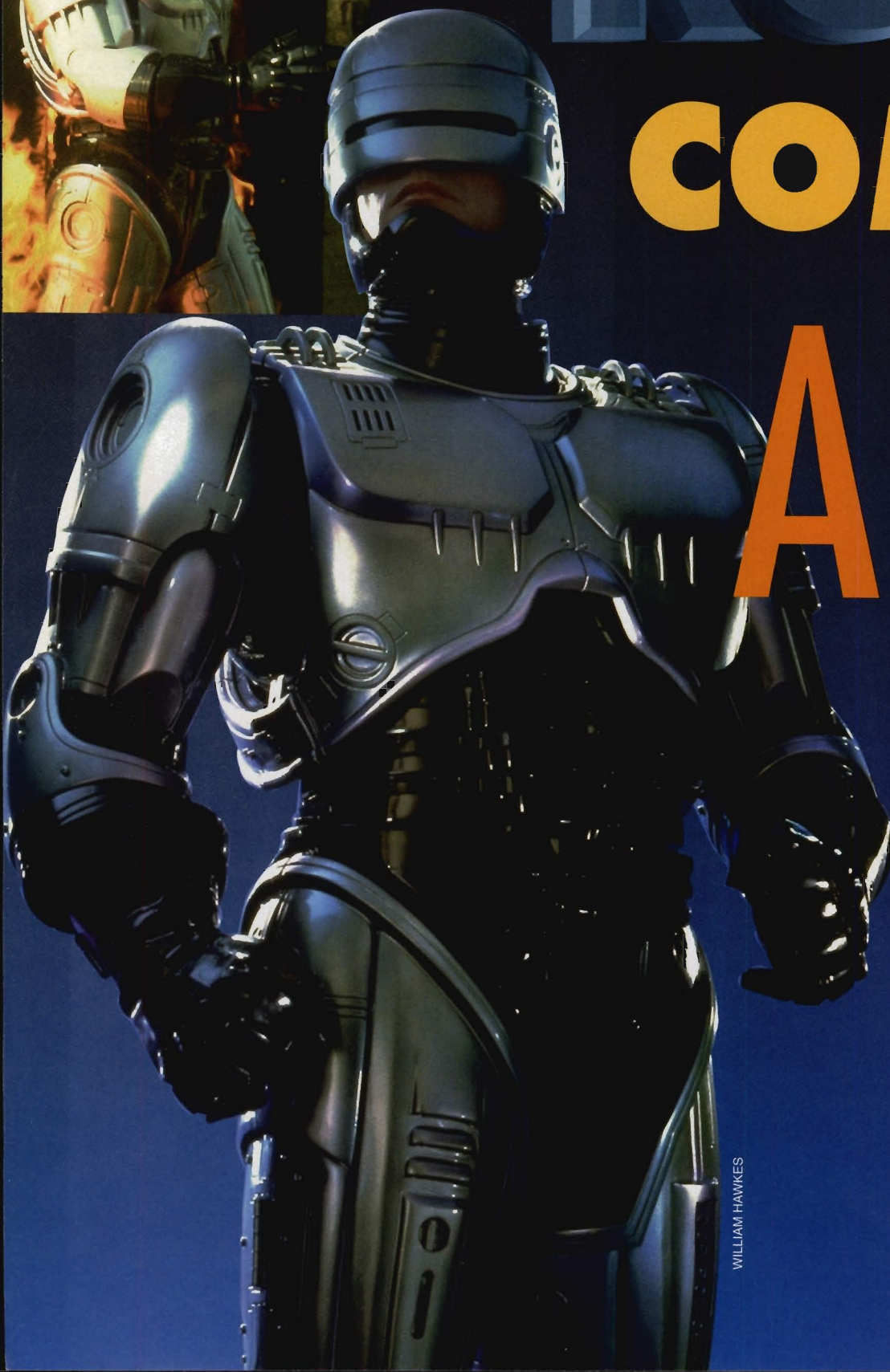
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VTU AUGUST 1994

43



SHANE HARVEY



WILLIAM HAWKES

ROBOCOP COMES

by Ron Leach

Armed with the power of syndication and 3D animation, *RoboCop* has seemingly made a flawless transition from motion pictures to episodic television.

Based on the successful triumvirate of *RoboCop* movies, *RoboCop: The Series* continues the action/adventure storyline about an adaptive Cyborg who restores order to a lawless society. Like the *RoboCop* movies, the series centers around former police officer Alex Murphy (Richard Eden), who is resurrected from death to return as half-man, half-machine.

The futuristic setting for *RoboCop*'s heroics is provided courtesy of the show's visual effects department, headed by supervisor Lee Wilson.

Among the systems and software used to make the unique look for *RoboCop: The Series* are EGS cards and SpectraPaint, Picasso II cards, TVPaint, Retina graphic cards, the Abekas Digital Frame Storer, 24-frame scan converters (for playback on set), and the only Video Toaster Screamer in Canada.

"We use an in-house Video Toaster system, which won an Emmy award for advancing tele-

ROBOCOP ALIVE



The Hummer

In episode six (*Ghosts of War*), a plasma cannon is stolen from a military research facility and used to wreak havoc on Delta City and Old Detroit.

The producers originally looked for stock military footage to incorporate into the show. However, Visual Effects Department Supervisor Lee Wilson looked for some stock location footage in which to place a Toaster-created Hummer.

In the following sequence, the Hummer motor vehicle, with full military livery, is shown driving into an area where the plasma cannon has been set up (the plasma cannon is shown in the top right hand corner of the screen, located atop a building). The entire sequence is framed in letterbox since it will be played back on a letterbox monitor in the chairman's office at the OmniConsumer Products (OCP) headquarters. This is a daylight shot, which makes LightWave's job that much more difficult; re-creating natural light sources upon the Hummer was a time-consuming project.

In this scene, the plasma blast has been discharged from the cannon and is on its way down to the Hummer. Normally, a laser or some other form of blast might be



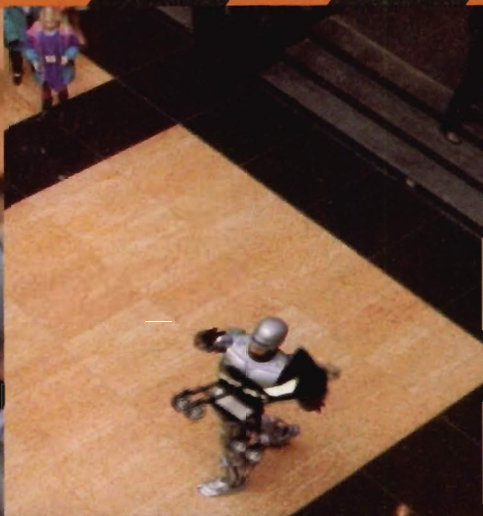
ROBOCOP: THE SERIES, VISUAL EFFECTS DEPARTMENT

used; however, a plasma blast envelops the object it is fired at. Because the Hummer is moving toward the camera, we are able to see more detail on the vehicle and make out the driver.

In seconds, the plasma blast hits the Hummer and surrounds the vehicle with energy. The impact of the blast propels the vehicle off-course, driving it down upon its springs. The electricals of the vehicle burn out and the vehicle swerves out of control into a building. It's even possible to see the driver's head roll back and forth with the inertia of the crash.

The entire sequence involves many different techniques applied against a live action, daylight background. It is seamless and plays back as a live sequence with no telltale signatures of computer augmentation.

In the same episode, Wilson's team animated a jet fighter and attacked it with the plasma cannon. The plane is seen in perspective with after-burners and running lights tracked by the plasma emission before taking the strike.



The Explosive Stroller

The episode titled Faces of Eve included a complex scene involving a bomb hidden within a baby stroller. The scene takes place inside an atrium-covered public building. In the opening live shot, RoboCop is shown grabbing the stroller.

The scene is then crosscut with an overhead shot of RoboCop as he hurls the stroller

aloft into the atrium ceiling. The visual effects department had to match the stroller with the aspect ratio of the shot, light sources, and depth of field perfectly for the transition from live action to animation not to be noticed.

Again from the overhead shot, the stroller is seen tumbling toward the camera, with

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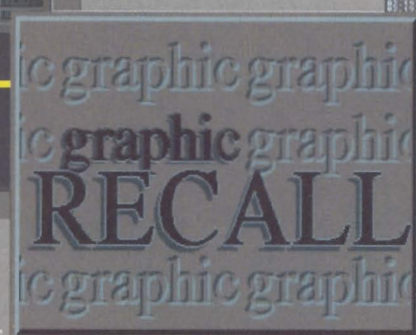
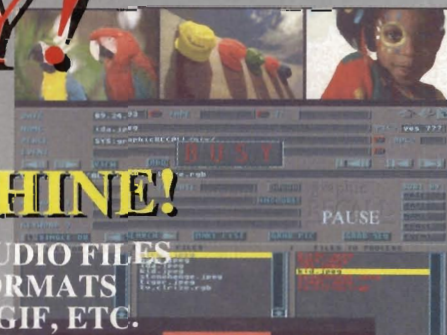
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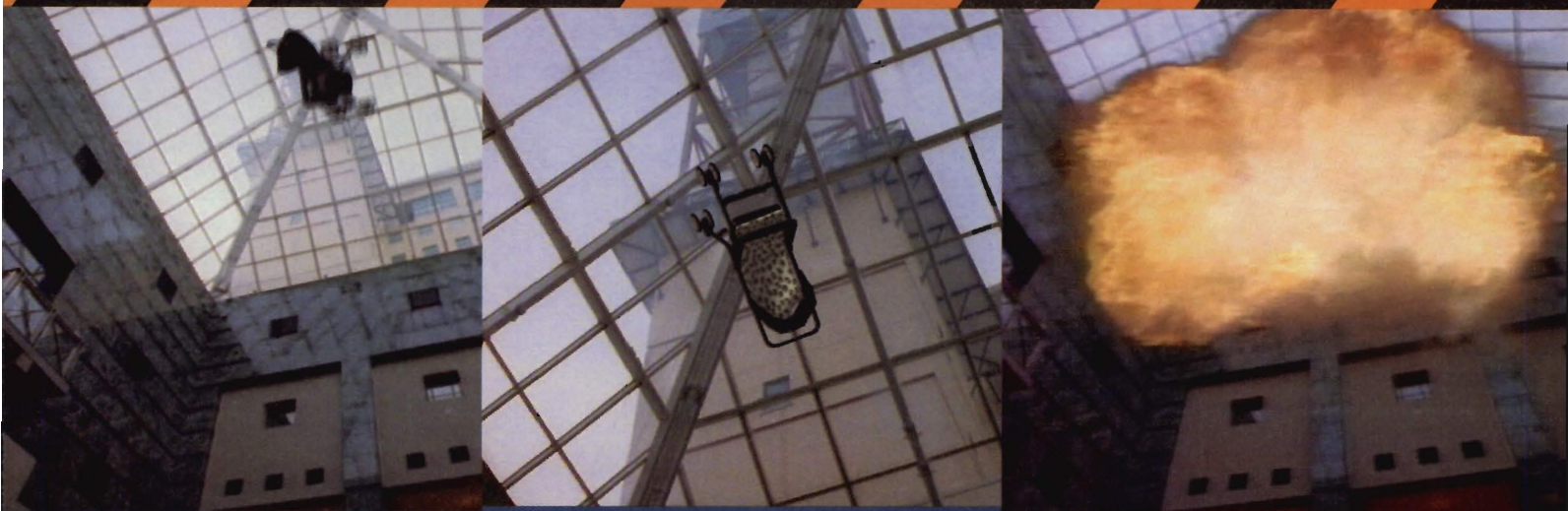


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ROBOCOP: THE SERIES, VISUAL EFFECTS DEPARTMENT

the cast located below on the atrium floor. The motion has been matched perfectly and added details such as the pattern of the inner liner of the stroller have been matched. With another reverse angle, it's possible to reveal the stroller as it reaches the peak of its ascent and explodes spectacularly.

The scene plays realistically, with motion blur, natural lighting and depth of field all blending to create a lifelike image on the screen, culminating in a terrific explosion. "Even (LightWave programmer) Allen Hastings didn't notice the switch from a live-to-animated stroller in this episode," Wilson said.

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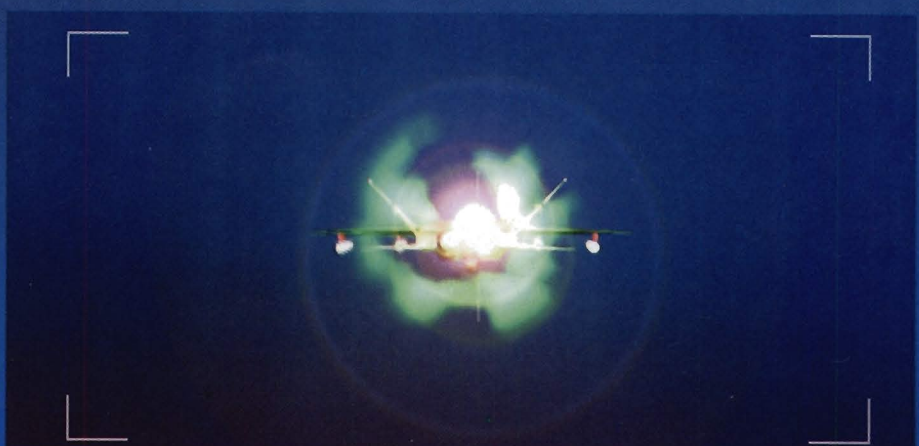
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Scad Control

In episode 13 (RoboCop vs. Commander Cash), RoboCop is shown using his all-purpose Scad to capture one of the bad guys. A Scad is a puck-shaped device featuring different types of uses for RoboCop.

The camera does a dolly move to actually pass the bad guy on the run. The visual effects department modeled the Scad, adding a little float to it and dropping it into the shot.

Here in a close-up shot, we see the Scad in full detail, including blinking lights which indicate that it is armed. Traditionally, the filmmakers would actually string a wire and fly the weapon or other object in the frame, and then paint out the wire. This is rendered unnecessary when the camera's movement and light source is coordinated with the visual effects department and the Toaster flies the Scad or a similar object in the frame. The final film will cut back to live action with the side view of the Scad as it slides across the floor ahead of the bad guy. In the final scene, the animated Scad flies into the doorway and inflates to fill the space, blocking the escape route.

This entire sequence was shot with the careful consideration of the visual effects department. Wilson routinely works with the directors of the first and second units to ensure live action will blend with LightWave effects. Camera position, lighting and final cut are all being judged in a atmosphere of close cooperation.

continued from page 44

vision technology, and the Amiga 4000 computer," Wilson said. "In fact, we have 12 Amiga 4000s with Toasters, some equipped with Warp Engine accelerators."

All are utilized to create a seamless merger of real-time filmmaking with 3D animation, including all of the elements of visual effects, special effects and computer animation with live action set against blue screen and mattes.

Executive Producer Stephen Downing said the financial investment in the visual effects department has already paid off in the series' first season.

"The outstanding work they deliver is saving the production time and money, creating elements we don't have to sub-contract to other companies," Downing said.

In addition to delivering impressive 3D images in each episode, the visual effects department is responsible for all of the interactive computer read-outs on monitors in locations such as the RoboCruiser and the Metro South squad room.

Wilson said *RoboCop: The Series* utilizes the Video Toaster differently

ROBOCOP: THE SERIES, VISUAL EFFECTS DEPARTMENT

from its science fiction series competitors.

"*seaQuestDSV* and *Babylon 5* animate in a totally 3D world, underwater or in deep space, creating beautiful effects," Wilson said. "On *RoboCop: The Series*, however, the visual effects department is matching and replacing reality with 3D effects. We use the Toaster to affect cost-effective, time-efficient visual effects and to reduce danger to cast and crew."

For the series premiere, the visual effects team created a helicopter which flew over Old Detroit and Delta City. The effect was astounding, surprising everyone with its realistic feel.

Later in the season, the scene was enhanced, with RoboCop reaching from the helicopter to make a dramatic rescue. RoboCop is seen in the helicopter against a real city background and the futuristic matte paintings. At one point, the helicopter rotor blades actually slice through the camera as it arcs toward its destination. The show is extraordinary because of the number of minutes that the 3D effects are actually driving the storyline and sustaining the visual interest of the episode.

"We also create the imaging in RoboCop's visor (dubbed RoboVision by those who created it) for targeting, computer feed and systems diagnostics," Wilson said, "as well as the backgrounds for trips through cyberspace and RoboCop's neuro-nets."

In a merging of all of the systems at their disposal, the helicopter was built and animated in the computer using the Toaster and LightWave 3D. Later, the copter was flown over Delta City's beautiful matte paintings—a creation of John Fraser of Ann-Imation—in a seamless intercut with live action footage.

Under Wilson's direction, *RoboCop: The Series* is staffed by a group of 3D animators, including Alan Kaplar, Larry Adlon, Anthony Paterson, Ian Britton and recent additions to the team, Colin Cunningham and Mark Glaser. The video-guy, as she is known by her co-workers, is Angela Knight, who handles tape and frame transfers. Organizing all of the activity is Visual Effects Coordinator Julie Kealey.



RoboCop: The Series' Visual Effects Department Supervisor Lee Wilson is shown at left. At right, *RoboCop: The Series'* Visual Effects Department: (back row) Alan Kaplar, Ian Britton, Anthony Paterson, Mark Glaser, Julie Kealey; (front row): Colin Cunningham, Angela Knight, Larry Adlon.

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by Allen Edmonds

The pure emotion embodied in the long-awaited union of two people is an experience that, for most, is rivaled only by the birth of a child. To even the most jaded, the wedding day is one of the few milestones in life that is actually marked by ceremony.

The bride, for maybe the one time in her life, is truly a queen—her court scurrying to meet her every request. Friends and rivals alike defer in respect on this, her day.

For the groom, it's an entire day in the winner's circle. His ego soars as he waits for that special moment when he first spots her waiting in the vestibule.

Of course, that's the fairy tale. In most cases, the wedding day is a final, frenetic blur of activity and worry. Will he remember what he's supposed to say? Will that bridesmaid he used to date throw a last-minute tantrum? Will she be on time?

Years later, none of the reality and all of the magic remains engraved in our memories as we page through the photo book. What it would mean to most of us if we could only relive that one day: the feelings, the joy, the relief that it all went smoothly after all.

As the fruits of technology encroach further and further into tradition and our everyday lives, couples in ever-increasing numbers are including video in their wedding-day plans. The difference is clear: While photographers document, videographers capture. And if documentation were the goal, the license at the courthouse would suffice and \$25 would take care of the entire bill.

"Video is certainly moving up the bride's list of priorities," said Roy Chapman, editor of *Wedding Videography Today* magazine. "It used to be that she'd book the flowers, the church, the photographer and the limo. Maybe, after everything was planned, she might decide it would be nice to videotape the ceremony. Now, video is, in a lot of cases, right up

the Bride

How to Profit from Wedding Videography

Here Comes the Bride

near the top of her list."

Instead of Uncle Joe with the family camcorder, professional videographers are handling the duties. From preplanning and interviewing the participants to sophisticated post-production that combines multiple camera angles and sound from a variety of sources, brides and grooms everywhere are finding that elation can be captured.

Videographers, meanwhile, are finding the market expanding exponentially as wedding budgets continue to shift in their favor.

What's Making the Market Grow?

Ken Ehrhart has seen the wedding video trend gaining momentum across the nation. Since his wife is in the military, he has had to move his

graph, 90 percent of the time, it's staged. Everything we do is unrehearsed. It's what happened that day."

Ehrhart's Summit Video Productions is experiencing success despite his previous inability to build a permanent base of operations—and that reflects the acceptance the medium has gained, he explained.

David Ingram, owner of Ingram Video Productions of New Braunfels, Texas, has been shocked to discover clients that didn't even have a photographer booked.

"Talk about nerve-wracking. They wanted to go strictly video," Ingram said. "But we have to be ready for that because wedding videography really is beginning to gain the acceptance that wedding photography has always had."

That acceptance has translated into dollars, as both have made the jump from part-time to full-time entrepreneurship. For Ingram, that leap came in 1993 after working in the business on a part-time basis since 1988. And for Ehrhart, the wedding videography business has been a full-time endeavor since 1991. Despite his inability to put down permanent roots until now, Summit Video Productions "has made a profit the last two years."

"Things were pretty lean the first two years," Ehrhart said, "but I really can attribute most of that to buying equipment."

For Ingram, going full-time was "a very, very scary experience. But it's something I haven't regretted once," he said. "At this point, we're paying the bills and putting a few bucks in the pocket. And I only have two open dates left for '94. I have five jobs already booked for '95, and twice this year I've had a bride actually reschedule her wedding so we could shoot it."

Pros Are Everywhere

As with any growing industry, at times it is difficult to establish a reputation as a truly professional service. The "Uncle Joes" are out there in quantity—believing with all their heart that the ability to hold a camcorder fulfills the qualifications for a professional.

"Obviously, a professional wedding videographer must have the ability to keep the camera steady and focused—which is something that most people with their little handheld palm-corders can't do," Ehrhart said.

"But it's a lot more than that. I have a television news background, and a lot of us that used to be photographers in television news are getting into this field. We have a way of knowing where the action is going to be, and where to position ourselves when it happens. With us, everything on the screen is going to be composed correctly, and we're able to be there when you least expect it—rather than directing



Ken Ehrhart's Summit Video Productions uses storybook packages and other features to capture the uniqueness of a couple.

base of operations several times over the past few years. Whether in Colorado Springs, Colo., Riverside, Calif., or the couple's now-permanent retirement location in Albuquerque, N.M., the reasons for capturing a wedding on video have all been the same.

"Over the past two to three years, people are really beginning to understand that photographs are a very nice way of documenting the event, but if you really want to remember the event, videography's the only way to go.

"When people sit down and watch the tape, they see things they'd forgotten all about," Ehrhart said. "They laugh, they cry—all the emotions come back again. You look at a photo-

the action toward us."

"It's an instinct," Ingram agreed. "It's just an ability to blend in with the background and being unobtrusive. Obviously good camera work and sound quality are givens, but it goes beyond that to really knowing how to capture a scene so we can get all the emotion out of it."

Technical skills form the backbone of a solid professional, though, said *Wedding Videography Today's* Chapman.

"In Hollywood, you basically have a union for each of these specialties—directing, writing, producing, audio, video, cinematography. So you're asking someone to be good in all these areas, and if it's not, it shows up on the screen," he said.

"That's what distinguishes professional videographers from each other. Anyone can call themselves a professional videographer. If they charge a fee to do a wedding, they're a professional. But whether or not their work is professional quality is something entirely different."

Processional to Recessional and Beyond

Definitions of the typical wedding video number as high as there are individuals involved in the trade. Chapman, whose magazine also sponsors the annual Wedding Video Expo, being held this year in Orlando, Fla., compares it to wedding photography.

"Just as there is no one way to take still pictures at a wedding, there are many different styles and techniques used in wedding videography," Chapman said. "Some clients might like to have a lot of interviews and some request none."

"Maybe you'll have one-camera coverage of the reception, and maybe there'll be three. Maybe there'll be no special effects, and then again, maybe you'll add extra animation. There is much more of a chance in this marketplace for a bride to find the videographer that's right for her—and certainly, not every videographer is right for every bride," Chapman said.

"The key is flexibility," Ehrhart said. "I let the couple do whatever comes up. If it's a boring couple, it may end up being a boring tape. But if they are a couple that is really enjoying the day and is really excited about being married, that'll come through."

For Ehrhart, that philosophy carries through outside the wedding coverage.

According to him, storybook packages and additional features, including the love story, attempt to capture the uniqueness of the couple.

"It's not simply having them go out and walk in a park. We will sit down and separately interview the bride and groom," Ehrhart said. "We'll help them a little, but it's basically up to them. Whether it's a golf course, a park, a ballgame—it generally turns out to be about a 15-minute

piece that really captures who they are."

In addition to the video footage, Ehrhart uses music combined with freeze frames, touched up and painted with the use of the Video Toaster. All this is integrated with quick highlights of the ceremony and reception to create a true story.

Ingram has found the range of skills displayed in his wedding products have led to other types of corporate work, such as local cable commer-



cials, city council and county-commission meetings.

"We're now doing some of the local cable commercials, city council and county commission meetings. And all of this came about as a result of my wedding business," he said.

Getting Started

Equipment expense is, of course, the toughest initial hurdle to clear on the road to profitability. Both Ehrhart and Ingram plowed profits from the early years right back into equipment upgrades. But proper marketing and training can be even more critical to long-term success.

"Equipment does not make you money," Chapman said. "Lots of people with great equipment go broke; it's the talent and marketing skill of the videographer. Most think they don't need any training—they just get a camera and start shooting, but that's the worst way in the world to start a business."

A few years ago, when the art was new, trial and error was the only way to learn. Now, that kind of arbitrary work ethic could mean immediate failure.

"Get some video production training," Chapman said. "If you don't have the money to get formal school training, head to your local

In addition to the footage, Ken Ehrhart uses music combined with freeze frames touched up and painted with the use of the Video Toaster.

Here Comes the Bride

public-access station and get some basic video production skills under your belt."

"After that, it is crucial to remember how one's market determines one's income," Chapman said. "A lot of wedding videographers aren't making that much money. They find that brides don't want to pay very much for what (videographers) have to offer, and they have \$25,000-\$30,000 invested in equipment. How are they going to make that back?"

"Before they invest that kind of money, they'd better have a marketing strategy," he said. "That's something very few videographers are

ing, thanking them for stopping by the booth, along with a brochure detailing my services," he continued. "After that, I send out another letter. Depending on their response (or non-response) from the first mailing, I may offer them something different. Either a percentage off, or I could offer to give them one of my additional services on spec—if they don't like it, they don't pay for it.

"I've found that if I can get the in-laws, especially the groom's parents, to come see the final product, they'll very often go ahead and buy it because many times they've paid for relatively little of the wedding."

Chapman warns against leaning too heavily on bridal shows for marketing, however. He believes business-to-business networking with wedding merchants and service providers is most effective for attracting the higher-end brides.

Wizardry Behind the Scenes

Equipment levels vary from videographer to videographer. All can be effective with even the minimum level depending on proficiency and creativity. But there are certain keys, according to both Ehrhart and Ingram.

"The Toaster is by far the best investment I've ever made," Ingram said. "Only two of my eight or nine competitors have it, and from what I hear at the bridal shows, we seem to be the only ones that are using it effectively. I'd have to say it's the thing that's kept me in business."

While using the special effects selectively, they are a key element to the 25-picture photo montage at the beginning of most of his videos. "We also use them with the footage of the preparations, but for the ceremony, it strictly dissolves," Ingram said. "The key is the Toaster's ability to manipulate the still photos.

"I use a lot of the animation tapes like the Producer series, and we'll take a specific freeze of that, load it into ToasterPaint and then put up a title with it," he said. "I can create some custom stuff that way."

In addition to the Toaster, Ingram uses Panasonic AG-455 cameras and for some jobs a JVC KY-15 three chip docked to a 410-U. He hopes to upgrade to the JVC X2U later this year. Currently he has approximately \$30,000-\$35,000 invested in equipment, but it didn't all come at once.

"That's one reason I didn't go full-time sooner," Ingram said. "I was taking the money I made shooting weddings part-time and dumped it right back into bigger and better equipment."

For Ehrhart, the capital investment was between \$25,000-\$30,000, over four years.

"I lean very heavily on post-production. I have a pretty high-end S-VHS editing deck. Most



Ingram Video Productions receives many of its referrals from bridal shows held early each year.

going into business with."

The most effective marketing strategy may well be free. Business-to-business networking, or word of mouth, is critical to success.

Ingram said that he gets a great deal of business through local photographers. In addition, Ingram has had good luck exhibiting at local bridal shows. Located 30 miles north of San Antonio, Texas, he attends two to four shows in that city per year. He also advertises in two local bridal magazines and utilizes the mailing lists generated by those publications.

"The bridal shows have really been the best for us," Ingram said, "especially the January show—I may walk out of there with 10 bookings."

Ehrhart also recommends beginning with the local bridal shows.

"Moving as much as I have, a good bridal show in a community can get you from 100 to 600 names, all of whom are at least semi-interested in video, or they wouldn't stop by your booth," Ehrhart said.

"Once I have that list, I send out a first mail-

of my competitors have spent their money on more high-end cameras. I have, quite frankly, shot many of the weddings on consumer-grade cameras, and I compare anything I've shot with what they've done," Ehrhart said. "Yes, some of their colors may be a little richer with their three-chip cameras, but when you put mine together, using what I can do with the Toaster, I'm head-and-shoulders above the rest."

Ehrhart has been using the Toaster for two years and can't praise it enough.

"All I had was a little two-channel switcher. The character generator was ragged-edged, and I could only put it up against a blue background. It was horrible," Ehrhart said.

What You Can Make

According to Chapman, the going rates for a professional wedding video vary as widely as the types of videos and weddings.

"It's running anywhere from \$300 to \$5,000," he said. "A top-end package may start with documentary coverage of the relationship of the bride and groom that's produced with on- and off-camera interviews, still pictures and moving pictures.

Two cameras are most often used, but up to six could be used, Chapman said.

Ingram is somewhat limited in what he can charge due to his location, he said.

"In Houston and Dallas, [videographers] can easily get from \$1,500 to \$2,000 for a multi-cam-

Vital Statistics

Name: Ken Ehrhart

Summit Video Productions

Albuquerque, N.M.

Began full-time: 1991

Capital invested: \$25,000-\$30,000

Price range: \$595-\$1,395



Name: David Ingram

Ingram Video Productions

New Braunfels, Texas

Began full-time: 1993

Capital invested: \$30,000-\$35,000

Price range: Average \$895,

top \$1,495



"With my photographs, for example, I can freeze-frame and clean all the edges with the paintbrush so that I don't have to worry about shooting off the edges. You see exactly what I want you to see in the photograph," he added.

In addition, Ehrhart has learned to shoot rocks or walls, then rub those scenes into the photo for background, giving the whole shot a textured feeling.

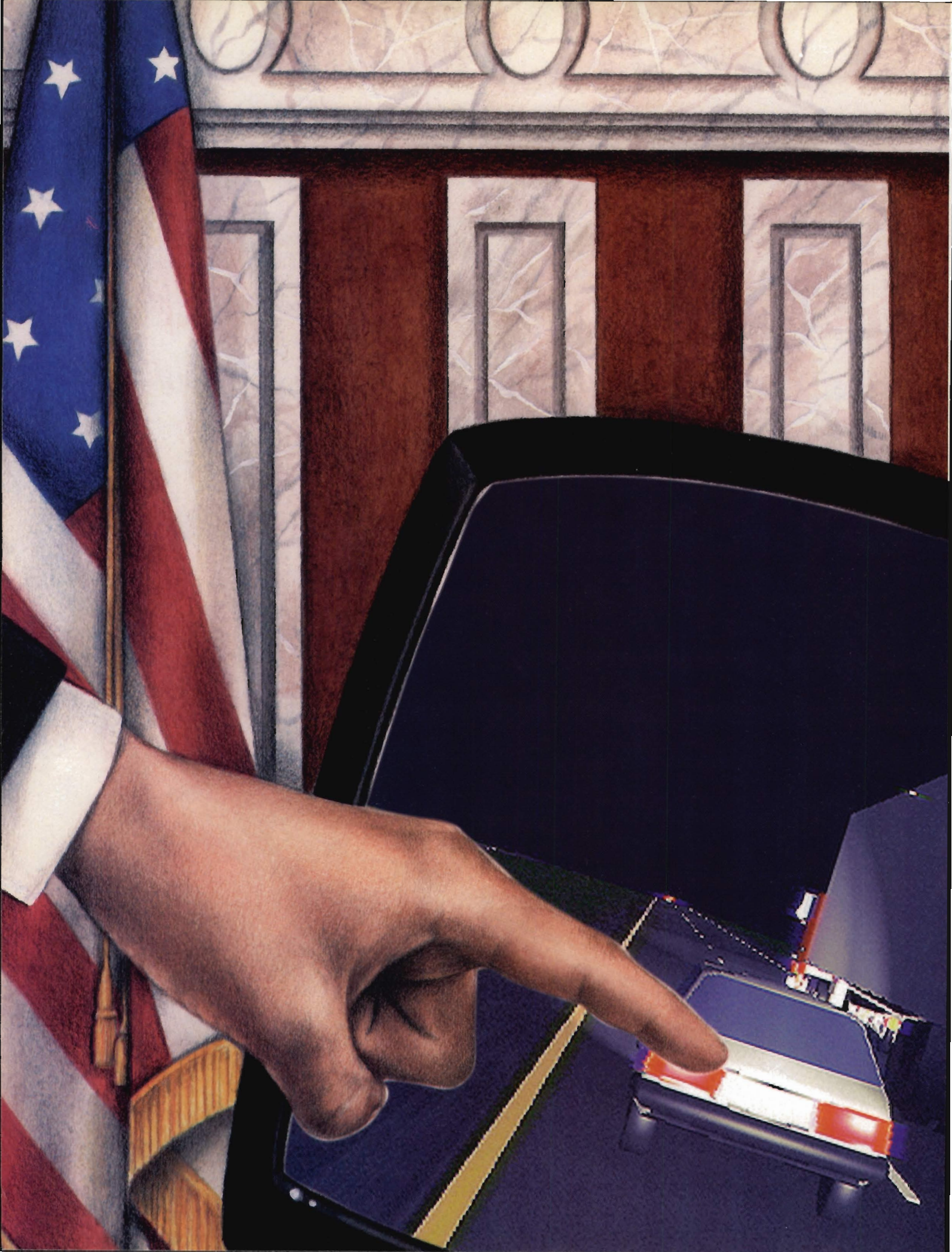
"I've had competitors literally lining up at bridal shows, looking at my work out of the corner of their eye," Ehrhart said.

era wedding," he said. "Here in the San Antonio area, I can't get quite as much. My average price is \$895, but I have an advanced package priced at \$1,495, and I've sold two of those."

Each of his packages uses two cameras and includes a wireless microphone on the groom and another on the lectern. They include a 25-picture photo montage at the beginning, tape of the preparations and six hours of on-location time.

It's been harder for Ehrhart to set prices because he's been based in different parts of the country. In Colorado Springs, he said, prices ranged from \$350

continued on page 96



Forensic Video

Next to an Attorney, Videotape May be Your Best Ally In The Courtroom

by Don Pence and
Michaela Miller Pence

The onslaught of material speeding down the information highway is overwhelming. It is changing virtually every industry and making specialization almost mandatory. The video production field is certainly no exception.

Forensic (legal) video is one of the fastest growing areas today and also one of the least visible, since it has a small audience in courtrooms across America. So unless you are in the legal profession or have served on a jury where video was used, you may not be aware of the significant inroads video has made in the justice system.

In fact, the past 10 years have spawned several well defined sub-specialties within the industry. For purposes of this article, we will focus on the video and computer services offered to civil trial attorneys, including depositions, mock trials, day-in-the-life documentaries, settlement documentaries and computer animation.

In addition, litigation support often requires "hard boards" (poster-style displays) with graphs, charts or illustrations to accompany the presentation.

Custom medical illustrations are also used frequently to demonstrate a procedure and/or the before and after. The good news is that all of these services can be produced or dramatically enhanced by using the Video Toaster and its associated hardware and software. We will discuss many types of forensic video in this article; however, time and space does not allow a comprehensive analysis of the legal and practical aspects for each form of evidence.



With the use of forensic video, it's possible to reconstruct an accident scene similar to the one portrayed above, where a speeding motorist is about to hit the pedestrian while two witnesses stand just a few feet from the scene.

Forensic Video

Depositions

Testimony via videotape is the most common form of forensic video production. Virtually all types of cases call for depositions to be recorded at some time and for a variety of reasons. Obviously, videotape captures a witness' appearance, voice, demeanor and other behavioral nuances which allows the viewer to make character judgments.

in one state, it may be played in another jurisdiction; therefore, it's extremely important to obtain a copy of the rules that apply.

Videotaped depositions are now being produced so routinely that they have become more sophisticated than the long-accepted "talking head." The Toaster can switch between a camera on the witness and another shot of the questioning attorney, an exhibit or a combination shot.

Keep in mind that your audience consists of a judge and jury in a courtroom, so stick with subtle transitions.

The Association of Professional Videographers (APV) has a Forensic Video Special Interest Group (SIG), which has adopted a Code of Conduct as well as Standards and Procedures for conducting videotape depositions. The APV and the National Court Reporters Association (NCRA) are the only two organizations with deposition certification programs.

Day-in-the-Life Documentary

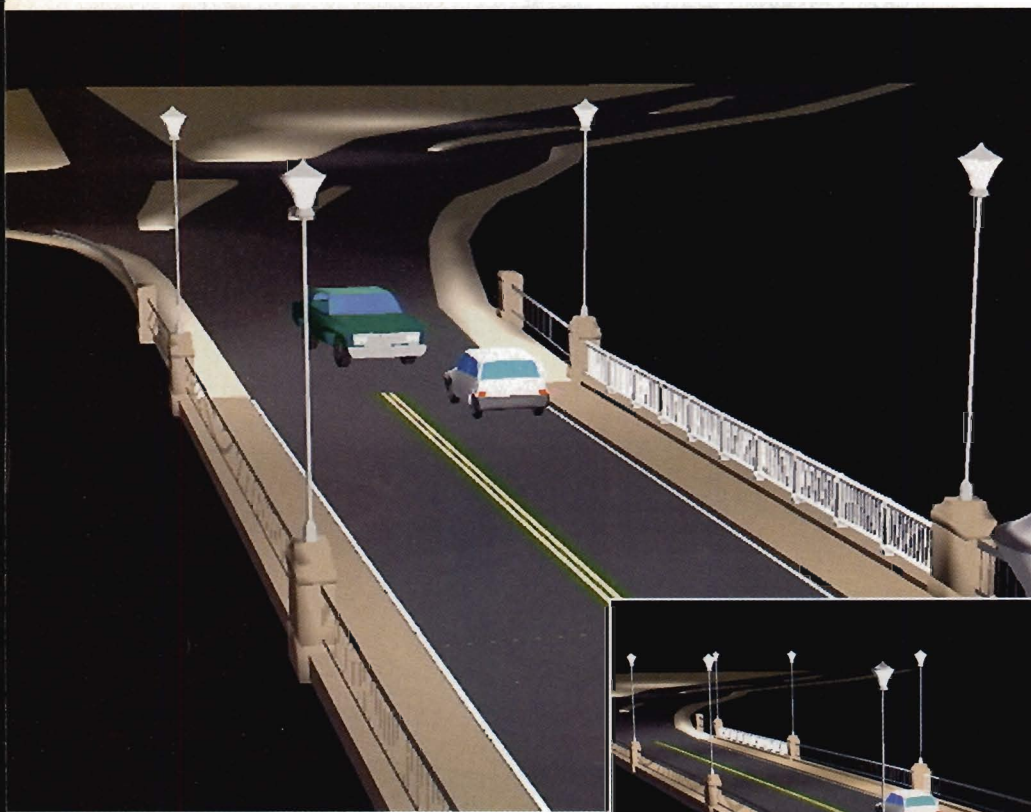
This form of evidence is usually reserved for a catastrophic injury case such as paraplegia or quadriplegia. It is designed to show the jury what a routine day is like for the severely injured person and the impact of that injury on his or her family.

Watching a disabled person struggle with daily activities and the loss of enjoyment can be highly emotional and even unpleasant. However, when used as an illustrator of fact, a day-in-the-life documentary is perhaps the best way to understand and share in the privacy of another's life and effectively communicate the damages.

Once edited, the tape should run no longer than 30 minutes and

include all pertinent aspects of daily living—dressing, bathing, feeding and therapies. Pre-production is tremendously important since it will be a long day. You shoot from the waking hours through bedtime. We recommend meeting or at least talking by telephone with the client or his/her caretaker prior to the day of shooting to determine what a routine day involves.

As the video documentarian, you must be aware of the type of shots which can have your presentation thrown out of court. For example, an extreme closeup of a gri-

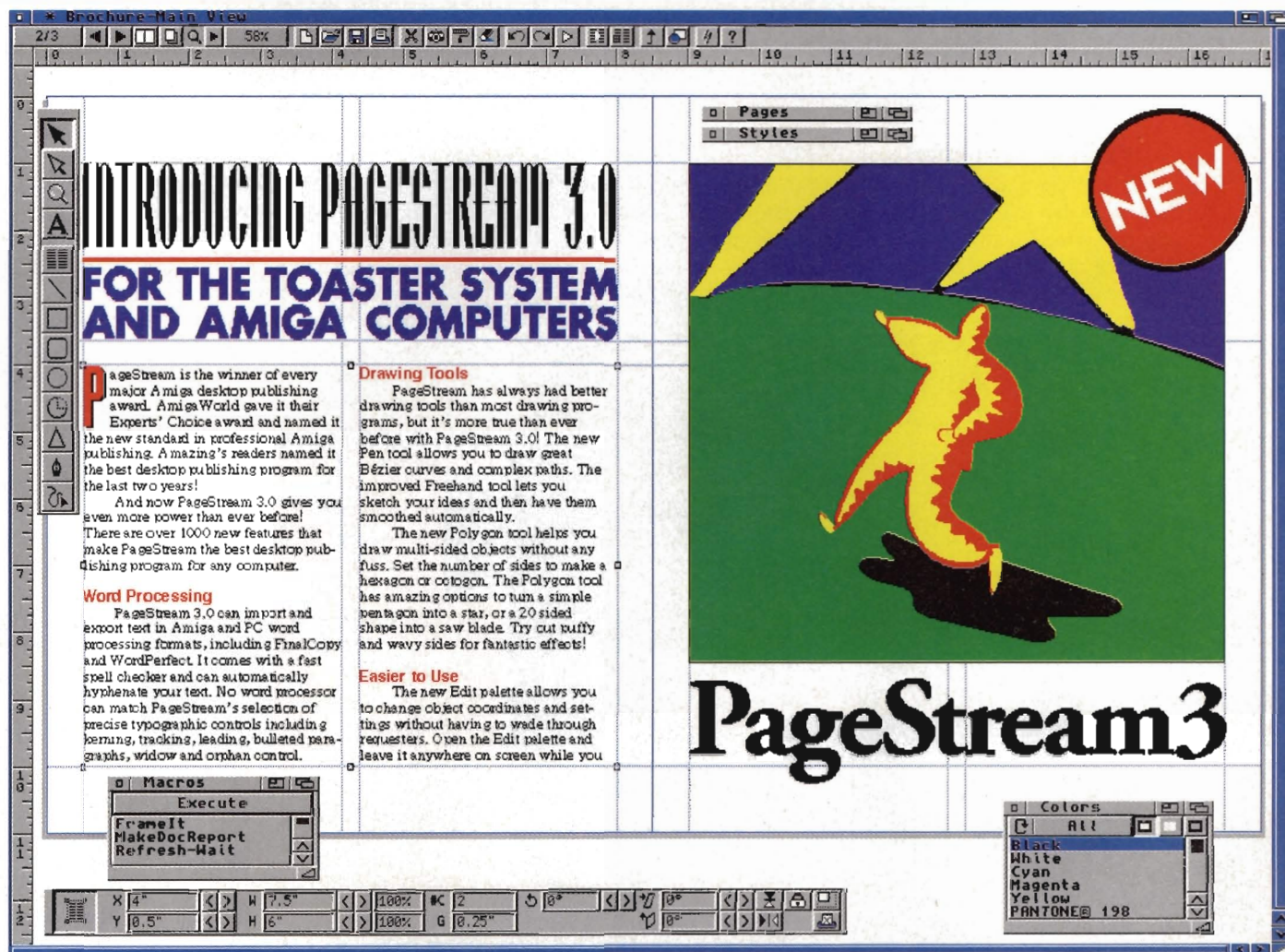


In this pair of frames, it is possible to see why the smaller car (inset) was forced off the narrow bridge, causing a fatal accident on the Bridge of the Lions in St. Augustine, Fla.

Videotape depositions preserve testimony and should be recorded in an objective manner so as not to influence the finders of fact. The camera should record the witness at eye level, since some camera angles create a fallacy which can influence the emotional reaction of the viewer. For example, if you shoot down on a witness it can diminish the witness' credibility. Conversely, the person may come across as superior if you shoot up toward the witness. Obviously, that would be influencing the testimony and may make the tape inadmissible.

The Federal and State Rules of Civil Procedure govern the way video depositions are to be conducted. Some state rules go so far as to tell the video operator how to frame the shot as well as how frequently the shot can be changed. Even though a deposition may be recorded

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Forensic Video

mace or any shot that dramatizes pain and suffering will assuredly raise objections and could potentially exclude the entire tape. A fair and accurate representation must be proffered for justice as well as your professional integrity.

Settlement Documentary

This presentation is not for trial and therefore not restricted by evidentiary rules. It is shown to opposing attorneys and insurance adjustors to promote the settlement of a lawsuit. This presentation is an opportunity to produce a concise summation of the case through narra-

Picture a jury listening to an accident reconstruction expert explaining the dynamics of an accident. It is just after lunch and they are hearing the terms vector, conservation of momentum, delta V and coefficient of friction thrown about wildly. Receiving a lesson in physics is not exactly on top of their priority list, but the information must be conveyed.

One solution is to take the engineering data and apply it to the virtual world of the computer to create the scene and re-create the accident. Applying mathematical concepts to a real-world incident allows the jury to see and understand what happened. Forensic animation is an exacting process of applying formulas based on witness statements, accident reports, depositions and the reconstruction report. The next step is to rule out the information that is physically impossible.

In the information gathering process, go to the site whenever possible to obtain independent measurements and data. It is absolutely necessary that the animation be accurate. You can never have too much data. There are times when going to the site is not possible due to financial considerations. In those circumstances, it's necessary to rely upon the measurements of the expert or hire a local surveyor to provide any vital data.

Finally, the search for the vehicles is initiated. Look for exemplar vehicles to measure, and if an exemplar is not available, the investigation continues through other sources such as the manufacturer to get the size and style of the objects. Some of the tedium can be avoided by purchasing the objects needed from one of many companies (most of which are listed in this publication). Several on-line databases also carry objects.

Once all of the objects are created, it's time to set the stage for the actual animation. This is where the real work is involved. The creation of motion files is not a simple matter. It takes a good working

knowledge of algebra and a handful of formulas.

Always check the data—even from the expert—and double check all the math. Since we are working with 30 frames per second, the data must be converted from miles per hour to feet per second. With the current LightWave layout area, it's meters per second. Remember that your second is comprised of 30 frames and that you will have to work in finer detail of those increments.

Once you have all of your data converted, you need to create your keyframes. In the process of setting up objects (in the case of a roadway accident), place your 0,0,0 coordinate where your initial POI (point of impact) will be. By doing this, you can back out the animation from the POI to create the keyframes referenced on 0,0,0. It makes all of the math much easier to calculate when you don't have to add or subtract any offsets.

When creating a set of motion files, be sure to check the keyframes from all three points of view throughout the animation. There is nothing worse than discovering an error during the rendering process. Forgetting to allow for



With the aftermath of a previous accident in the foreground, this framestore shows two cars maneuvering through a dangerous stretch of the highway. In this scene, the truck driver is unaware of the smaller car's position because its location is not visible from the driver's seat.

tion and interviews. The finished product looks very much like something you would see on a news magazine program.

If liability is clear in a case, you can focus on the damages (pain and suffering, economic losses, medical costs, etc.) by interviewing the client, family members, friends and co-workers. The sound bites generally focus on the "before and after" issues pertaining to the case (what the client could do before vs. what he/she can do now). Photographs and home videos are extremely valuable in pulling the whole story together.

Forensic Animation

The use of graphics to communicate complex concepts to a jury is not a new idea. Photographs, slides and overhead projection acetates have been used in conjunction with expert testimony for decades. The point of visual evidence is to clarify the information and help jurors retain the information better. The use of animation enhances this technique considerably.

the Y axis can make for some pretty bizarre occurrences.

Setting up the camera for the most effective POV (point of view) is the next task. Try to use the best eyewitness POV because that is the person who should verify the accuracy of what is being depicted. If you don't have an eyewitness, use a POV that is jointly agreed upon by the attorney and the expert as the most effective to show what happened. Then let the animation render for hours, days or weeks—depending on how many polygons you've created—and admire your finished product.



Don and Michaela Pence own Video Law Services, Inc. They lecture regularly to state trial lawyers associations and video associations on their specialized field. The couple has produced "Legal Video Documents," an instructional videotape series on the legal and practical aspects of utilizing video in litigation. For more information, call (800) 526-5643.

Organizations mentioned:

Assn. of Professional Videographers
1000 Whitetail Ct.
Duncansville, PA 16635
(814) 695-4325

National Court Reporters Assn.
8224 Old Courthouse Rd.
Vienna, VA 22182
(703) 556-6272

Society of Forensic Arts
24 hours (904) 396-0318

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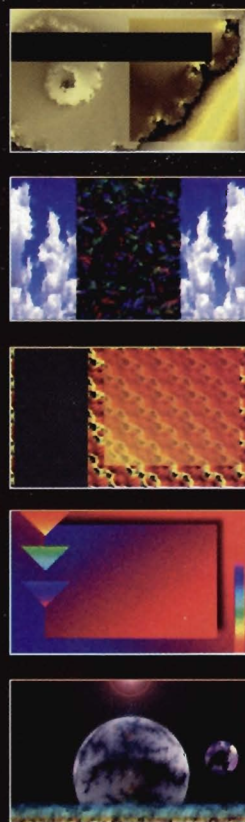
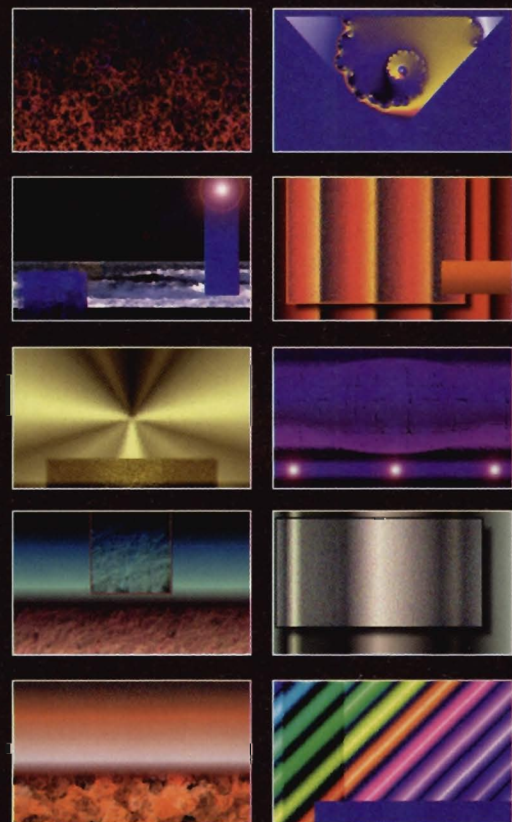
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Adding Sparkle to Digital Video Effects

by Frank Kelly

There's no denying that the Video Toaster could use some improvement when it comes to Digital Video Effects. The DVE drawbacks are most evident when you look closely at most of the Toaster's digital transitions and see "blocky" artifacts.

Creating DVEs that squeeze or distort the video image by changing its size requires a tremendous amount of technological horsepower. Although the Toaster does an admirable job of creating the illusion of high-end real time DVEs, it falls well below the standard set by the venerable Ampex Digital Optics (ADO) or similar devices from Abekas, Pinnacle and other manufacturers. ADO's introductory price in 1981 was \$190,000. Today's typical broadcast DVEs average nearly \$50,000. These high-priced units usually consist of a CPU with plenty of memory and a control panel loaded with dedicated sub-processors.

Is it reasonable to expect the Toaster to perform effects with the same quality of a 50K DVE for its comparably modest price tag? Not really. Can the Toaster be expected to perform in real time? Definitely not. However, you can create many of the same effects by mapping image files onto objects in LightWave before rendering an animation.

Until recently, the procedure was somewhat complex and impractical for those unfamiliar with LightWave and ARexx scripting. Previously, an image sequence (such as a segment of video) needed to be captured to a hard drive, then converted to IFF images. This alone required large amounts of hard disk space. These images would be imported into LightWave and used as an image map for a particular object.

The image sequence could be manipulated through skillful use of motion paths, morphing, secularity and light placement to closely mimic high-end DVEs when rendered to a finished animation.

Enter Hollywood FX

Synergy International's Hollywood FX is a software package designed to get the most out of LightWave and create DVEs which look as good as those on the high-priced units. No pre-



vious LightWave knowledge is required to use Hollywood FX, and its simple-to-use interface is friendly and intuitive. It comes with 40 different transitions that can involve anywhere from one to several images simultaneously. Animated croutons which approximate the finished movement paths also display numbers on each object that correspond to images selected from a convenient requester.

Choose either a still image such as a Toaster framestore, 24-bit IFF file, or an image sequence such as captured video or an animation. While some of the Hollywood FX's transitions are similar to those offered by the dedicated DVEs, there are many that take advantage of LightWave's more pow-

erful features. This results in several transitions that include particle disbursement and morphed objects.

Most of the effects are well designed and useful in their context. The "48 Hours" effect mimics the "camera and lens" transition of the news magazine. One effect that will find its way into many wedding videos includes two heart shapes which fly into view. New effects modules are promised for later release, along with an upgrade that will allow conversion of LightWave animations into effects modules.

Animation and the PAR Connection

Hollywood FX supports most conventional animation options that talk directly to LightWave. A4000 AGA animations are sufficient to use for entry-level projects. However, many will want the highest quality output available. In my particular setup, I have the DPS Personal Animation Recorder (PAR). I also use the TBCIV in conjunction with the PAR to capture video into image sequences.

LightWave (managed under Hollywood FX and PAR) doesn't require an additional large hard drive to store the source RGB image sequences or the final animation because PAR transparently emulates a mounted AmigaDos volume during rendering and capture. Given the rendering options available, the PAR seems to be the easiest and most efficient. Hollywood FX also takes advantage of pre- and post-processing of images in packages that support ARexx, such as Art

Department Professional and ImageMasterRT.

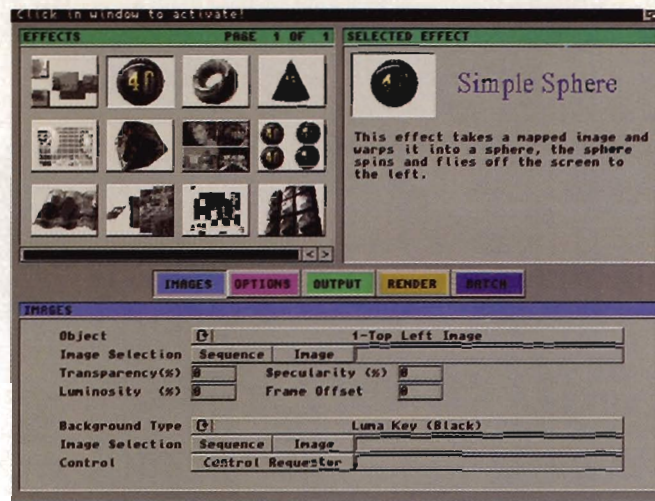
There are sample scripts for creating embossed and oil paint treatments which can be easily modified for other processing tasks. Utilizing the PAR's own hard drive to store images during processing makes things a lot less complicated than using conventional methods.

LightWave Options

Hollywood FX is essentially a front-end to LightWave, although it appears to bypass some of LightWave's conventions. One time-saving feature is its ability to render scenes loading only images that will be seen on the screen while that particular frame is rendered. This requires less memory and less time.

Hollywood FX provides a requester for popular options because LightWave has the ability to use different backdrops. You can choose luma key black, chroma key blue, or create a background that is user defined from within the LightWave Control Requester.

All LightWave resolutions and render



Hollywood FX is designed to get the most out of LightWave.

options are available, including field rendering and print resolution. Field rendering is especially useful for smooth display of capture video sequences. Most will find medium resolution is adequate while saving render time. Low resolution is best for creating quick previews which would take the place of wire frame anims. Effect duration is controlled by setting elapsed frame times and a hold-frame position.

Surface attributes such as transparency,

specularity, ray tracing, antialiasing and shadow mapping are all presented on the same requester and are documented for those unfamiliar with LightWave's finer points in the use of these options.

Another feature of interest to animators is Hollywood FX's batch processing. LightWave scene files and Hollywood FX transitions can be combined into a series of segments for later unattended rendering.

System Requirements

Hollywood FX requires an accelerated system operating under Toaster software version 3.0 or higher. At least 10MB of

fast RAM (16 or more recommended), and 10MB of available hard disk space should be used. Two megabytes of chip RAM are recommended for optimum results.

Company Mentioned:

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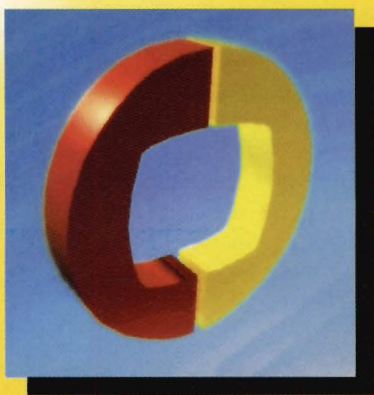
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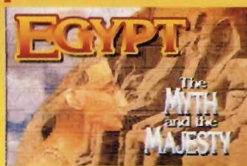
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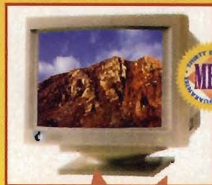
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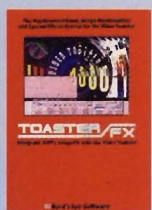
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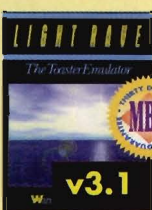
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Studio 16 Version 3.0

A Sweet-Sounding Upgrade

by Matt Drabick

The lively sounds emanating from SunRize Industries surround the recent upgrade to version 3.0 of Studio 16, the professional audio sampling, editing and mixing software. New features include an easy-to-use timeline interface for creating audio productions, automatic fades and cross fades, external MIDI mixer support, automated mixing and SMPTE chase. The unit also provides improved support for the Video Toaster and Bars and Pipes Professional.

Studio 16 is bundled with the AD516 (\$1,495) and AD1012 (\$595), internal audio cards for the Amiga, which are made by SunRize Industries as well. Both cards provide multi-track recording, editing, mixing and playback capability using a hard drive and work with SMPTE time code and longitudinal time-code. The AD1012 offers one mono input, one mono output and four tracks of mono sound with 12-bit quality. The AD516 offers two unbalanced stereo inputs and outputs plus eight tracks of 16-bit or CD-quality stereo sound.

The Essence of Studio 16

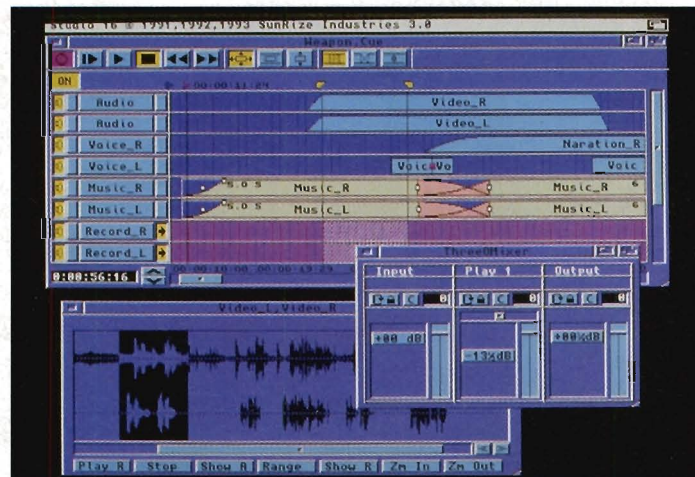
The AD516 and Studio 16 combination effectively replaces the 8-track reel-to-reel tape recorder. Instead of audio tape, a hard drive is used for recording, editing, mixing and playing back sound. Because the audio is in the digital domain, the user can perform previews, undo an operation quickly and easily make changes. No generation loss or noise occurs when mixing down tracks. Audio can be recorded and played back on separate tracks at the same time, allowing the user to listen to a track of narration while recording music on another track at a lower level. The AD516 and Studio 16 are used for professional audio-for-video production, creating original soundtracks for television shows and movies.

The AD516 has a frequency response of 15 Hz to 22 KHz, 85dB dynamic range, input resistance of 50K ohm, and 14 different sampling rates, ranging from 5.5 KHz to 48 KHz. The card uses RCA phono connectors with a pair of inputs and outputs and a single time-code input. The unit has an internal time-code generator and reader that only works with LTC (not VITC—vertical interval time-code) or longitudinal time-code at 24, 25, 29.97 and 30 frames per second. LTC output is not provided, but devices exist for converting VITC to LTC for use with the AD516.

A Zorro slot allows the AD516 to work with the Amiga 2000, 3000 and 4000. Up to four AD516s can be installed in the same machine, providing eight audio inputs and outputs for recording or playback purposes. If you install two or more AD516s in



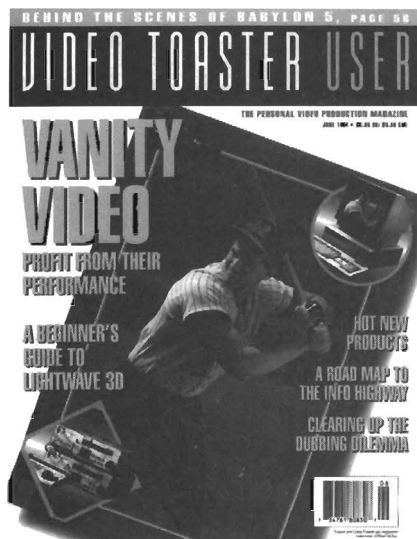
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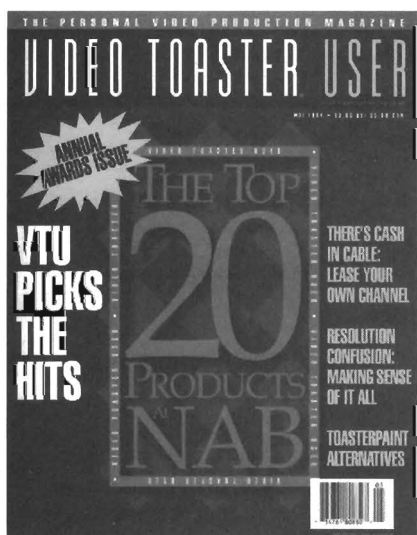
Studio 16 is bundled with the AD516 and AD1012, audio cards for the Amiga.

the same Amiga, you're limited to 12 tracks for recording, editing and playback purposes. Workbench 2.0 or higher and at least 4MB of RAM is required, while a fast CPU (68030 or 68040) and 8 to 10MB of RAM is highly recommended. While small samples can be captured, edited and played from RAM, a hard drive is the best way to go.

You should use a large dedicated hard drive for storing your audio data. At 44.1 KHz or CD-quality sampling rates, about 5.0MB of hard drive space is required per minute per track.



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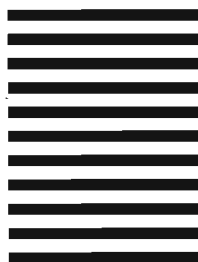
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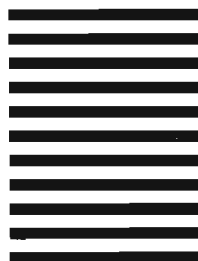
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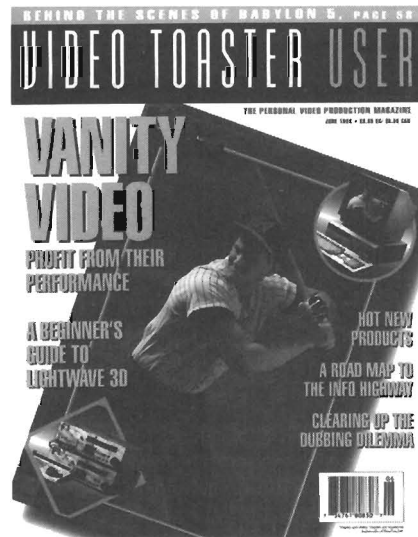
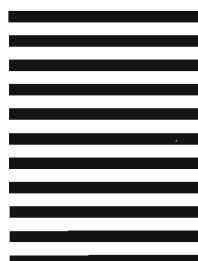
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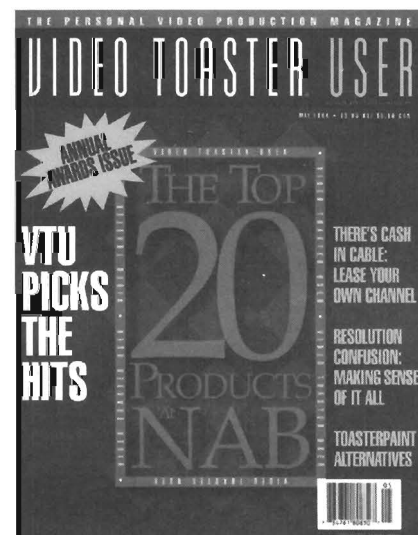
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When working with multiple tracks and/or a lengthy production, hard drive space is eaten up quickly. For both audio-for-video and music production, a minimum hard drive size would be about 500MB, depending on the length of the production, the sampling rate and the number of tracks used. Samples can be worked with 16-bit data using AIFF, Raw and Studio 16 formats or as 8-bit data using AIFF or IFF 8SVX formats.

Recommended Hard Drives

The ability to record and playback all eight tracks with a single AD516 depends on the CPU being used, the hard drive's access time, the hard drive controller and whether the drive is SCSI or IDE. SunRize recommends SCSI-II hard drives over IDE hard drives with an access time of 10 ms or faster. According to SunRize, a stock Amiga 3000 with a 68030 CPU, a 105MB Quantum SCSI hard drive and the AD516 provides six tracks. An Amiga 4000 with its stock IDE hard drive and controller and a 68040 CPU provides five tracks. By adding either a DKB 4091 or Fastlane Z3 SCSI-II controller to the Amiga 4000 and a fast hard drive (8 ms access time), eight tracks are available. Up to seven tracks are possible by adding a GVP combo 68040 accelerator with a SCSI controller and a fast hard drive to an older Amiga 2000.

Finally, while it's possible to use a SyQuest drive instead of a hard drive for storage, due to its relatively slow access times you will only achieve four tracks. The faster Bernoulli Box 150 can provide up to seven tracks.

Because recording and playing back audio samples is read/write intensive, it's a good idea to use a dedicated hard drive with the AD516 separate from the hard drive used for your Toaster system software. Should the hard drive become corrupted, at least your Toaster and other software (plus any data files) won't be lost. If you only have one hard drive available, SunRize strongly recommends that you divide your hard drive into at least two partitions, one for your Toaster and another for the AD516.

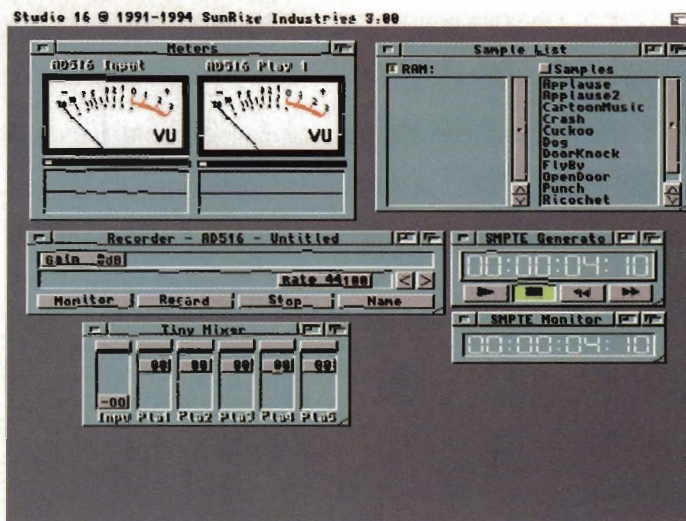
While this means you will have to reinstall your Toaster and other existing software onto one of the partitions, if the other partition being used to record and playback audio samples becomes corrupted, your Toaster partition will be unaffected.

Studio 16 Windows

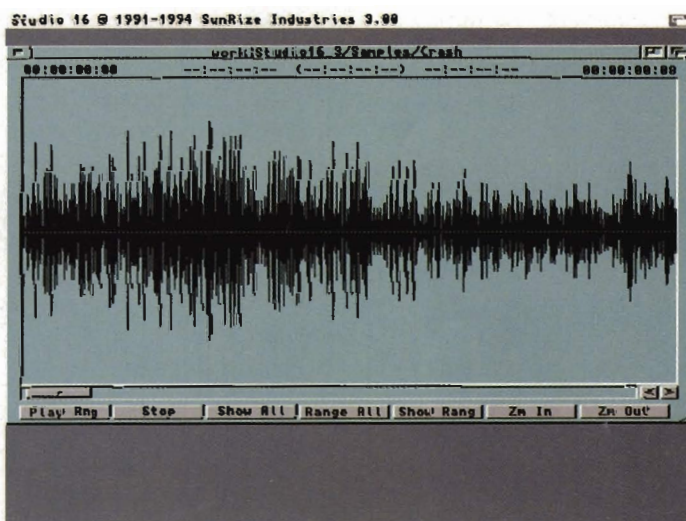
Studio 16 uses draggable windows for its different modules (mixer, cue list, meters, editor, recorder, etc.). The easy-to-use modules can be opened and closed as needed, with multiple windows opened at the same time. For example, when recording a sample you would have the meters window open while adjusting the input level with the slider control found in the recorder module.

The meters window provides analog, digital and graphical metering. The editor window can mark all or part of a sample for copying, cutting and pasting purposes. By zooming in on the graphical representation of the sample or waveform, the user can pinpoint each word or pause in a sentence of narration or note in a song. Samples can be scaled, reversed or have echo added. Both destructive and non-destructive edits can be performed. Destructive edits physically change the data on the hard drive while non-destructive edits don't. Non-destructive edits are created in real-time by the CPU during playback. There is a limit to the number of effects (fades, etc.) that the CPU can generate in real-time.

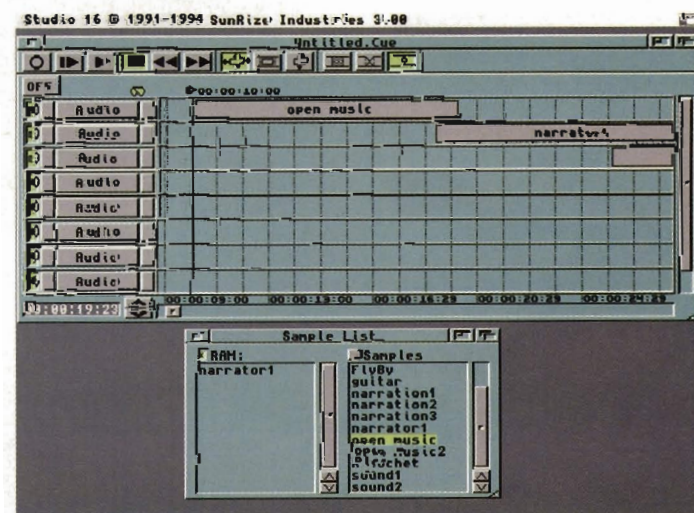
One advantage of destructive edits is that the effects already exist on the hard drive, minimizing demand on the CPU and allowing effects to occur with all eight tracks. When perform-



A collection of various modules (meters, sample list, recorder, SMPTE generator and reader, tiny mixer) found with Studio 16.



The editor module, which allows one or more samples to be cut, copied and pasted plus ramp samples and add echo.



The time-line cue list module, which allows multiple tracks to have music, narration, sound effects and ARexx events to be scripted over time.

ing destructive edits, it's a good idea to make and work with copies of your original samples.

The editor module can also generate digital silence that can be added to tracks plus 1 KHz tone.

Upgrade Improvements

Significant improvements have been made with Studio 16 version 3.0, largely in response to user input. The most noticeable addition is the time-line cue list, which creates audio productions using an extremely easy-to-use visual interface. The time-line module replaces the cue list and transport modules found with earlier versions of Studio 16.

The time-line cue list displays both audio and ARexx events in horizontal rows as they occur over time. Audio samples are simply dragged from the sample list window and placed anywhere on up to eight tracks. The time-line window can be resized and dragged around on the screen. Time can be displayed in Hours/Minutes/Seconds, SMPTE time code or BPM (beats per minute).

At the top of the window is a horizontal row of 12 VCR-style controls. The six controls on the left are used for

recording, playing from start, pausing, fast forwarding, rewinding and playing back samples. The next three controls allow samples to be moved backwards and forwards and from track to track, according to the grid spacing and vertically from track to track without affecting their placement over time. The final three provide limited and unlimited cross fading for bringing edits together. Cross fading includes linear, logarithmic, exponential and instant.

Once samples have been placed onto the timeline, each track can be turned on or off to isolate tracks for playback purposes or for recording a new track while listening to existing tracks. New tracks can be added while existing tracks can be cut, copied, pasted or deleted. The total length of the production and both the starting and ending times can be defined. The amount of time displayed by the timeline can be adjusted, allowing the user to zoom in or out to see all or part of a production. Finally, the playback sampling rate can be kept the same or changed, the gain adjusted for each sample and its output sent to the left, right or both channels.

In addition to audio samples, ARexx commands can be added to tracks. They

can start VCRs, trigger the Video Toaster using the optional Toaster Handler (\$249 from SunRize Industries), and even control light shows. The Toaster Handler allows one or two audio tracks to be played while performing a Toaster transition.

Other important changes have been made to Studio 16. Both fades and cross-fades can be automatically generated as non-destructive edits when using the time-line module. The mixer can module memorize a sequence of volume or pan changes and play them back later for automated mixing. Punch-in and punch-out automatically start and stop recording anywhere on the timeline. An external MIDI mixer can be added to manually adjust the gain and pan of all eight tracks or to add reverb in real time.

The SMPTE chase function eliminates the slight drift associated with long audio segments. In the past, playback from the AD516 with MIDI-generated notes or time-code from videotape could get slightly out of sync. That problem has been fixed. Assignable tracks allow samples such as narration to be panned to the left or right channels. And the big blocks function re-formats your hard drive for improved audio performance.

Sound Tracks

Number of simultaneous tracks using various configurations

Hard Drive	Access Size	Time	A2000 w/ GVP	A3000 w/ 040 combo	A4000 w/ Built-in SCSI	A4000 w/ FastLane Z3DKB 4091	A4000 w/ Built-in IDE
Maxtor 1240S	1.2 GB	8 ms	7	8	8	8	n/a
Maxtor 540S	500 MB	8 ms	7	8	8	8	n/a
Quantum LPS 240S	240 MB	16 ms	6	8	8	8	n/a
Quantum LPS 105S	105 MB	19 ms	6	6	6	6	n/a
Maxtor 540A (IDE)	500 MB	8 ms	n/a	n/a	n/a	n/a	6
ST3144AT (IDE)	130 MB	16 ms	n/a	n/a	n/a	n/a	5
SyQuest 88	44 MB	20 ms	4	4	4	4	n/a
Bernoulli Box 150	150 MB	18 ms	6	7	7	7	n/a

Data supplied by SunRize Industries

By increasing the drive's or partition's logical block size, disk seek times are significantly reduced and more tracks can be played.

Finally, the maximum number of undo levels is 100, memory permitting. The real-time delay module found with previous versions of Studio 16 that provided flanging, choruses, echoes and other effects has been removed but may be added later. Support for the Video Toaster, Scala MM300, the Personal Animation Recorder, AmiLink, T-Rexx Professional and Bars and Pipes Professional has been improved. Bars and Pipes Professional and the One-Stop Music Shop, the MIDI sequencer software and internal MIDI module from Blue Ribbon SoundWorks, allow the AD516 to playback guitars and vocals as tracks while the One-Stop Music Shop plays MIDI-generated notes.

Other related products from SunRize Industries include SMPTE Output (\$249) and the DD524 digital interface (\$749). SMPTE Output can be used as a stand-alone product or integrated with the Studio 16 software. In addition, SMPTE Output generates longitudinal time-code output via the Amiga's right RCA audio connector and can be used to stripe video and audio tapes with time-code or act as the master time-code reference in a studio. The DD524, still under development at the time of writing, is an input/output device that imports and exports digital audio between your Amiga or Video Toaster's hard drive and a DAT recorder for CD mastering. Samples can be captured from a CD player or DAT recorder and both samples and finished productions archived to a DAT recorder.

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Companies mentioned:

SunRize Industries
2959 Winchester Blvd., 2nd floor
Campbell, CA 95008
(408) 374-4962
Fax (408) 374-4963

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Blue Ribbon SoundWorks
Venture Center
1605 Chantilly Dr., Ste. 200
Atlanta, GA 30324
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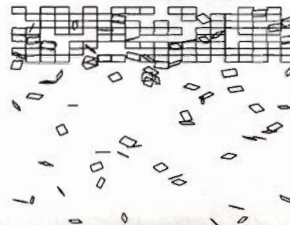
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Power Macros

Custom ARexx Scripts for LightWave and Modeler

by Tim Doherty

One of the many powerful features of Modeler 3.0 is the ability to execute ARexx scripts, which makes it possible to customize Modeler with an endless variety of functions. A number of ARexx macros are included with 3.0, and can be launched from the Macro button under the Objects menu. They range from practical shortcuts, such as Center, which centers an object on coordinates 0,0,0, to Haiku, the humorous diversion which randomly generates funny and often bizarre poems.

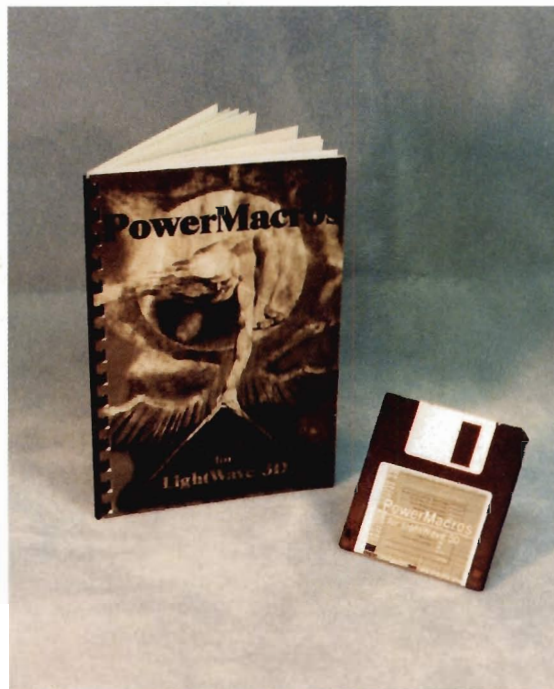
Power Macros is a set of 17 new custom ARexx scripts for LightWave and Modeler. Authored by CineGraphics of La Jolla, Calif., Power Macros was designed to pick up where Modeler's current ARexx routines leave off. Sophisticated and elegant, Power Macros offer something for everyone. They will be appreciated by LightWave users at all levels of experience.

What Is ARexx?

Nearly everyone who is familiar with the Amiga beyond the Toaster's Switcher screen knows that it is a multitasking computer. Its hardware is capable of running more than one program at once. For example, animators can keep a paint program loaded at the same time as LightWave, and then switch back and forth while creating, modifying and applying textures.

Fewer people are familiar with an equally important feature of the Amiga: interprocess communication (IPC), which allows information to be exchanged between applications and adds a deeper dimension to multitasking. Different programs can not only run concurrently, but can share data and actually work together. This communication is accomplished through the use of software message ports or hooks. These contain addresses which allow messages to be sent and received by programs supporting IPC.

ARexx is a programming language which has been



incorporated into the Amiga operating system and is designed to take advantage of the Amiga's multitasking and IPC environment. It allows programs written by different companies to exchange information and work together. It also lets users modify, direct or otherwise customize programs with ARexx hooks. Power Macros uses Modeler's ARexx hooks to automate functions which would otherwise be repetitive or difficult to do by hand.

Adding Power to Modeler

Dragging the Power Macros Install icon into the Toaster drawer and clicking on it automatically copies the Power Macro scripts into the LightWave ARexx Examples\lm directory. It also installs a list which identifies all the Power Macros by name. To load the entire Power Macro set into Modeler, select <<Configure List>> from the Macro button before clicking on the Load button and choose the Power Macros list. All 12 Power Macros appear in the Macro pull-down menu, replacing Modeler's original list of macros. (The original list can be reloaded by choosing ModelerMacroList.)

Of course, it is also possible to customize the macro lists with any combination of macros you prefer—and there is a Modeler macro to do this. Selecting Add Macro allows you to add individual Power Macros into the standard ModelerMacroList, create an entirely new list and save it with a new name. Another option is to activate your favorite macros via function keys. Macros can be assigned to each of the 10 function keys with the <<Configure Keys>> option. This is what I prefer. On my computers, for instance, F1 loads Center, the standard Toaster macro which I mentioned earlier, while F10 loads RenderBatch, a Power Macro which I've found to be very useful and which I will describe later.

The 17 Power Macro scripts are divided into four categories: Business Macros aid the animator in preparing business graphics or presentations; Energy Macros create

sophisticated real-world energy effects; Layout Macros work with LightWave's layout functions; and Modeler Macros, which are employed in the process of modeling. Let's look at each in detail.

Business Macros

There are three business macros. The first, Chart Legend, creates a beveled plaque with square beveled highlighters next to each series title. Any Toaster Postscript font can be used in creating a plaque. Although fonts cannot be loaded from within the macro, they must be pre-loaded using the Modeler Text function. Figure 1 shows a plaque created with this macro. The only modeling I did beyond executing the Chart Legend macro was to give a new surface name to the front of the letters.

Pie Chart 1 and 2 create accurately sectioned pie charts. A requestor allows input for up to eight percentage values, and the resulting pie chart is extruded to a user-defined depth. Pie Chart 1 generates a single object comprised of different surface names, while Pie Chart 2 creates separate objects from the pie's pieces.

Energy Macros

The three Energy Macros are probably the most exciting scripts included in the Power Macros set, though their use is more specialized than many of the other routines. Shatter and Blow Up work together. Shatter uses Boolean operators to slice an object into pieces, saving the objects it creates in their original position, and parented to a null object in a new scene file. You can determine the number of Boolean slices, along with the randomness of the cuts. The resulting new objects are complete with new surface names for interior polygons, if you so choose. Blow Up can then be used to animate the objects produced by Shatter, with real-world motion controls for the exploded pieces.

Figure 2 shows the Power Macros Blow Up requestor. You can define diminishing velocity rates, gravity, spin, the ground level and the bounce height of the pieces. You can also select the point of explosion, so that your object explodes outward from its center or side, upward from its base or downward from its top. Blow Up even gives you the option of automatically generating a dissolve envelope in the scene, which loads the unshattered object, then performs a one-frame dis-

solve to the shattered pieces just as the explosion begins. I used Blow Up to animate an exploding turbine for a legal case. The time it saved me was significant, and the finished animation looked great.

Swarm is a macro for producing unique flocking motion paths. It can animate flocks of birds, schools of fish or swarms of insects with a minimum amount of effort. I've had to produce such motions in the past, and can attest to the tedium involved in creating such a scene by hand, and the speed with which I put together a similar scene using Power Macros. First, I created a scene file containing the objects which I wanted my swarms to fly around. These objects can be anything you choose, but must be named either "attractor" or "repeller," which corresponds to the way the swarm reacts to them. The size of the objects dynamically determines their amount of attraction. After saving the scene file, I ran the Swarm macro. I clicked on the scene file I had created, then chose the objects I wanted to swarm. Among the parameter adjustments are velocity, spline inertia (which controls how strictly the objects interact), and frame delays between objects. It took only a moment for Modeler to generate a new scene file containing the swarming objects. The resulting animation was truly natural looking—better than my handmade one.

Layout Macros

The layout macros are the most diverse of the Power Macro set. The first, Focal Distance, keeps the camera focused at a controllable distance through a LightWave scene. It is simple to set up and only requires that

you create an object in your scene named FDist, which has key frame numbers matching those of your camera. The macro creates an envelope for the camera, which can then be loaded to control the camera's focal distance.

MoveScene is a handy utility for transferring a LightWave animation from one computer to another. Anyone who distributes rendering to multiple machines appreciates this

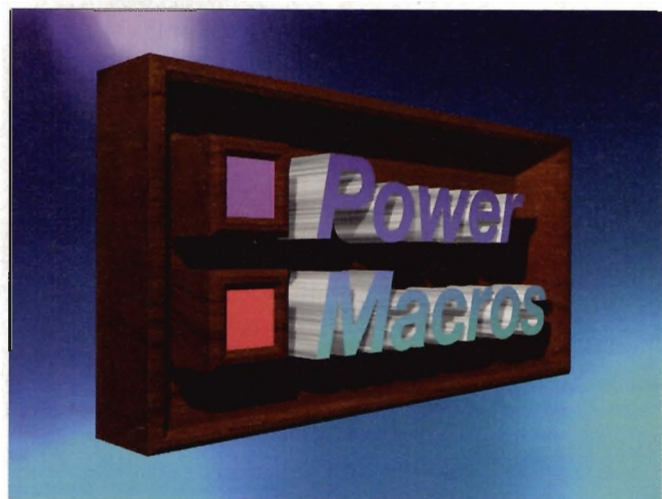


Figure 1



Figure 2

macro. You can input new paths for the scene, texture, and object files so that changes don't have to be made with a text editor or manually as the scene loads.

Perhaps the most useful Power Macro script for the busy animator is Render Batch, which is shown in Figure 3. This macro enables you to automatically render a series of com-



Figure 3

pleted scene files. It prompts you for the names of each scene and for each destination drive and file name. The scenes are then loaded one after another and successively rendered to the appropriate device. Images can be saved as either IFF or framestore. Support for the DPS Personal Animation Recorder (PAR) is included. You can render either separate or joined animations to the PAR.

Smooth Velocity is a simple but helpful macro, which modifies the velocity of an existing motion path into a perfectly constant velocity.

Snake (Figure 4) is one of my favorites. It is used for morphing an object along a path using bones. This is a fast method of producing an animated slithering snake or swimming fish. You only need to sketch a motion path, choose your object and then select the

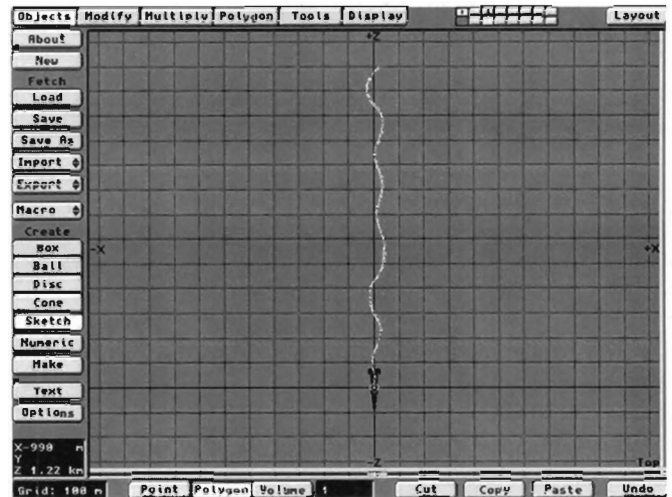


Figure 4

number of bones. The Power Macro sets the scene from there. Like Explode and Shatter, this script greatly simplifies an otherwise complicated process.

Modeler Macros

The final six macros aid in creating models, as do most of the standard Toaster ARExx scripts. Although they are all helpful, Save Pivot Point is the one which I've found to be the most

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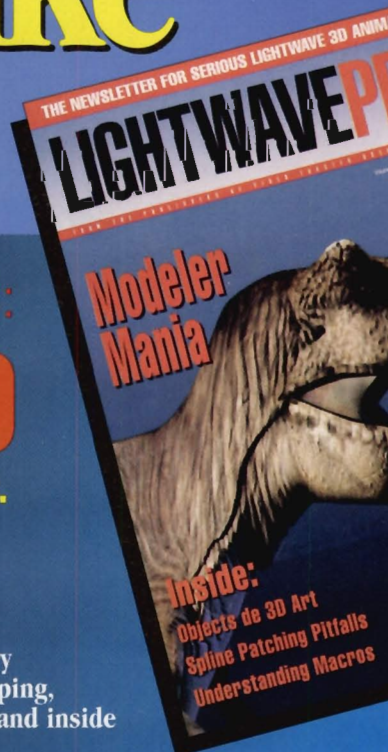
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useful. It allows you to assign any point in an object as the object's pivot point. This makes it possible to build and position hierarchal models using Modeler's layers. Anyone who has ever worked with hierarchal models in LightWave can appreciate the accuracy and ease of piecing them together from within Modeler rather than Layout.

Clone Object and Surfaces is a macro that expands Modeler's clone command. It creates new surface names for each new clone (as well as new names for the clones themselves), saving you the task of renaming the surfaces on each of the cloned objects. For example, an object named Logo with the surface name, Gold, can be saved as Logo.001 and Logo.002 if two clones are generated. Their surface names will be Gold.001 and Gold.002, respectively. You can even instruct the macro to load the clones into a scene, so that their surfaces are ready to be assigned textures.

Another variation of a standard Modeler function is Mirror Using Polygon. It gives greater flexibility in mirroring objects by controlling the angle as well as the position of the mirrored object. A single polygon is used to determine the location and orientation of the new object.

Attach To Polygon makes it easy to join one polygon to the absolute surface and angle of another polygon. It is particularly useful in attaching an object onto the curved surface of another. As with Mirror Using Polygon, it works on a single polygon to determine the position and orientation of the attachment. A companion script, Flip Around Polygon, flips selected polygons or objects 180 degrees, and can be used if the Attach To Polygon macro orients the object in the opposite direction relative to the selected polygon.

Last but not least, Load From Scene loads an entire LightWave frame into Modeler with all objects positioned, scaled, and oriented as they appear in layout. Any frame of an animation can be loaded. This is an excellent way to sketch motion paths through a scene.

Indispensable Macros

Power Macros are aptly named. The flexibility they provide for modeling, animating and rendering a scene is impressive. They have proven to be indispensable to me, since I use the RenderBatch function to keep my computers rendering to a PAR board around the clock—not to mention the ease (and fun) I've had in animating explosions

and snake like movements. They are easy to use and have been designed with attention to detail. Animators know better than anyone that time is money. Power Macros can save you time, simplifying many difficult tasks while expanding your arsenal of friendly but sophisticated LightWave and Modeler tools. Any LightWave enthusiast who uses Modeler macro scripts can find at least one valuable application for Power Macros which easily makes it worth the list price of \$149.

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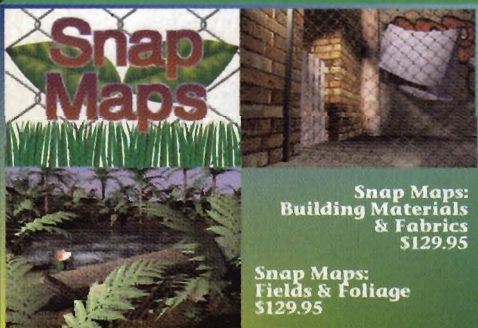
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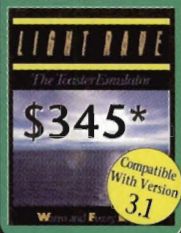
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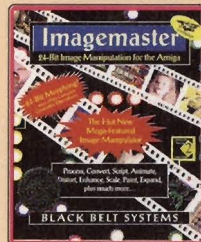
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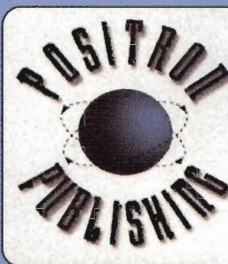
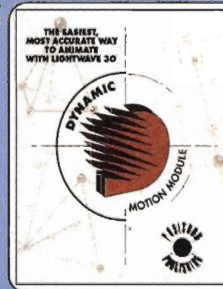
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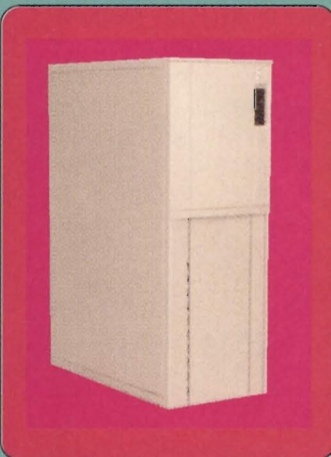
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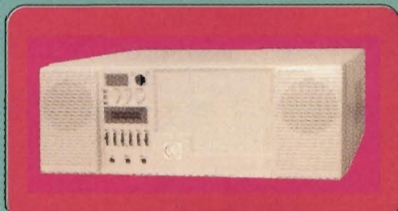
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FOR INFORMATION CIRCLE 101

3D Morph Project Walkthrough

Learning with LightWave

by Maury McCoy

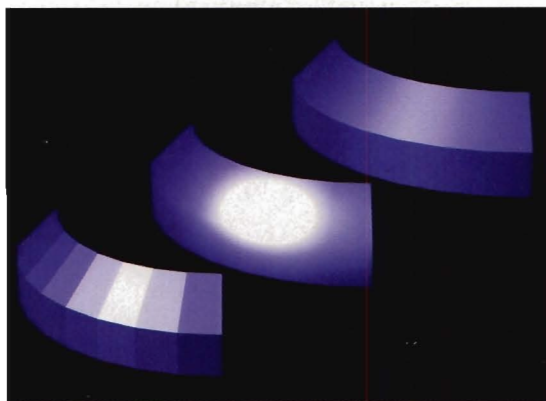
Let me say right from the start that this isn't going to be one of those how-to articles filled with "punch in these coordinates and press this button to create flying logos that will amaze your clients." If you have clients like that, you're a lucky person. Most likely, your clients have their own ideas, and getting those ideas on-screen presents a new challenge with every project.

Instead, this article will focus on how I approached a recent project and the various tips and techniques used throughout. At times it gets a little heavy discussing envelopes, morph targets, beveling and the like. For those new at LightWave, stick with it. Observing how a project moves from start to finish, along with the problems encountered and hard-won solutions, will undoubtedly help you when it comes time for you to complete a difficult project.

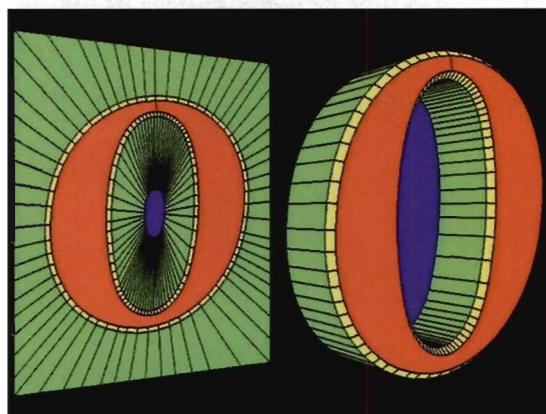
Morphin' Magazines

Recently, a client noticed the morphing sequences on my demo reel and inquired as to whether or not the cover of their magazine could be morphed into their magazine logo. The magazine cover had to be transformed into the letter O (which was the first letter of the *Omaha* magazine logo), then the rest of the logo would be dissolved in later.

In a case like this, it would be logical to think that a morphing project would need morphing software. After all, the original morphs on my reel were produced using Cinemorph. Looking more closely at the problem, I realized that morphing software alone was not the answer. For starters, morphs work best if the source and target image resemble each other at least somewhat, and I could



This image shows (left to right) a curved bevel without smoothing, a curved bevel with smoothing, and a bevel with smoothing after separation.



The original magazine object is shown (left) next to the morph target object.

tell right away that I would have problems with that big hole in the middle of the O. There was also a pretty good chance that the straight edge of the magazine would not transform smoothly into the curved outline of the letter O. From a strictly aesthetic point of view, I thought of an effect moving the camera around the magazine as it was transforming to help distinguish my animation from the majority of morphs that just transform static images. All of these factors resulted in LightWave being the logical choice.

The Game Plan

The next question to present itself was simple: Where to start in LightWave? Here was my plan: Begin with the letter O in Modeler and yank the points around until they are in the shape of a flat rectangle. Then texture map an image of the magazine cover onto the flat rectangular shape and have that object morph into the original O object. At the same time, move the camera around from a shot of the magazine lying flat to a head-on shot of the letter O. The problem of the hole in the target object could be solved by turning on the

morph surface button and having the target surface for the hole polygon be 100 percent transparent on the final O object. This would cause the polygon to gradually dissolve out as the surface of the object was changing. Morphing surfaces also help change the flat polygons of the magazine into the smooth ones needed to make the letter O. After the transformation to the O is complete I would then fly the object backward while at the same time morphing it into an identically shaped object, but with a new surface matching the shiny metal used for the rest of Omaha magazine logo. After the O was in place, I would then dissolve in the rest of the logo and the two would blend in flaw-

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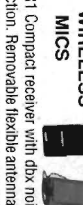
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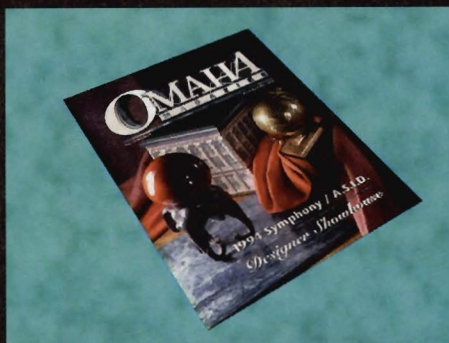


Figure 1



Figure 2



Figure 3

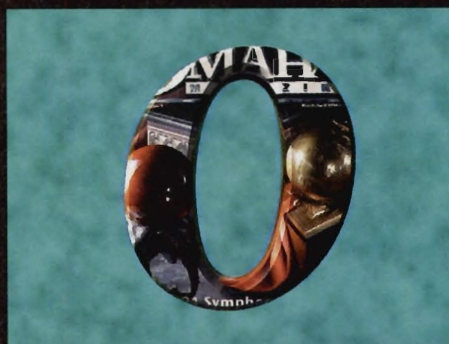


Figure 4



Figure 5



Figure 6

This series of images was taken from the final rendered sequence of a 3D morphing project.

lessly. Simple, Right? Well, maybe not, but at least in theory everything should work. I accepted the project and went to work.

Images

There were two images for this project—the magazine cover and a background pattern. This issue had yet to go to print, so the cover image was only available on a Macintosh 44MB SyQuest cartridge.

I needed to convert the cover image to my Amiga. I borrowed a friend's Mac, JPEG compressed it to fit on a Mac floppy, then converted it to the Amiga using Mac-2-Dos software. Once the cover image was in my Amiga, I used Art Department Professional to convert it to an IFF file. Then it was possible to use the IFF image as a texture map in LightWave.

The magazine also provided their logo, which was created in a Macintosh 3D program. With a little touch up work, I could dissolve in that image as opposed to remodeling and re-rendering the complete logo.

The background pattern was created using a dark-blue, fractal-noise pattern on a light blue rectangle. Rather than have this rectangle render behind every frame of the animation, I rendered an image of nothing but the background, saved it, and used this picture as the background image for the entire animation. Using this technique saves enormous rendering time.

The Objects

This is where the fun begins. For starters, I chose an O from the font book that matched the style used in the logo. Using the Text button, I loaded this letter into Modeler. Remember that you can change how many points the modeler uses to create letters by changing the smoothing settings in the options menu. I then extruded this object and gave it a beveled edge using the tools of the same name. I also created a polygon for the hole, realizing that it would be transparent later on. Next, I went ahead and renamed all of the angled polygons as bevel, the edge polygons

as edges, the front polygon as front, and the hole polygon as hole.

Before saving any object, I always perform a check for illegal polygons by hitting the select Non-Planar in the polygon statistics requester. This menu can be summoned by hitting the "w" key. I also use the center macro to ensure that my object will appear in the middle of the layout screen when loaded into LightWave. Normally, I use the Merge Points option before saving my object to remove any duplicate points that may have occurred during modeling. There are certain times when Merge Points shouldn't be run, however, and it just so happens to be the case when round objects with bevels are being used. Here's why.

On letters such as O, S, and J that have round edges, the surface of the bevels will need to be smooth or they will look faceted when rendered. This is especially true if the surface is at all specular because it will end up looking like a disco ball if animated. The edges of these objects should be smooth for the same reason.

Unfortunately, a problem arises when both edges and bevels are set too smooth because the edge and bevel will smooth into each other, causing your letters to look more like giant bubbles than finely chiseled objects. Fortunately, there is a simple trick to remedy this problem. Use the volume include selector and draw a box around the back half of the letter. This selects the edges, but not the bevel. By cutting out this portion of the object and consequently placing it in the same spot, our problem is solved.

Morphs work best if the source and target image resemble each other at least somewhat.

What we have accomplished is that now the edge polygons have their own points and the bevel has its own points. In other words, if you click on a point along the seam of the edge and the bevel you will find two points where you formerly had one. Since the edge and bevel no longer share a common edge, LightWave will not try and smooth between them. This trick comes in handy when modeling complex objects with lots of curved surfaces, such as car bumpers.

After saving the completed O object, I went ahead and loaded it into a different layer to modify it into a flat rectangular shape. Do not copy the object and then paste it into a different layer because morphing between the two will not work. I then created a rectangle that matched the size of the magazine and put that in a layer of its own. This object, which was never used in the final animation, was instead placed in a background layer as a reference for where to tug the points of the new object to. After a lengthy period of stretching, pulling, and flattening points, I came up with the object shown in the included image. I also gave the same name to each of the polygons in this new object to make it easier when setting the texture map in the surface menu of LightWave.

The Scene

At first, the scene was actually fairly simple. I loaded both the flat object and the O object before modifying the surfaces for each, remembering to

make "the hole" polygon 100 percent transparent. I then set the "Morph Target" of the flat object as being the O object and set the object dissolve for the O object as being 100 percent. This keeps the target object from lingering around in the layout window of LightWave where it is no longer needed. I also turned on the morph surfaces button for the reasons mentioned previously. If you recall, I mentioned earlier that I was going to have this object actually morph twice. First from the flat rectangle into the O, and then from the O

with the magazine texture on it, and finally to an O with a texture that matched the final logo. After setting up this entire scene I discovered this wasn't going to work. After a call to NewTek, I learned that an object can morph into multiple target objects, but you can't do multiple surface morphs. So much for theory.

Fortunately, there was another way around this with a technique I had been using before LightWave had the ability to morph surfaces. The trick is to create an object just a fraction smaller than your original object and place it inside of your original object, much like those silly bowling pin-shaped dolls. By parenting this new smaller object to the original object, it moves wherever the original object goes. Now, simply set up an object dissolve envelope so that the original object becomes more transparent through the course of the animation, and it will appear as if the

surface of the original object is transforming into the surface of the object underneath. Having the surface color of this new object match that of the logo I had received was also another problem. Since close inspection of the color wasn't working, I loaded the logo into ToasterPaint and used the Pick Color Feature to give me the exact RGB values of the color I was trying to match. Inputting that information into the surface panel of the final object was a simple matter.

As you can tell, creating an animation of this sort is no easy task. Fortunately, everything rendered fine and the client was pleased with the final results. It's impossible to tell what problems you'll encounter when trying to complete an animation of this sort, but with careful planning and a little creativity almost anything can be accomplished with the power of LightWave.

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FOR INFORMATION CIRCLE 111

Mathframes

Making Toaster Frames with MathVision

by C. William Henderson

It doesn't take a genius to add up the merits of MathVision, a welcome support program designed to create exciting mathematically based images for the Toaster. The latest version is MathVision 2.4-f, which can produce many different wipes when used with ToasterVision, a useful set of Toaster Tools and utilities. The wipes are based on animated sequences that can be of as many frames as desired.

With ARexx, MathVision can produce mathematically based 3D objects for LightWave. Some are so complex, like fractals, that they can't be created in Modeler.

Animation is another MathVision feature which can produce 24-bit moving backgrounds for both LightWave and the Character Generator (CG). In addition, it can modify and distort existing Toaster framestores beyond the capacity of ToasterPaint (TPaint). These images, like all framestores, can be used as CG backgrounds, LightWave backgrounds and texture maps.

MathVision Description

MathVision is used to plot pictures of mathematically generated objects which are not 3D objects in the LightWave sense, but pictures of them. These pictures can vary from single drawings of lines to contour maps (floor plans) to perspective renderings.

If you remember any high school algebra, you can manage just fine with MathVision. Figure 1 shows the Edit screen. Key F-1 toggles between this and the Image screen, which is displayed upon booting. Clicking the right mouse button displays a series of pull-down menus at the top of the screen, which the manual describes in detail. The 3D objects that MathVision displays are defined by formulas you enter on the Edit screen

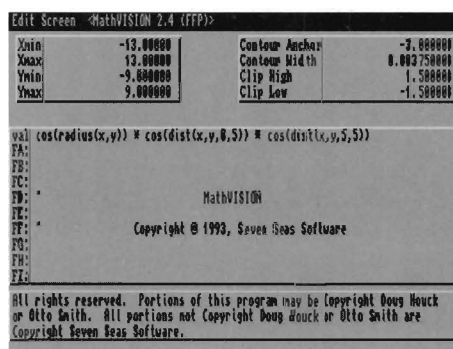


Figure 1

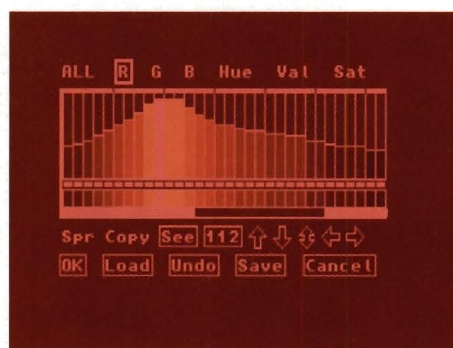


Figure 2a

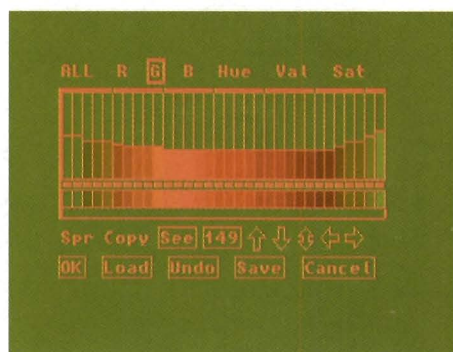


Figure 2b

value (val) line and lines FA through FI. Val is the primary element to plot and is a function of X and Y. Think of it as Z, the distance in front of and behind the screen with X and Y defining the location of Z on the screen. Thus $X^2 + Y^2 = Z$ (or val). Using this equation, at the location where X and Y both equal 3, Z is located at 18 ($3^2 + 3^2 = 18$). This formula produces a paraboloid (radar antenna) coming toward you from the screen. The same formula can be entered as (using the value lines FA and FB):

val: FA + FB
FA: X^2
FB: Y^2

(Use Shift-6 to enter the ^ key.)

The X-Y min-max in the upper left of the screen in Figure 1 defines the limits of the object. These are not expressed in specific measures like feet or meters, but rather as abstract units.

Another important factor is the contour width in the upper right, which defines how the object is made visible. The contours are displayed by color changes ranging from two colors to 24-bit color. Because varying the contour width can dramatically modify the display, experimentation is recommended.

Colors are defined in the Color Gadget (Figure 2a), and they can be accessed with the right mouse button (R-mouse) by clicking Screen/Colors/Change Colors. By selecting R, G or B at the top with the left mouse button (L-mouse or clicking) and then clicking on the screen below, you can choose the color settings.

MathVision 2.4 can create and display 4- and 5-bit color (16 or 32 colors and simulate 24-bit color in HAM) for the A2000. For the A4000, it displays in AGA chip colors, but it can also output in 24-bit color for the Toaster. Depending on your computer and the program, these different 24-bit outputs are displayed specifically for them. The screen viewers can be

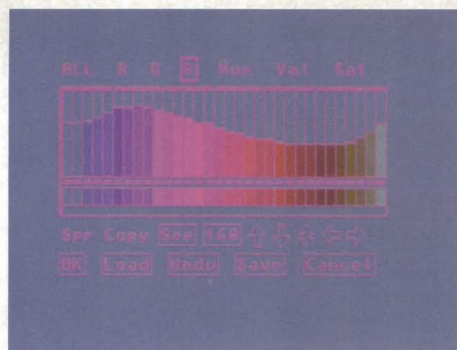


Figure 2c

accessed with R-mouse Screen/Viewer (Figure 3). The standard and AGA viewers are for conventional MathVision plots. All others are prefaced with 24, which means they all produce identical 24-bit files, but display them on your monitor to suit the computers and programs being used. For this discussion we are interested in the standard.mvviewer and 24ham6.mv-viewer for the A2000 and aga.mvviewer along with 24ham8.mvviewer for the A4000. 24toaster.mvviewer plots directly to the Toaster's main (formerly project) screen.

MathVision works on any Amiga with 1MB or more of RAM. Working with the program is a fascinating process that can keep you intrigued for hours.

Creating A Toaster Frame with MathVision

Before putting MathVision to work for the Toaster, you should create a directory on your hard drive to store the images. You could store to RAM, but a crash can wipe out hours of work as well as any experiments you may not be able to re-create. I call my drawer MVframes.

Let's create a regular MathVision image to be used as a Toaster frame. Use light colors so the frame can serve as a background for the CG (Figure 5). Boot MathVision by double clicking its icon. In the MathVision 2.4 window, click the MathVision drawer icon. In the next window, click either the ffp or jeev version then R-mouse or press F-1 to toggle to the Edit screen.

Note that the Edit screen is almost identical to Figure 1, since this formula makes a nice CG background and doesn't require that you make many entries. Just make one change: Enter the same Contour Width to match Figure 1.

Now select a 24-bit viewer (24ham6.mvviewer for the A2000 or 24ham8.mvviewer for the A4000). Hit R-mouse Screen/Viewer, and click on the appropriate choice.

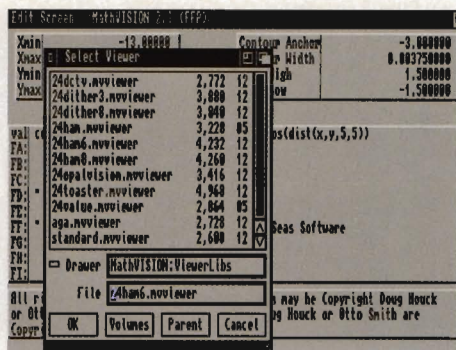


Figure 3

Toaster frames have a resolution of 751x480 pixels. These take a long time to plot and also do not fully fit on a MathVision screen, so they must be scrolled. In order to see the full image and save plotting time, plot at 320x200 or even fewer pixels (you will get poor detail at less than 160x100). Enter the Screen Parameters window with R-mouse Screen/Resolution, and set the screen pixels to 320x200, depth 24, Lores, NoLace. Your selected viewer should have done this for you.

Go to the Color Gadget (R-mouse Screen/Colors/Color Change. See Figure 2, a 5-bit plane approximation of your 24-bit screen (since my screen grabbers don't recognize 24-bit images). Click (L-mouse) on val in the top row. At the bottom-left of the large color box with L-mouse depressed, move horizontally across to the extreme right. The entire color box should become black. Hopefully you can still see the screen parameters well enough to click on various elements at the top.

Click on R. With L-mouse, create a curve similar to Figure 2a. You have set the red spectrum. Click on G and emulate Figure 2b, which is a combination of red and green. Click on B and emulate Figure 2c. Now your colors should be similar to those in Figure 2c, and certainly adequate for this exercise. A2000 users see only 32 vertical bands of color because the A2000 cannot see more than 32 colors in the MathVision Color Gadget; but the 24-bit plot grades between them.

These 24-bit color maps are difficult to reproduce. When you create one you like, it's a good idea to save it, possibly to MVframes by clicking the Save button and specifying its destination and name in the Save Colors window.

With your colors established, click OK (bottom left), which automatically exits the Color Gadget. R-mouse Global/Modulo and move (L-mouse) the slider to the right to 255.

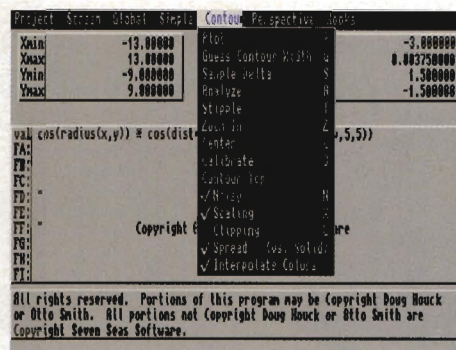


Figure 4

Finally, R-mouse the Contour pull-down menu and verify that all items are checked as in Figure 4. Then R-mouse Contour/Plot, and let your creativity begin.

Does the image resemble Figure 5? Do you like it? You can shift the image by changing the X-Y min-max, or shift the colors around by resizing the Contour Width. To alter the colors, change the Color Gadget colors individually or with sweeping curves. You may even wish to experiment with the formula. But before you make any changes, be sure to save the image as a file to the MVframes drawer. Use R-mouse to select Project/Save/Picture_and_Formula. In the resultant window click on Volumes and go to the MVframes drawer. Type a filename (I chose CGbackground). Now experiment. Once you are satisfied, change the resolution in Screen/Resolution to 751x480.

R-mouse Plot again (it may need 20 minutes with an accelerated machine). Save this new 751x480 image to MVframes drawer as CGbackground.OS (overscan).

Now you are ready to make a Toaster frame. TPaint requires a lot of RAM, so if your computer has no more than 9MB of RAM, exit MathVision with R-mouse Project/Quit.

To continue, boot your Toaster and load TPaint. There is a Control Panel at the bottom. R-mouse Picture/Load RGB. When the Control Panel changes to a Requester, select the drive and drawer of your image with L-mouse.

Double click on MVpicture.OS from the MVframes drawer. When the image fully loads onto the monitor and Preview screens, you will see less than one-fourth of the image (as with MathVision). R-mouse brings up the Control Panel again. Click on the Clipboard. This loads the full image as a frame onto your Main screen.

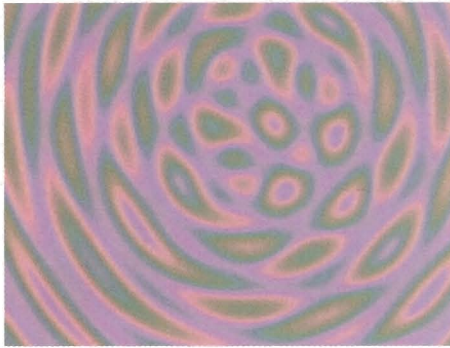


Figure 5

If you like the image, R-mouse to Picture/Save-Frame, which brings up the Toaster's Framestore directory. Drag the vertical bar to the bottom to see the last numbered frame. With the numeric keyboard, type a number higher than the last numbered frame. The number will appear in the top band. In the box immediately to its right, type whatever name you want for the frame and click Save Frame. You have now created a mathematical Toaster frame. Do not exit TPaint.

Distorting an Existing Toaster Frame

If you have been to a computer trade show featuring the Video Toaster, you may have seen NewTek's former principal presenter, Kiki Stockhammer. Thousands of people have watched this attractive lady display the Toaster's magic. One wonders if she has ever wanted to stare back at all those eyes. In Figure 6 she can. I call it Kiki's Revenge. Let's repeat it here.

If you have the original frame of Kiki from Toaster 1.0 showing her full face, use that just as I did. If you don't have the Kiki object or a video camera to freeze-frame yourself, try a television set. If it has a Video-Out connection, your TV can act as a primary video sync source. Freeze and save a close-up picture of your favorite news reporter's face.

To load your Toaster face into MathVision for distortion, change it to an RGB file. Do this from TPaint by R-mouse Picture/Load-Frame. Double click your selection and wait for it to load on your monitor. When loaded, R-mouse Picture/Save-RGB. Then click where to save it and type in a filename. Use the face and its destination of DH0:/MVframes, then click Save RGB in the right corner. The RGB will be saved to your hard drive. Quit TPaint then with Ctrl-Ctrl-Alt-Alt temporarily leave the Toaster.

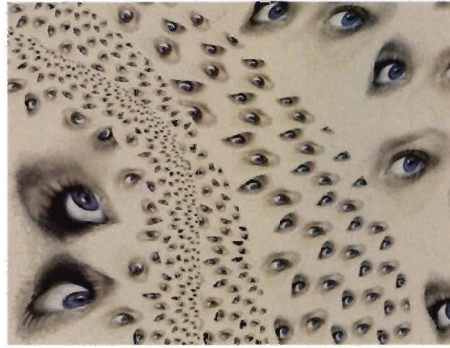


Figure 6

At this point, we must use a distorting version of MathVision. If MathVision is running, click R-mouse Project/Quit to exit. Return to the main MathVision 2.4 window and double click the Special Effects icon. Double click on the MathVision icon in the Special Effects window and bring up another MathVision window displaying the text line "MathVision.1eee." Double click this line and MathVision will boot with a slightly different image screen than the regular version. R-mouse or pressing F-1 brings up the Edit screen. This version can plot regular images like the other Edit screen, but it is primarily for distortions. Note the DataIO1 window in Figure 7, which is the key to distortion. Drag it to the lower right. The DataIO1 window in is a buffer to hold an undistorted picture original, while the Edit screen defines how to distort it.

We are now ready to distort a Toaster frame. Click anywhere in the Edit screen to activate it. Then L-mouse click DataIO1/LOAD IFF MTRX. With Volumes, find Face and double click on it. Note the DataIO1 window has changed color. When it returns to normal, Face has loaded as indicated in the DataIO1 title bar.

In the Edit screen, select the 24ham6.mvviewer or 24ham8.mvviewer for the A2000 or A4000 and set the resolution to 320x200. Make the depth 24. Be sure the Contour pull-down menu looks like Figure 4, and that Contour/Sample Delta is set to 0.

As it stands, this is a special effect of a picture without a formula, but you need to enter one in order to plot. R-mouse on Project/Load/formula. Click the Volumes button and scroll the resultant table to find the Special Effects drawer. If it isn't there, press L-Alt M several times to toggle to the Special Effects window. Double click the Assign_Special_Effects icon to load the drawer. Then L-Alt M back to the Edit screen and try again.

In the Special Effects drawer,

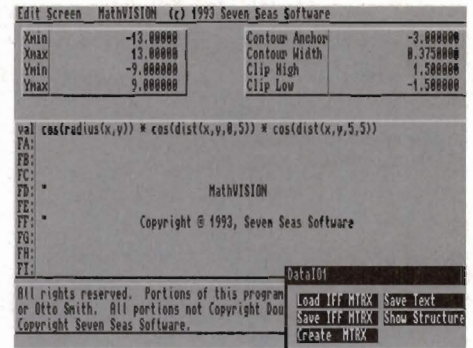


Figure 7

double-click Distortion_Startup to load the formula. This replaces the formula in the Edit screen and lets you plot the image stored in DataIO1. If you plot the image with the formula as is, you get an undistorted picture of the DataIO1 image. Changing the X and Y on lines FB and FC can produce customized distortions.

Zooming

Since you don't want the whole face, you must zoom into the image for the eyes only. You can plot where you need to zoom with R-mouse Contour/Plot, or speed up the process with R-mouse Hooks/DivideAndConquer.

Once the image is plotted, R-mouse Contour/Zoom_In. A box appears which, with L-mouse, you can size and locate (see manual) to just include the eyes. R-mouse sets the area to be zoomed and returns to the Edit screen.

Plot

The image is probably elongated vertically because it is filling the entire screen, whereas your zoom box was probably proportionately wider. If you are pleased with the result (if you zoomed too far, you need to reload the Face file), set the resolution to 751x480 pixels and re-plot.

Save the image as Eyes.OS to the MVframes drawer. We want the final image (Figure 6) to be a seamless blend of flesh when tiled or otherwise multiplied, so we must return to TPaint for a little touch up. If you don't want to touch it up, load the image into DataIO1 as a new original since the old one is a full face.

Once back in TPaint, load Eyes OS, using Load RGB. Click the palette button, and then the Pick button in the Palette Control Panel. This lets you select any color from the image to paint with. With L-mouse, place the pointer on a flesh color that predominates the image, and release the mouse button. Click on the Main Control Panel button (paint

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brush and triangle) to return to the brushes. Select Continuous Freehand and a medium-size brush. With L-mouse, paint a line around the entire perimeter of your image; fill in to produce a fairly large border.

Using the ToasterPaint tools of your choice, blend this border into other parts of the image until you have a pair of eyes smoothly blended into a pure, flesh-colored background with no other distractions in the picture.

Save this image to the MVframes drawer as an RGB file named Eyes.painted. Press Ctrl-Ctrl-Alt-Alt to exit. If necessary, reboot the Special Effects version of MathVision.

Fractalizing

As before, load the DataIO1 version of MathVision. Click the DataIO1/Load IFF MTRX, and using Volumes, find the Eyes.painted image and double click to load.

In the Edit screen, R-mouse Project/Load/formula; then L-mouse to Special Effects/Distortion Startup. Be certain the viewer is 24HAM6 or 24HAM8 and change the resolution to 320x200, then Plot to verify that everything works.

You are now ready to fractalize those

eyes. Select Project/Load/Formula, then find Special_Effects/Image Processing /Distortions/Mandel_Distortions.

Experimentation

The result should produce lots of eyes. Your eyes won't be arranged like those in Figure 6 because I fiddled with the screen parameters for my image.

Note the X-Y mins are set to 0 and X-Y maxs are 1. They could be set to -1 and 0. You can change them to include more or less image, or to shift it around. Changing the numbers following Mod in lines FB and FC makes a difference, as does changing the 20 in val. Try entering 2, which simplifies the image.

Experiment as you wish. For a quick plot you can change Contour/Sample_Delta from 0 to 2. This produces a fuzzy image, but offers a good preview. You must use Contour/Plot with this, not Hooks/DivideAndConquer. When satisfied, reset your resolution to 751x480 and reset the Sample Delta to 0.

You can plot, save and load into ToasterPaint, then save as a frame as we did before. But there is another way. Change the viewer to 24toaster.mvviewer. This allows you to plot directly to the Toaster's DV1 screen if the Toaster is

running (remember, we exited with Ctrl-Ctrl-Alt-Alt). PLOT, either from Contour/Plot or Hooks/DivideAndConquer.

Notice the Toaster screen containing DV1 blacks out and then begins to plot from the top. Your monitor cycles from the plotting image to the Switcher screen.

When the frame plot is complete, it is a frame image, not an RGB. To save it, using the switcher, make sure the image is on the main screen then press Ctrl-Ctrl-Alt-Alt to return to the Switcher. Click Setup to get the screen where you can save the image like a freeze-frame.

The Disk button in the upper panel should indicate the drive containing your Framestore drawer. If not, click the button and move the pointer to the proper drive and release. Then click the Save button for the Save Frame window. Click on the numbered bar, moving the mouse down until an unused frame number appears. Now type the name of your frame and click Save.

Summary

With MathVision's support, we have created a Toaster frame by transforming a regular MathVision image into a 24-bit picture that the Toaster can use as a framestore. We have also distorted a Toaster framestore in two ways: zooming in to enlarge a small element to a full-size image, and distorting that into numerous reproductions similar to a fractal. Thus, we have distorted a distortion.

And there are many other ways to distort images. In addition to Zoom and Mandel distortions, MathVision has Tiling, Rotations, Picture in Picture, Vignetting, Fraying and Customized distortions based upon formulas the user creates.

There are other program features that support the Toaster, including making Switcher wipes, animation and 3D objects for LightWave. And it's possible other applications will become available in the near future. Experiment and enjoy!

VTU

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- Built-in character generator lets you superimpose two lines of up to 16 characters on your recordings. There is also a choice of three date and time displays.
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- Includes a wireless controller which makes it a highly sophisticated edit deck. Includes a full-function shuttle dial allowing easy selection of a range of forward and reverse playback speeds for swift, precise scene location.
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- Charge in under 2 hours with the optional 650-III charger.
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- Accommodates bulbs from 20W to 100W DC.
- Prismatic dispersion grid provides smooth even light output and reduced glare without changing light intensity.
- Sturdy all-metal click tilt mounting bracket with ratchet action. Eliminates shake under action shooting conditions.
- Optional barn doors enhance light control capabilities.
- Front retainer assembly pops off for instant bulb access without the bother of screws.
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POWER STATION SERIES

Designed to replace expensive original-manufacture AC power supplies, the affordable Power Stations deliver precisely-regulated 12-volt DC power from AC sources worldwide. High-current capability allows for powering not only large camcorders, dockables, decks, and cameras, but lights, monitors, and other high draw 12-volt equipment as well. The stations provide up to 9 amps of precisely regulated DC power eliminating the need for battery power in stationary applications where an AC source is available. The Power Stations exceed all original manufacturer performance specifications. Rugged construction, exceptional regulation, and high-current capability plus a price hundreds less than comparable supplies make the Power Station an excellent equipment investment for any videographer.



Available in different configurations:

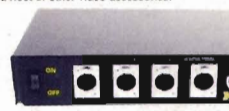
- The 12560 features a single cigarette or 4-pin output and up to 5 amps of output current.
- The 129100 features dual outputs in any combination of cigarette or 4-pin or 9 amps of output current capability.

Features:

- High-current output
- Worldwide voltage selection
- Detachable worldwide cordset
- 4-pin or cigarette lighter outputs
- Rugged steel case
- Lighted power switch

POWER STATION-2 SERIES

Just plug the PowerStation-2 into any AC outlet in the world and out comes perfectly regulated 12-volt DC power through four 4-pin XLR connectors and one cigarette lighter connector. It uses an advanced pulse-width-modulated power supply which allows for ultra-light weight and small size. It operates with little heat even at full output. The PowerStation-2 is the ultimate multiple-output professional power source for cameras, decks, lights, monitors, and a host of other video accessories.



- 85-264 volts worldwide auto-adjusting input (just plug in).
- Supply is fully protected from overcurrent.
- Ultra-light weight - under 3 lb.
- Outstanding 300,000 hour mean time between failure far in excess of any other manufacturer.
- Ultra-efficient PWM regulation generates far less heat than linear type supplies.
- Provides the ultimate in performance and reliability in a universally compatible and compact package.

SENNHEISER
MKE-300 Short Shotgun



- Lightweight electret condenser mic to support the excellent video capabilities of most camcorders with the superior audio they deserve.
- Ideally suited for mounting on camcorders with an integrated shoe assembly and an extremely lightweight compact design.
- Tight, supercardioid polar pattern has the ability to pick up only those sounds that correspond to the scene being filmed and rejects any disturbing ambient noise.
- Integrated wind screen virtually eliminates handling and wind noise.
- Operating time of over 200 hrs. using its own built-in battery so will not put added strain on your camcorders already limited power supply. **\$189.95**

SAMSON

MR-1 Wireless System

- The MR-1 micro receiver is a professional VHF wireless receiver measuring less than 4" long and 2" wide.
- FCC licensed in 14 channels from 184 MHz to 213 MHz.
- Truly switchable balanced mic level (600 ohms) to unbalanced (-10 dBm) output.
- dbx noise reduction to simultaneously increase dynamic range and eliminate noise.
- Receiver squelch, level & headphone level output controls.
- Can be powered by a 9V battery for 10 hours.
- SH-2 hand-held transmitter can be used with mic elements like Shure SM 58 dynamic mic or Audio Technica Pro 4.
- ST-2 (L) body pack transmitter can be used with leading lavaliere mics like Sony ECM-144 or Audio Technica 831.

Lavalier (clip mic) Systems

- ST-2(L) ECM-144 Transmitter with Sony mic & MR-1 Receiver **\$367.50**
- ST-2(L) ECM-44 Transmitter with Sony mic & MR-1 Receiver **\$419.95**
- ST-2(L) AT 831 Transmitter with Audio Technica unidirectional mic & MR-1 Receiver **\$419.95**

Hand-Held Systems

- SH-2/P4 Audio Technica Dynamic mic element & MR-1 Receiver **\$367.50**
- SH-2/S8 Shure SM58 Dynamic mic element & MR-1 Receiver **\$434.95**
- SH-2/S8 Shure SM-55 condenser mic element & MR-1 Receiver **\$592.50**

SUPER TO SERIES TRANSMITTERS

For the serious professional who wants true step-up quality features. Lavalier (clip mic) systems each include:

MR-1 Micro Receiver TX-3 Body-Pack Transmitter Lavalier Mic with Multi Pin Plug

- Sony ECM-144 **\$507.95** Sony ECM-44 **\$444.50**
- Sony ECM-55 **\$653.50** Sony ECM-77 **\$724.95**
- Sennheiser MKE-2 **\$747.95**

MACKIE



MicroSeries 1202

Ultra-compact 12 channel audio mixer featuring the same specs and performance as the proven CR-1604. In less than 1 sq. ft. of work space it provides 4 low-noise/high headroom mic inputs with +48V phantom power, 4 bal./unbal. mono inputs, 4 stereo inputs, 2 AUX sends per channel, 2 stereo effects returns, 4 channel access inserts, tape in/out, 2 band EQ, headphone monitor w/level control, 12 LED peak meter display, sealed potentiometers, rugged steel construction and built-in power supply.

CR-1604

Sixteen-channel audio mixer designed to deliver exceptional performance in a wide range of situations, including studio recording, live recording, live music PA systems, broadcasting studios, and high quality installed systems. Exclusive mix amp technology delivers 2X more headroom than ordinary mixers, along with the lowest distortion and highest possible S/N ratio. Convertible design allows physical format to be changed between tabletop, jacks-to-top and rack mount with jack pot rotated 90° to back. Rack mount brackets included.

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EDITIZER 2.1 PC-Based Edit Controller

The TAO Editizer 2.1 is a hardware/software combination video edit controller that runs on Windows 3.1 and supports both Professional and Professional equipment. The Editizer comes complete with integrated Windows-based software for VCR control, A/B Roll Editing, tape logging, EDL management and EDL import/export. The Editizer supports virtually every protocol including Sony Control, Panasonic 5-pin, RS-232C parallel and serial. It has 3-VCR control, an auxiliary serial port and multiple GPI triggers. It has switcher control for the WJ-MX50, WJ-MX50, Video Toaster and most of the other devices in your suite.

Hardware Features:

- Three VCR control ports for true A/B roll. Each VCR port can support a different protocol. (For example, you can use a Panasonic AG-1970 as 'A' source, Sony EVS-3000 as 'B' source and JVC BR-S822 as record VCR).
- Built-in SMPTE Longitudinal (Audio) Time Code generator with external and internal video sync.
- Three multi-speed SMPTE Longitudinal time code readers.
- Auxiliary serial port for full control of Newtek Video Toaster, GVG 100, and Panasonic WJ-MX50 switchers.
- MPC Audio and MIDI support for embedding sounds and MIDI sequences in your EDL.
- DPS TBC II & III support—you can control two personal TBC cards and the Personal V-Scope from a serial port.

Software Features:

- VCR Control—up to three VCR controllers on-screen simultaneously. Jog and shuttle control. You can use either your mouse or keyboard.
- Tape Logging—Multi-event search, copy directly into edit list, multiple log windows may be opened simultaneously, log files or selected events may be printed to a window.
- Time code generator in Drop/Non-Drop frame.
- Multi-event controller can handle up to 16,000 events. Interactive graphical 'Time Line' window. Split audio editing, cut/copy/paste events. Preview, Perform, Review. Automatic and manual EDL ripple.
- Optional support for AutoDesk 3D Studio, Lightwave 3D.

CALL

Sundance Technology Group Q-BASE Scene Logging Database

- Connects any Macintosh (MacPlus and up) to any source VCR with RS-422 9-pin interface. Cable and Software included.
- Machine control provided via the RS-232C serial port allows use of mouse, keyboard, or optional jog/shuttle device.
- Four easy keystrokes for each log entry. Simply mark Time Code IN, OUT, select the Comment Window (enter a comment up to 32K of text per event), save your comment to the log.
- Job information window allows tracking of all pertinent job information via 18 user-definable fields; find all jobs matching the search criteria from multiple fields.
- Export and import logs to and from word processor and/or database programs.
- Create event lists of randomly ordered events by picking desired events.
- Events can be reordered with automatic renumbering by simply dragging and dropping.
- Move or delete single, contiguous or non-contiguous events.
- Print current and screen display: Log, Group or Event List.

\$499⁰⁰

Q-CUT Cuts-Only Video Editing

- Q-Cut Cuts-Only is a software only package. Connects any source VCR with an RS-422 9-pin interface to the RS-232C Serial Port and any editing VCR with RS-422 protocol to the printer port for a complete cuts-only edit system.
- Includes full integration of Q-Base Scene Logger. You can import event lists from Q-Base to Q-Cut for instant access and auto-assembly.
- Generates CMX and Sony compatible EDL for import or export.
- Records single-frame animations from Toaster, LightWave 3D and many other popular 3D software programs.
- Dynamic Motion Control of CMX database sources.
- Time Code Math functions: add and subtract time code values from IN, OUT, or DURATION.
- Screen monitoring of VITC, LTC, or Control Track for status (drop/non-drop and interpolated).
- Edit mark, backtag, and "Hit" Point calculation.
- View "EDL" vertical timeline; drag and drop edits to reorder the list—with and without auto-ripple.
- EDL clean and trace with trace journal report.
- Split Video/Audio 1 and Audio 2 edits.

\$1499⁵⁰

Q-CUT A/B Roll Video Editing

- Q-Cut A/B Roll includes mini (Multi Machine Interface) hardware. The MMI allows machine control of up to 15 serial devices, has 8 GPI triggers and provides serial control of the Video Toaster as well as switchers using GVG 100 Protocol.
- Includes Q-Base and all features of Q-Cut Cuts Only.
- Includes all cables and connectors for A/B Roll editing.
- Software allows designation of any machine (from up to 15) to be the record VCR.
- Roll up to 6 sources in slave/sync mode.
- Double Play/Double Record for recording and editing two camera ISO productions.

\$2995⁰⁰

Q-CUT VIDEO EDITING POWER FEATURES:

- Full integration of the Q-Base logging with Q-Cuts puts Sundance in a class by itself with the fastest, most efficient platform for editing and managing job information.
- Q-Cut Cuts Only and A/B Roll feature "Music Cuts". Transfer your music track to the record VCR, then just tap the Enter key in time with the music to create an EDL with slots pre-marked for video scenes. Import select video scenes on top of the music cuts and auto-assembly.

Panasonic Broadcast & Television Systems



AG-460

2-CCD S-VHS Camcorder

AG-3

3-CCD S-VHS-C Camcorder



- Two 360,000-pixel CCD image sensors
- 470 lines horizontal resolution & superb color reproduction
- Laminated amorphous video heads
- Hi-Fi audio with stereo zoom microphone
- Two-speed 10x power zoom lens
- Piezo auto focus (TTL) with 3-step focus zone
- Sensitivity switch (Q db, +18 db, AGC)
- Advanced auto-tracing white balance with manual override
- Automatic iris with manual override
- Variable high-speed electronic shutter
- Audio level control with LCD level meter
- Audio/Video insert editing and dubbing capabilities
- Audio out select switch (Hi-Fi/Normal/Mix)
- Versatile editing facilities: S-Video out terminal/Adaptor terminal/Synchro Edit/5-pin Edit terminal/Edit switch
- Includes Panasonic metal system case

- Three 1/3" CCD image sensor system delivers over 530 lines of horizontal resolution
- New 10:1 2-speed zoom lens (see above) 6.6mm F1.6 with automatic and manual zoom. Also features 20:1 digital zoom.
- High resolution color viewfinder lets you preview and shoot scenes exactly as they are
- Built-in digital TBC (Time Base Corrector) eliminates jitter and skew and assures stable, distortion-free playback
- Digital Mix—for soft fade-over between memorized still and moving images
- Digital Still—lets you freeze a particular scene for as long as you like, without interrupting sound recording
- Digital Gain-Up—delivers clear, distinct images in low-light levels, even down to 1 lux
- Digital Strobe & Digital Wipe—add professional effects to your shooting.

AG-455 2-Hour S-VHS Camcorder

- S-VHS system—records and plays back over 400 lines horizontal resolution
- Laminated amorphous heads assure exceptional picture quality, high resolution, superb color reproduction, and high signal-to-noise ratio
- 12:1 power zoom lens with continuously variable speed zoom
- Hi-Fi stereo and linear track for recording. Also has "Audio Out" select switch for Hi-Fi/Normal/Mix combinations
- High performance stereo zoom microphone features three different settings: Wide, Telephoto or automatic zoom
- Built-in VITC (Vertical Interval Time Code) time code generator gives absolute address to each frame of video for frame accurate editing (with specific edit systems)
- Digital Mix—for soft fade-over between memorized still and moving images
- Digital Tracer—to add an after-image effect to moving subjects
- Digital Still—lets you freeze a particular scene for as long as you like, without interrupting sound recording
- Digital Zoom—Thanks to digital processing, you can enjoy shots with ultra-high magnifications of up to 100:1
- Digital Gain-Up—delivers clear, distinct images in low-light levels, even down to 1 lux
- Digital Strobe & Digital Wipe—add professional effects to your shooting.
- Audio/Video Fade-In and Fade-Out for smooth, professional scene transitions
- Automatic Iris plus manual control for fine adjustment
- Variable high-speed shutter from 1/50 to 1/8000 second.



Future Video

V-STATION 3300 for TOASTER A/B Roll Edit Controller

- Integrated software and hardware solution for the precise A/B Roll editing of videotape or your Amiga/Toaster system. The advanced multi-tasking, multiple event A/B Roll edit controller software provides you with direct communication and control over your Video Toaster. The 3 VTR controller unit provides the necessary machine control and computer interface.
- Provides true A/B roll editing even with low-end industrial and consumer VCRs. Various VCRs using Panasonic's 5-pin or Sony Control-L editing protocol can be used.
- Optional VTR Driver kits provide compatibility with VCRs using VHS-C, RS-232 and RS-422 serial control protocols. VCRs such as Sony CVU-1000 (VHS-C) Panasonic AG-5700, Sony EVI-8720 and JVC BR-S800 (RS-232), Panasonic AG-7750H, Sony GVR-S850 (RS-422) can be used.
- Fully integrates the power of A/B roll multi-event edit control with the versatility of the Video Toaster's effects, frame-stores, and character generation.

- Computer and VCRs are connected to V-Station 3300's sleek VCR transport controller unit. Its advanced multi-tasking design enables commands to the VCRs to be carried out precisely and simultaneously.
- Reads RC time code and with optional SMPTE LTC option can read SMPTE time code as well, for frame accurate editing
- Built-in tape logging capability makes it easy to log your tapes before editing.
- The enhanced speed and efficiency of editing your production from two sources (A and B) while integrating your Toaster capabilities, is manifest in your V-Station 3300 for Toaster system. You'll appreciate the intuitive and easy-to-read software screens. Simple mouse clicks enable you to set your edit in/out points, edit mode, transition, and the various other event parameters. You will also be able to trim, auto-tag, and ripple your events.

AG-1970 S-VHS Hi-Fi Editing VCR

- Playback and record in S-VHS, which delivers 400 lines of horizontal resolution and exceptionally detailed images.
- Uses Amorphous video heads which are clearly superior to that of conventional ferrite heads because the strength of the amorphous head is much greater. The Amorphous video heads deliver rich, vibrant color reproduction and a high S/N ratio.
- Digital filter helps to achieve even more accurate Y/C separation. Also a noise filter is included in the circuitry.
- Hi-Fi audio with a frequency response from 20Hz to 20,000 Hz and a 90 dB dynamic range. Besides near-CD quality audio the AG-1970 also has stereo recording level control, headphones monitor terminal and mix input terminal.
- Does assemble edit, video insert and audio dub. Flying erase head for smooth, clean, seamless edits. 5-pin edit terminal makes it easy to set up an editing system.
- Jog/Shuttle Dial for varied playback from slow motion to high-speed search (shuttle) and frame-by-frame picture control in forward and reverse (Jog).
- Outputs the audio track during search operations for cueing and quick confirmation of audio recording.
- Advanced dual-loading mechanism features a quick response time, exceptional tape control accuracy for outstanding editing precision and ease.
- Automatic head cleaner removes dust and other particles from the heads to help maintain optimum performance.
- Digital Time Base Corrector eliminates jitter and distortion. Playback is high quality, stable and with natural colors.



NEW! AG-DS840/AG-DS850

S-VHS Slow-Motion Editing System Editing machines truly designed for professionals

- These state-of-the-art machines provide the quality required for professional video production and even broadcast systems. They offer features such as Digital VHS Circuitry, Digital 3-D Time Base Correctors, Digital Slow Motion, and Digital Noise Reduction. They also have built-in Time Code Generator/Readers for frame accurate editing, and component video output for connection to MII and Betacam machines.
- They provide clear, noise-free, high quality slow playback. Playback speed, including Digital Still is selectable in 10 steps (1/4, 1/8, 1/16, 1/32, 1/64, 1/128, 1/256, 1/512, 1/1024, 1/2048).
 - 3-dimensional digital TBC with a correction range of one field. With the VCRs continuously retaining one field in memory, the data is used for 3-D type processing thereby providing excellent dropout compensation.
 - Digital Signal Processing for improved picture quality, and for maintaining uniform picture quality during editing. A Chroma Aperture Compensation (CAC) circuit eliminates color blurring and expands chroma bandwidth.
 - Other digital processing circuits include:
 - Dig. Noise Reduct. (DNR): Processes Y & C signals separately to boost S/N Ratio by minimizing noise during playback.
 - Digital Comb Filter: Advanced 3-dimensional system for total Y/C separation providing reduced color and luminance blurring.
 - Switching Noise Mask Circuit: Effectively eliminates noise caused by head switching during slow motion playback.
 - Employs amorphous video heads that have a higher magnetic coercivity than conventional ferrite heads. Expanded color signal frequency response from the amorphous heads enhances picture quality by minimizing color blurring.
 - They have built-in LTC/VITC (Longitudinal/Vertical Interval) time code reader/generators for absolute frame accurate editing.
 - Equipped with component outputs allowing easy connection to other component video equipment. This allows high quality transfer of S-VHS source material to Betacam or MII.
 - Equipped with RS-422 (5-pin) serial interface. The standard control system for professional broadcast machines.
 - IQ (Intelligent Focus) mechanism delivers precise, high-speed operation, plus the reliability needed. The dual-loading system achieves high-speed response while protecting tapes and heads from damage. The tape transport mechanism uses five direct drive motors, including two reel drive motors. Automatic head cleaning is also provided.
 - Capstan Control System with large capstan spindle allows high-speed search at 32x normal speed.
 - 4 channel audio—2 hi-fi stereo channels with dynamic range of 90dB as well as 2 linear channels with Dolby NR. Each audio channel has its own input (AG-DS850 only) and output with individual channel-level setting capability and uses XLR connectors.
 - Provide 16:9 wide aspect compatibility, so they are fully equipped for the next generation of televisions.
 - 3 rack units high, they are unbelievably compact for easy space saving installation. 19" rack-mountable with optional AG-M730.

JVC BR-S500U/BR-S800U S-VHS Player/ S-VHS Editing Recorder



- SUPERB VIDEO PERFORMANCE**—Incorporates latest picture improvement technologies for razor sharp images, with over 400 lines of horizontal resolution. Digital Y/C separation, along with a chroma noise reducer, chroma aperture correction and a 3-line cross-talk cancellation all combine to offer outstanding image quality, even when dubbing down multiple generations.
- OPEN ARCHITECTURE**—Two plug-in slots that accept a variety of optional JVC expansion boards. One of these, the SA-K27UA board, provides an RS-232C interface for connection to computer-based editors. For use with more sophisticated edit controllers such as the JVC RM-6870U, there is the SA-K26U RS-422 Serial Interface Card. For configuration into older JVC Parallel edit systems, the SA-K28UA 45-pin Parallel Remote Card provides compatibility with JVC's 45-pin Parallel Edit Controllers like the RM-6810U. There is also a plug-in TBC card with DNR (Digital Noise Reduction).
- VARIABLE-SPEED 32X SEARCH**—Provides fast and accurate viewing at up to 32x normal tape speed in forward and reverse.
- 4-TRACK AUDIO**—Each has two Hi-Fi stereo channels with wide frequency response and a dynamic range of over 80 dB. In addition, they each have two linear tracks. The linear tracks of the BR-S800U can be dubbed independent of each other and of the video. This is ideal for adding background music or sound effects to an existing audio track, or for more sophisticated editing. There are two audio level meters, switchable between the Hi-Fi and linear channels.
- CONTROL TRACK TIME CODE SYSTEM**—Built-in time code reader (BR-S500U) and time code reader/generator (BR-S800U) utilize JVC's CTL (Control Track) Time Code System which records absolute tape address information (hours: minutes: seconds: frames) on the control track, and provides fast and accurate access to any frame on the video tape. Far superior to conventional control track counters that lose reference when the tape is removed from the machine. CTL Time Code can be added to the tape during the recording process, or onto an existing recorded tape using the "post stripe" function. You don't need any special time code equipment, and you don't have to give up an audio track. CTL Time Code is the easiest and most flexible time code available. For professional VITC and LTC time code operation there is the optional SA-R50U VITC/LTC Time Code Reader/Generator card.

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MILLER Fluid Heads & Tripods

The silky, smooth action of each Miller Fluid Head is the product of the finest quality cast and machined parts functioning together in a fluid environment. They are engineering masterpieces, built to operate even under extreme conditions. They are engineered to exceptionally fine tolerances and their mechanisms are protected effectively against ambient moisture and dust.



Miller 20 - Series II Fluid Head

- Continuously adjustable fluid drag control
- Sliding/Quick Release camera platform
- Weights only 4 lbs. will handle cameras up to 22 lbs.
- Counterbalance system designed to compensate for nose heavy or tail heavy camera configurations, and permits fingertip control of the camera throughout the tilt range.
- Includes independent pan and tilt locks, bubble level, dual pan handle carriers and integrated 75mm ball levelling.

#440 - Lightweight Tripod

- Weights only 4.5 lbs., supports up to 30 lbs.
- Minimum height down to 24", maximum height to 57".
- Extremely portable, folds down to 33"
- Engineered from thermoplastic moldings, diecast alloy and hard anodized tubular alloy.
- Fast one turn, captive leg locks
- Includes 75mm (3") ball levelling bowl

#420 - 2-Stage Tripod

- Two extension sections on each leg. Operates at low levels as well as normal heights without the use of mini legs.
- High torsional rigidity, no pan backlash
- Weights 6.6 lbs., supports 50 lbs.
- Very portable, folds to 27"
- Includes 75mm (3") ball levelling bowl with model 420 model 402 includes 100mm (4") ball levelling bowl.

System 20 Catalog #338

- Miller 20 II fluid head 440 Lightweight tripod 1549.00
- 410 tripod spreader with foot pads 1895.00

System 20 ENG Cat. #339

- Miller 20 II fluid head 420 2-stage tripod 1895.00
- 410 tripod spreader with foot pads 1895.00

Vinten

Vision SD 12 and SD 22

Pan and Tilt Heads with Serial Drag
The Vision SD 12 and SD 22 are the first heads with the "Serial Drag" pan and tilt system. The system consists of a unique, permanently-sealed fluid drag and an advanced lubricated friction drag. So for the first time, one head gives you all the advantages of both fluid (viscous) and lubricated (LF) drag systems - and none of their disadvantages. Achieve the smoothest pans and tilts regardless of speed, drag setting and ambient temperature.

- Simple, easy-to-use external control for perfect balance.
- Patented spring-assisted counter-balance system permits perfect "hands-off" camera balance over full 180° of tilt.
- Instant drag system breakaway and recovery overcome inertia and friction for excellent "whip pans."
- Consistent drag levels in both pan and tilt axis.
- Click on, flick off pan and tilt caliper disc brakes.
- Greater control, precision, flexibility and "touch" than any other head on the market.
- Touch activated, time delayed illuminated level bubble.
- Working conditions from as low as -40° up to +60°C.
- SD 12 weighs 6.5 lbs and supports up to 35 lbs.
- SD 22 weighs 12.7 lbs and supports up to 55 lbs.

Vision Two Stage ENG and LT Carbon Fibre ENG Tripods

The ultimate in lightweight and innovative tripods, they are available with tubular alloy (Model #3513) or the stronger and lighter, axially and spirally wound carbon fiber construction (Model #3523). They incorporate torque safe clamps to provide fast, safe and self-adjusting leg clamps. "Torque Safe" requires no adjustment. Its unique design adjusts itself as and when required, eliminating the need for manual adjustment and maintenance and making for a much more reliable clamping system.

- New hip joint eliminates play and adds rigidity.
- They both feature 100mm levelling bowl, fold down to a compact 28", and support 45 lbs.
- The #3513 weighs 6.5 lbs and the #3523 CF (Carbon Fibre) weighs 5.2 lbs.

Vision 12 Systems

All Vision 12 systems include #3364 SD 12 fluid and lubricated friction drag pan/tilt head, single telescoping pan bar and clamp with 100mm ball base.

- SD-12A System
- 3364-3 SD-12 Pan and tilt head
- 3518-3 Single stage ENG tripod with 100mm bowl
- 3363-3 Lightweight calibrated floor spreader.

SD-12D System

- 3364-3 SD-12 Pan and tilt head
- 3513-3 Two-stage ENG tripod with 100mm bowl
- 3314-3 Heavy-duty calibrated floor spreader

Vision 22 Systems

All Vision 22 systems include #3363-3 SD-22 fluid and lubricated friction drag pan and tilt head, single telescoping pan bar and clamp with dual 100mm/150mm ball base.

- SD-22E System
- 3366-3 SD-22 Pan and tilt head
- 3219-52 Second telescoping pan bar and clamp
- 3516-3 Two-stage ENG tripod with 150mm bowl
- 3314-3 Heavy-duty calibrated floor spreader

SONY EVW-300 Hi-8 3-CCD CAMCORDER

The EVW-300 is a complete one piece camcorder which includes a variety of innovative and advanced operational features. So, whether your shoots require basic recording capabilities or premier performance, the EVW-300 offers a wide range of features and remarkable recording quality to best suit your needs.

Features:

- Equipped with three high density 1/2" IT Hyper HAD image sensors. Has an excellent sensitivity of F8.0 at 2000 lux, high S/N of 50 dB, and delivers over 700 lines of horizontal resolution.
- Provides high quality PCM digital stereo and single channel AFM Hi-Fi recording. Has XLR balanced audio connectors.
- Quick start 1.5" viewfinder with 550 lines of resolution plus Zebra pattern video level indicator and color bar generator
- Quick-start recording - takes only 0.5 seconds to go from REC PAUSE to REC MODE for immediate recording in the field
- Built-in 8mm Time Code generator records absolute addresses. (Either non-drop frame or drop frame mode may be selected.) Furthermore the EVW-300 incorporates a variety of time code features such as Time Code PRESET/RESET, REC RUN/FREE RUN and User Bits.
- Variety of automatic adjustment functions for different lighting conditions: ATW (Auto Trace White Balance) - optimum white balance is always ensured during recording, even for changes in color temperature. Conventional white balance adjustment is still provided with the Auto White Balance. AGC (Automatic Gain Control) - in addition to manual Gain Up AGC provides linear gain up in the range of 0 dB to 18 dB. Intelligent Auto Iris - where the lighting between subject and background is different (subject is underexposed) the Intelligent Auto Iris automatically adjusts the lens iris for proper exposure.
- Selectable gain-up from 1 dB to 18 dB in 1 dB steps for Mid & High positions.
- Clear Scan function - provides a variety of selection of shutter speeds ranging from 60-200 Hz allowing recording of almost any computer display without flicker.
- Compact, lightweight (12 lbs with NP-18) ergonomic design provides well balanced and extremely comfortable operation.



JVC GY-X2 3-CCD S-VHS CAMCORDER

- Three 1/2" CCD image sensor delivers 650 lines of horizontal resolution
- New micro-lens technology provides exceptional sensitivity of F7.0 at 2000 lux and new LOLLUX mode lets you shoot with almost no light! Now you can shoot superb footage with excellent color balance at a mere 3 lux illumination
- Variable Scan View allows flicker-free shooting of a computer monitor.
- Quick Record Mode - when turned on the camera is set to the auto iris even if lens is set at manual. Also activated is (ALC) Automatic Level Control and EE Extended Electronic Iris which provides both variable gain and variable shutter. Now you can shoot continuously from dark room to bright outdoors without having to adjust gain, iris or ND filter.
- Full Time Auto White circuit lets you move from incandescent to fluorescent to outdoor lighting without changing white balance or the filter wheel.
- Genlock input allows synchronization with other cameras.
- Dual output system allows camera output to be connected directly to an external recorder

TOSHIBA TSC-200 3-CCD Hi-8 Camcorder



- 3 1/2" CCD chips mounted with spatial offset technology deliver resolution of 700 horizontal lines
- Low noise design provides extreme sensitivity of F8.0 at 2000 lux. Min. illumination 7.5 lux with excellent color reproduction
- New LNA (low noise amplifier) delivers a S/N (signal-to-noise) ratio of 62dB - the highest achieved for this type of camera
- 28-pin connector outputs Y/C or component video signal allowing hook up to a portable S-VHS, Hi8 or Betacam recorder and simultaneously record with Hi-8
- Quick-start 1.5" viewfinder needs no warm up time so you never miss a shot. Zebra pattern in the viewfinder alerts operator to excessive video levels.
- Genlock capability allows synchronization with other cameras. Also full calibration functions are built-in as well as color bar generator.
- Variable high speed shutter from 1/60 to 1/2000 second
- Built-in 8mm time code generator records an absolute address to every frame.
- High-performance back electret condenser mic records to all three audio tracks. Low cut filter eliminates wind noise.
- Very low power consumption. Draws only 16 watts per hour allowing 100 minutes of recording time with 1 NP-18 battery.
- Body made of magnesium alloy previously found only on broadcast cameras. Still only 13 lbs. in standard configuration.

Panasonic NEW! Broadcast & Television Systems AG-DP800 SUPERCAM S-VHS FIT 3-CCD Digital Signal Processing Camcorder



- Three high-density 380,000 pixel CCDs with half-pitch pixel offset to achieve over 700 lines of horizontal resolution, a S/N ratio exceeding 60dB and remarkable sensitivity of F8 at 2000 lux result in simply extraordinary image quality. Additionally the Frame Interline Transfer (FIT) CCDs minimize vertical smear, so you maintain impressive picture quality even in very bright illumination.
- Uses advanced digital signal processing circuitry which provides four valuable benefits:
 - 1) Consistently reliable up-to-spec performance.
 - 2) Fine adjustment of a wide range of parameters.
 - 3) Memory storage and instant recall of specific settings.
 - 4) More flexible and higher quality image processing, as well as easier maintenance.
- Some of the DSP circuits and their functions:
 - CHROMA DETAIL - This function compensates for poor resolution in the high chroma areas of the picture.
 - DARK DETAIL - Determines optimum degree of contour enhancement in dark areas to deliver crisp, natural-looking images
 - HIGHLIGHT COMPRESSION - Expands the dynamic range of the highlighted areas and prevents halation. The highlight compression circuit allows a wide dynamic range producing detailed images even against bright backlight or daylight.
 - FLARE CORRECTION CIRCUIT - Compensates for unsteady black caused by light or by a subject's movements.
- Six Scene File modes. There are two user modes for custom digital parameter settings including Horizontal Detail, Vertical Detail, Chroma and Dark Detail, and Color Correction. The four preset modes are normal, fluorescent, special and sparkling.
- In addition to regular AGC (Automatic Gain Control), Supercam has a Super High Gain mode. At F1.4 this enables shooting under illumination as low as 2 lux while retaining detail and color balance.
- Synchro Scan function allows flicker-free shooting of computer monitors. Electronic shutter increments from 1/60 sec. to 1/2000 sec.
- Built-in internal time code generator lets you record with SMPTE LTC/VITC (Longitudinal/Vertical Internal) time code
- 28-pin connector for direct signal output from camera section for easy back-ups using 2nd VCR
- 2 hi-fi stereo audio channels with a dynamic range of 80 dB, and 2 linear audio channels with Dolby NR. Normal/Hi-Fi recording is selectable and levels of all 4 channels are controllable. Uses XLR connectors to further ensure high-quality sound.
- Phantom power can be supplied to optional microphone. Power can be switched off to prevent battery drain when not in use.

PROFESSIONAL VIDEO TAPE



H471S S-VHS Double Coated	
ST-30	7.69
ST-120	8.99

M221 Hi-8 Double Coated	
ST-30	7.69
ST-120	8.99

Metal Particles	
P630HMP	4.99
P660HMP	7.19
P6120HMP	9.69

Metal Evaporated	
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AMPEX

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KCA20	7.69
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KCA60	11.79

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BCA20	8.59
BCS20 (mini)	9.59
BCA30	10.20
BCA60	14.39

297 SPA 3/4" U-matic SP Master Broadcast (In Box)	
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SPA10	10.20
SPS20 (mini)	10.85
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BC-20LA	20.49
BC-30LA	22.39
BC-60LA	29.59
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P6-60 HG BQ	4.99
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BQ Certified Hi-8 Metal Cassettes	
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T-30 Plus	2.29
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T-90 Plus	2.69
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KCA-20 HG	8.99
KCA-30 HG	9.49

KCA 3/4" Broadcast w/Album & Sleeve	
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KCS-20 BQ (mini)	8.49
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KCA-10 BQ	8.29
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KCA-20 BRS	8.39
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BCT-10GL	10.39
BCT-20GL	11.69
BCT-30GL	12.89
BCT-60GL	23.99
BCT-90GL	30.50

BCT Metal Betacam SP Broadcast Master (Box)	
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BCT-10M (small)	19.29
BCT-20M (small)	21.29
BCT-30M (small)	23.29
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BCT-90ML	49.99

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PROFESSIONAL S-VHS SYSTEM

SVP-9000 Player



SVP-9600 Player/Recorder



The SVP-9000 S-VHS and SVP-9600 are designed as multi-purpose machines with the use of various optical interface boards. By selecting one or more of a particular board, they become dedicated machines for satellite recording, office viewing, video library, sports analysis and editing. At the same time, they adhere to Sony's professional VTR concept of reliable mechanism, rigid construction and easy operation, ensuring reliable and reliable operation in the industrial and professional environment.

They both feature:

- Using the S-VHS format, they deliver superb picture playback and recording. With newly developed Digital Y/C separator maintained picture quality even in composite.
- Newly developed video cross talk canceller eliminates color blur providing more accurate color and sharper images.
- Four channel audio system - Two Hi-Fi with a dynamic range of 90dB and two linear channels with Dolby NR.
- Two direct-drive reel motors provide rapid response and smooth operations. Mode transitions such as STOP to REC, FAST FWD to PLAY, STOP to REWIND are instantaneous.
- Picture search from -10 to +10 times normal speed.
- SYNC IN for synchronizing with other video sources.

Optional Interface Cards:

- **SVBK-100** 33-pin interface board allows remote control of basic VTR functions.
- **SVBK-120** RS-232 interface board allows machine control from a computer.
- **SVBK-140** RS-422 interface board allows either machine to be configured into any professional system.
- **SVBK-150** Digital Noise Reducer board reduces jitter, noise and Y/C delay and provides clear, crisp still frames.
- **SVBK-160** SMPTE Time Code interface board (can only be used with SVBK-140 board).

EVO-9720 Hi8 Dual Desktop Editing Machine



BUILT-IN EDITING CAPABILITIES

- Provides two ways for assemble editing when using the supplied RM-E 9720.
- **Quick-Edit** - By simply pressing the EDIT button at the desired point on the source tape, pressing END at the output and repeating the process, a program is easily assembled, segment-by-segment on the master tape.
- **Program Edit** - assemble video segments that are not adjacent to one another on the original source tape. The EVO-9720 can memorize up to 99 program events and realizes automatic sequential editing of pre-assigned scenes. The editing list of the programmed time code data can be stored in the data area of the original source tape. The data can also be recalled, added to, inserted or deleted as desired.
- **Insert Editing** - Provides separate editing video and audio.
- Using the video insertion function, video and AFM audio segments can be edited into an existing PCM (Pulse Code Modulation) digital sound track. A simulated edit can be monitored by pressing the PREVIEW button.
- Allows audio dubbing on the PCM tracks. Background music or commentary can be added or inserted into the PCM sound track. During editing, audio from an external microphone can be mixed with the original audio from a player or from LINE IN and recorded on both the PCM and AFM audio tracks.
- Incorporates a digital field memory, allowing noiseless 1/5 normal speed slow motion pictures and a clear freeze frame to be played back during editing. This makes it possible to create a program with special effects.
- Built-in 8mm time code generator and reader. When using a tape without time code, you can easily stripe time code by simply pressing the Time Code Write button. (Post stripping of 8mm time code will not affect any of the video and audio signals) Can also read RC (Re-writable Consumer) time code.

SUPERIOR PICTURE QUALITY

- The player portion employs a digital noise reducer for luminance and chrominance signals, providing superior picture quality. Noise reduction levels are selectable from an on-screen display in accordance with picture conditions. CNR (Chrominance Noise Reduction) offers High, Middle, Low, and Off positions. YNR (Luminance Noise Reduction) offers High, Middle, Low, Very Low and Off positions. Jitter and skew are eliminated at the same time to give clear, stable pictures.
- **A/B ROLL EXPANSION CAPABILITY**
- When you've outgrown the cuts-only functionality of the machine, the EVO-9720 lends itself to A/B roll expansion capability. Both the player and recorder have RS-232 serial ports that allow for external control. They can be directly connected as Source A and B to an external computer and/or the Sony FXE-100 Video Editing System.
- To further allow configuration into an A/B roll system there are external sync input terminals for both the player and recorder. When the external sync mode is set to Auto, the EVO-9720 synchronizes itself with the incoming reference signal.

ADDITIONAL FEATURES

- To provide for smoother transitions from scene to scene, the EVO-9720 has a video fader. Black or white fading can be selected as well as a duration time of 0.5 or 2 seconds.
- There is a GPI (General Purpose Interface) output with timing adjustment for controlling external devices. External devices like the Video Toaster or Character Generators can be controlled. GPI timing of between 00 and 60 frames is selectable.
- Incorporates both PCM (Pulse Code Modulation) stereo and AFM (Audio Frequency Modification) stereo recording for superb sound quality. PCM audio can be inserted or re-recorded for audio only edits in the Audio Insert mode.

COLOR MONITORS

PVM-1350

13" Presentation Monitor

- Employs a P-22 phosphor line pitch CRT to deliver stunning horizontal resolution of 450 horizontal lines.
- Equipped with beam current feedback circuit which eliminates white balance drift for long term stability of color balance.
- Has analog RGB, S-video and two composite video (BNC) inputs as well as 4 audio inputs.
- Automatic Chroma/Phase setup mode facilitates the complex, delicate procedure of monitor adjustment. Using broadcast standard color bar patterns, this function automatically calibrates chroma and phase.
- Chroma/Phase adjustments can also be easily performed with the monochrome Blue Only display. In Blue Only mode video noise can be precisely evaluated.
- Factory set to broadcast standard 6500K color temperature.
- Provides an on-screen menu to facilitate adjustment/operation on the monitor. The on-screen menu display can be selected in English, French, German, Spanish or Italian.
- On power up, automatic degaussing is performed. There is also a manual degauss switch to demagnetize the screen.
- Sub control mode allows line adjustments to be made on the knob control for contrast, brightness, chroma and phase. The desired level can be set to the click position at the center allowing for multiple monitors to all be controlled at the same reference level.

PVM-1354Q/PVM-1954Q

13" and 19" Production Monitors

All the features of the PVM-1350 PLUS:

- **SMPTE C** standard phosphor CRT is incorporated in the PVM-1354Q/1954Q. SMPTE C phosphors permit the most critical evaluation of any color subject. Provides over 600 lines of horizontal resolution.
- The PVM-1354Q mounts into a 19-inch EIA standard rack with the optional MB-502B rack mount bracket and SLR-102 slide rail kit same as PVM-13510. The PVM-1954Q mounts into a 19-inch EIA rack with the optional SLR-103 slide rail kit.

PVM-1351Q

13" Production Monitor

- Has all the features of the PVM-1350 PLUS.
- Is also a multisystem monitor. It accepts NTSC, PAL and NTSC video signals. NTSC 4.43 can also be reproduced.
- Equipped with a SMPTE 259M Serial Digital Interface. By inserting the optional serial digital interface kit BKM-101C for video and the BKM-102 for audio the PVM-1351Q can accept SMPTE 259M component serial digital signals.
- Equipped with RS-422 serial interface. With optional BKM-103 serial remote control kit all of the monitor's functions can be remotely controlled with greater confidence and precision.
- Equipped with input terminals such as component (Y/R-Y/B-Y), analog RGB, S-video, 2 composite video (BNC) and 4 audio terminals for complete flexibility.
- Aspect ratio is switchable between 4:3 and 16:9 simply by pressing a button.
- Underscan and H/V delay capability. With underscan, entire active picture area is displayed. Allows you to view entire image and check the picture edges. H/V delay allows viewing of the blanking area and sync/burst timing by displaying the horizontal and vertical intervals in the center of the screen.
- Color temperature switchable between 6500K/9300K/User preset. 6500K is factory preset. 9300K is for a more pleasing picture. User preset is 3200K to 10,000K.

CVD-1000 Vdeck Hi-8 Computer VCR

- Uses Hi-8 format which delivers over 400 lines of horizontal resolution in record and playback modes.
- Records Sony RC Time Code to any 8mm or Hi-8 tape plus it can dub RC Time Code to any existing tape.
- Not only does it read RC Time Code but also Sony Professional 8mm Time Code.
- With RC Time Code you can search for specific frames of video. Vdeck reads RC Time Code even in fast forward or reverse without having to switch to playback mode to read the Time Code. This allows for faster and more convenient search of scenes.
- Has AFM Hi-Fi stereo plus a PCM digital audio track. You can use the PCM track to dub digital audio background music or high fidelity narration.
- Has 3 video inputs (S-Video, 2-composite) and 2 stereo audio inputs. The Vdeck has a built-in switcher for transparent integration of multiple audio and video sources.
- Built-in microphone minijack allows connection of a mic to the Vdeck letting you add narration to your presentations.
- Microphone/Audio Mixer - lets you mix your audio and microphone sources onto AFM and/or PCM tracks while recording.
- Built-in fader lets you fade audio, video or colors during playback to give your presentations a more professional look. You can also fade live video. Create special effects by fading color to black & white (or vice versa). Fades can be preserved by recording onto a second VCR.
- You can write or search for index markers, a feature found on most Sony 8mm camcorders and VCRs.
- The Vdeck can read and write data code, allowing date and time information to be stored on the tape as data. Moreover it's the first video product that lets you search for a specific date and time on your tape.
- Includes RM-S1000 wireless remote commander designed for stand-alone presentation use, putting the control in your hands. Use cue and review modes to rapidly scan the contents of your tape. Or, use the index buttons to quickly and easily skip to specific segments on a tape that has index markers.

EVO-9650 Hi-8 Single Frame Recording VCR

- Facilitates fast and accurate single frame recording which is indispensable for animation creation. With a short 3-second pre-roll the EVO-9650 is twice as fast as any other machine.
- Built-in RS-232 interface directly connects the EVO-9650 to an external computer, allowing all of the VCR operation commands to be directly communicated to the computer. The RS-232 baud rate can be selected from 9600/4800/2400/1200 bps.
- Records in Hi-8 format which delivers over 400 lines horizontal resolution, high S/N ratio and superior picture quality.
- There is separate DNR circuitry for both the Y (luminance) and C (chrominance) signals providing playback of superior images. There are three noise reduction levels for CNR and four levels for YNR. These levels are selectable according to picture quality.
- To ensure efficient operation, a variety of VCR modes can be easily customized within the PRESET MENU. The menu is superimposed on a video monitor screen allowing easy VCR mode setting. Fourteen menus are incorporated in the PRESET MENU offering options for digital CNR/YNR levels, time code display position, still time, RS-232 baud rate, etc.
- Fully compatible with the Video Toaster 4000, no single frame controller required. In fact, most animation programs will work directly and will not require a controller. They include Autodesk 3-D Studio, AT&T Topaz, BYTE-by-BYTE Sculpt 4-D, WaveFront Video Composer, and Personal Visualizer.
- Incorporates a memory device for frame/field storage to provide an accurate frame image in recording and playback. This memory can be used in either the BUFFER or the DNR mode.
- **DNR (Digital Noise Reducer)** is used for playback. A clear and stable picture is played back with no guard band noise and no picture movement. Either field or frame can be selected. DNR mode is great for image analysis and medical applications.
- **BUFFER** this mode is for fast recording of sequential frames. Simply put the EVO-9650 takes a frame and stores it in its buffer thus freeing up the computer to proceed immediately to the next frame. During this time the EVO-9650 performs its pre-roll and edit functions. This effectively cuts in half the time needed for single frame recording.
- Built-in 8mm time code generator records an absolute address on every frame allowing absolute frame accuracy.



- Provides a variety of digital effects like 3x3 matrix display, 2x zoom and 1/30, 1/10, 1/5, 1/3 times normal speed in a noiseless slow motion playback.
- Additional audio, such as music or commentary, can be dubbed to existing video by simply pressing the AUDIO DUBBING button. Additional audio is recorded on the PCM sound track.
- Optional EVBK-65 RGB encoder board allows the EVO-9650 to accept RGB signals, ensuring optimum picture quality recording. The EVBK-65 encodes 15.75KHz analog RGB signals to Y/C signals. This board also has sub-carrier lock capability.
- Optional EVBK-66 VISCA interface board allows the EVO-9650 to communicate with VISCA control signals. The EVBK-66 translates VISCA control signals into the Sony standard RS-232C protocol.
- Supplied RM-9650 Remote Control Unit covers not only the basic functions, but also provides digital special effects, assemble/insert editing and jog/shuttle picture search up to 19x normal speeds.

EVO-9850 Hi8 Editing Recorder



- Utilizes the Hi8 format to deliver more than 400 lines of horizontal resolution and high signal-to-noise (S/N) ratio.
- To further enhance picture quality, there is a built-in digital noise reducer for both the chrominance and luminance signals. In the CNR (Chrominance Noise Reducer) mode you can select low or high level of noise reduction according to picture conditions.
- Equipped with four channels of audio. Two AFM Hi-Fi stereo tracks plus two PCM digital stereo tracks. Each channel has balanced XLR inputs and outputs, plus there is individual level volumes for each track.
- Assemble and insert editing modes. In the insert mode there is independent editing of video, PCM-1, PCM-2 and time code.
- Built-in TBC (Time Base Corrector). With TBC the EVO-9850 outputs highly stable video signals. A digital drop-out compensator is also built-in. TBC adjustments can also be remotely controlled with the optional BVR-55 TBC Remote Control Unit.
- Provides absolute frame accuracy for video editing and single frame recording. Accuracy of ±0 frames is achieved with its advanced servo system, quick response mechanism and built-in 8mm time code reader/generator.
- Built-in 8mm connector is utilized for communicating edit command and time code data. The 8mm time code is output as SMPTE time code through the RS-422 connection to the edit controller.
- For recording absolute address on tape, the EVO-9850 is equipped with a built-in 8mm time code generator. Time code is absolutely required for frame accurate editing. Since the 8mm time code is recorded between the video and the PCM audio tracks in a separate and dedicated location, 8mm time code insertion or overwrite is possible without losing a generation.
- For additional flexibility there is an optional SMPTE Time Code input board. With the optional EVBK-100 the EVO-9850 inputs and outputs SMPTE time code data via BNC connectors. Accordingly the EVO-9850 can feed time code to another VCR or can lock to an external time code.
- The Jog/Shuttle mode provides high speed picture search from -17 to 17 times normal speed. Frame accurate picture search is available in the JOG mode to precisely locate edit points.
- To minimize picture deterioration during the editing process, the EVO-9850 incorporates Dub In/Out (7-pin) connectors, enabling direct transmission of separate luminance and chrominance signals to another EVO-9850 or to Sony's U-matic editing recorders. The Dub Out connector offers selectability between Hi8 and U-matic.
- With the optional RMM-980, the EVO-9850 can be installed into a 19-inch EIA standard rack.
- External sync input to lock onto external reference video signals. This provides for synchronization with other video equipment and easy configuration into A/B roll systems.
- For customized operation there is a Dial Menu. You can set VCR operation modes like time code preset, time code superimpose, self-diagnostics display, with the search dial.

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HOTRONIC AP41 STAND ALONE TBC/ FRAME SYNCHRONIZER

- Compatible with S-VHS, Hi-8 and U-Matic SP equipment
- Frame synchronization with full frame memory synchronizes outside satellite, microwave and feeds with studio signals
- 4 times sub-carrier sampling, 8-bit resolution
- Adjustable horizontal and vertical blanking
- Proc-amp controls are presettable. Each control has a maximum useful dynamic range. Front panel buttons select different operational modes.
- Optional pixel by pixel DDC (Drop-out compensator)

AP41-SF

- Same as above plus S-Video output, freeze frame/field, Y/C adjustment and 16-speed strobe

AP41-SP

- Same as above plus wide-band comb filter (full bandwidth in all modes)



DIGITAL TBC/FRAME SYNCHRONIZER

- Will time base correct & transcode inputs from Hi-8, S-VHS, VHS-DUB, 3/4", 3/4" VCR-DUB and composite video
- Use as a frame synchronizer, synchronizing outside satellite, microwave and camera feeds with studio signals
- 3-5 dB chrominance and luminance noise reduction
- Full Proc-amp controls; drop out compensator
- Y/C delay adjustments, field and frame freeze
- Wide 5.5 MHz frequency response offers 450 lines of resolution. Full 8-bit processing and a 58 dB S/N ratio
- Built-in RS-170 sync generator with genlock input and black burst output. **1795.00**

The KitchenSync Dual Channel TBC

- Two complete infinite window time base correctors on one IBM AT/Amiga compatible card
- Plugs into any Amiga or PC compatible
- Use more than one KitchenSync linked together to synchronize even more channels
- S-VHS and Hi-8 compatible. Has S-Video input with option for S-Video out
- Complete 100% accurate sync generator built-in. Totally regenerates all sync and blanking signals
- Absolute 100% broadcast quality output
- Built-in Proc amp with Hue, Saturation, Contrast and Brightness adjustments
- Complete digital design - no pot adjustments necessary. The KitchenSync is completely microprocessor controlled
- Advanced sync output - useful with any VCR capable of taking an Advanced Sync in. **1279.00**

SUNRISE INDUSTRIES AD 516 and Studio 16 The Complete Digital Audio Solution



- The AD 516 is a professional quality 16-bit high fidelity sound board and hard disk recording system for the Amiga. It includes the feature packed Studio 16 software that allows you to perform all traditional audio post-production tasks. You can create sound effects, edit and replace dialog, and build multichannel soundtracks in the digital domain.
- Record, edit and playback directly off hard disk
- Play up to 8 simultaneous tracks off one or multiple hard disks in real time
- Use a mouse to slice up and rearrange sound quickly
- Mix tracks with no generation loss
- Synchronize background music with your productions
- Fade, cross fade, or eliminate sections of audio
- Create unlimited variations of echoes, flanges, and choruses
- Optional Video Toaster Handler expansion module lets you play audio during many of the Toaster's digital video effects.

SANYO GVR-S950 S-VHS Single Frame Recording VCR



- Single-Frame Animation Controller eliminates the need for separate or computer plug-in animation controllers. Uses industry-standard protocols, making it compatible with most popular graphic and animation software packages.
- SMPT-E Time Code Generator and Reader with Built-in Drop and Non-Drop Frame Read/Write is fully programmable from an external computer and rewritable from the front panel.
- Video and Audio Switcher with Two Independent Video and Audio Channels. Each video channel contains both composite and S-Video inputs. Each audio channel contains two linear and two Hi-Fi inputs. Switching can be performed either manually, or under RS232C or RS422 control. Video and audio channels are switched independently giving the GVR-S950 the ability to perform break-away edits.
- Auto-Sensing Single RS232C/RS422 input eliminates the need for optional external interfaces. Interface requirements are automatically sensed and adjusted within the recorder.
- Input and Playback Video Processing allows adjustments to the video level of the incoming signal.

RGB COMPUTER



Amilink CIP

Amilink CIP is an Amiga-based A/V roll edit controller. It is a combination of hardware and software that provides flawless control of three VCRs. It is also the most complete personal video editor for the Video Toaster. It controls low-cost industrial VCRs like the Panasonic AG-1970 or with Control L protocol like Sony EVS-3000 and SLV-R1000. You can use three of the same or in any combination. Best of all, Amilink CIP is upgradeable for professional machine control. To upgrade, you buy an upgrade kit that includes new software and professional level control cards. The system includes a new version of Amilink software designed especially for the Toaster 4000. With the new Amilink VT-4000 software, the Video Toaster is seamlessly integrated into your editing suite.

Machine Control

- Choice of joystick, mouse, keyboard and trackball, plus an optional jog/shuttle editing keyboard
- Industry standard keyboard layout (CMX/GVG)
- Auto calculated GPI, plus 48 additional GPI triggers per edit with optional hardware
- Controls industry standard audio mixers

Edit List Management

- Sophisticated search list by edit comment, content or number
- Import/Export CMX 3600 edit list on MS-DOS & Amiga-DOS
- Automatic edit list back-up
- Edit list cleaning, list rippling, multi-field sorting
- Optimized edit list auto assembly with special integration

Editing Control

- Preview, Perform, Review and Auto review functions
- Multi-set, Multi-trim • Reverse play and auto review
- Pre-Roll, Post-Roll and Preview select

Edit Modes

- Provides for multiple audio/video splits per edit event
- Open ended immediate/delayed transition edits
- Performs all edit modes plus "Music Video Mode" for easily synchronizing edits to music
- Integrate graphics, animation and character generation
- Cut and Paste EDL management

Toaster Control

- Amilink/VT gives you total control over the Video Toaster as a fully integrated post-production switcher.
- Amilink/VT remembers all of the Frame Stores, CG Tiles, and DVCS used for your production in the Amilink edit list. You never lose any of the information you need to recreate your production.
- All of the Video Toaster post-production functions are easily accessed from the Amilink/VT interface screen. Toaster Digital Effects, Character Generator pages and the Digital Video Frame Stores, as well as standard wipes and dissolves, can all be called up automatically during edits, and are stored in the edit list for later auto-assembly.

NEWTEK VIDEO TOASTER 4000



Production Switcher

The Video Toaster Switcher is a broadcast quality production switcher which lets you perform cuts, fades, dissolves, advanced digital effects, key and color effects between any of 7 sources including 4 video inputs, two true-color high resolution frame buffers and a background matte generator. A separate overlay channel gives you the ability to key in graphics or live video over the switcher during transitions.

Additional Features:

- 2 video outputs (Program and Preview)
- Preview output lets you compose the next camera shot or frame buffer prior to performing the transition
- 256 level adjustable luminance key
- Automatic or manual (T-bar) control of transitions
- Animated wipe patterns such as page tearing, spray paint, windshield wiper, heart, clock, iris, spiral and many more
- Organic transitions such as clouds, spilling paint, pouring water, smoke, fire, shattering glass.

Luminance Keyer

The Video Toaster's integrated luminance key technology gives you the ability to superimpose a weatherman over a map, live video or still graphics. Luminance keying also works in conjunction with many Toaster Digital Effects to make text or logos fly in over another video source. Text created in ToasterCG uses built-in automatic keying to deliver titles crisply rendered over any video source, even with transparent drop shadows.

Frame Grabber/Frame Store

The Toaster can grab and save a full frame (in 16.8 million colors) and has sophisticated motion removal algorithms to provide a rock-solid freeze frame. These frames may then be loaded into "ToasterPaint" or "LightWave 3D" for further manipulation. Up to 1600 frames may be saved on each frame store device (depending on available storage space). Stored frames can be loaded and displayed in the frame buffers in as short as 1/5 of a second from RAM or 3 seconds from hard drive. These frames can also be used as inputs to the switcher for transitions and digital effects.

ChromaFX Color Processor

ChromaFX is a sophisticated real-time color processor that gives you complete control of all aspects of the brightness, contrast and color of your video. It can alter video with color negatives, day for night, sepia tone, monochrome, solarization, posterization, color vignettes, and other totally unique effects such as Nuke, Chrome, Gold, Zebra, and more. ChromaFX also gives you the power to create your own custom color effects from subtle lighting changes or tints to blazing psychedelic effects that will wake up your audience.

Amilink AL-3NI Professional

Amilink AL-3NI is the professional version of Amilink. It is designed exclusively for machines equipped with RS-422 9-pin serial interface. Amilink AL-3NI is actually 2 edit systems in one, including both Windows and Amiga software.

Machine Control

- Controls up to (Sync-rol) to 16 source VTRs and 4 record VTRs
- Choice of joystick, mouse, keyboard and trackball, plus an optional jog/shuttle editing keyboard
- Industry standard keyboard layout (CMX/GVG)
- Auto calculated GPI, plus 48 additional GPI triggers per edit with optional hardware
- Single frame animation module standard at no extra cost
- Dynamic motion control/auto tracking support
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- Reads VTC and LTC time code, plus fully supports SMPT-E Drop-Frame and non Drop-Frame, mixed and PAL/EBU

Edit List

- Sophisticated search list by edit comment, content or number
- Import/Export CMX 3600 edit list on MS-DOS & Amiga-DOS
- Automatic edit list back-up
- Edit list cleaning, list rippling, multi-field sorting
- Optimized edit list auto assembly with special integration

Editing Control

- Preview, Perform, Review and Auto review functions
- Multi-set, Multi-trim • Reverse play and auto review
- Pre-Roll, Post-Roll and Preview select

Edit Modes

- Provides for multiple audio/video splits per edit event
- Open ended immediate/delayed transition edits
- Performs all edit modes plus "Music Video Mode" for easily synchronizing edits to music
- Recorder only edits for recording graphics/audio
- Integrate graphics, animation and character generation
- Scene-based editing with advanced park and perform features
- Six forms of Match-Frame edits
- Cut and Paste EDL management
- Multiple time-code and edit chip-board registers

Digital Video Effects

The Toaster has the processing power to manipulate live broadcast video in real time, and perform hundreds of network-quality digital video effects as easily as clicking the mouse and sliding the T-Bar. There are effects for weddings, birthdays, sales, music videos, public affairs messages, etc. There are even sound effects. Among the effects which are included with the Video Toaster are:

- Page Peel
- Smoke
- Zoom
- Fire
- Time
- Cube Mapping
- Push Off
- Push On
- Sphere Mapping
- Shatter
- Stats
- Analog Trails
- Dissolve
- Mirrors
- Puzzle
- Digital Trails
- Mosaic Tiles

Character Generator

ToasterCG creates YIQ-encoded, 35ns (nanoseconds) high-resolution titles. ToasterCG makes adding text to your presentations simple. Among the many powerful tools included are:

- Giant library of more than 250 PostScript fonts
- Can size fonts from 10 lines to 400 lines tall
- Variable outline and shadows
- Variable-speed crawling and scrolling of text
- Easily adjust color, shadow type, outline style and font selection on a line, word, or character-by-character basis

ToasterPaint

Everything you need to create or alter true-color images tailor-made for your presentations is included in an uncluttered friendly interface. ToasterPaint makes importing and modifying files from the CG and frame grabber easy. It also gives you the capability to merge images captured in the Toaster's high quality digital still store or retouch those images with incredible realism.

Dual Frame Buffers/Genlock

These are 24 bit (16.8 million colors) frame buffers with composite output that meets the most stringent requirements for broadcast video. Because there are two frame buffers, one can be loading while the other is shown on screen for seamless live presentations. Toaster effects can be done between live video and either buffer, as well as the buffers themselves.

Lightwave 3D

The Ultimate 3D Rendering and Animation System for Broadcast Graphics

LightWave 3D offers all the high-end features you need to produce true network-quality graphics. Model, render, and animate videos in full broadcast resolution and 16.8 million colors. Everything from flying logos, scientific visualization and the most sophisticated effects seen on broadcast television are now on your desktop.

DIGITAL

DPS VT-2600 Personal TBC IV

- Component digital transcoding provides s-video input and output. Digital 4:2:2 processing ensures the cleanest possible picture. Composite video signal is also enhanced by a newly developed chrominance comb filter.
- It interfaces virtually any camcorder, VCR or laser disk player to production switchers or computer video systems like the Video Toaster.
- Special features include Rock Solid Freeze (both field and frame), GPI Freeze, Variable Strobe, Forced Monochrome and Advanced Sync.
- Film Effect Strobe Mode - Simulates the 3-2 pull down conversion technique from a 24 frame per second film standard, to a 30 frame per second video standard.
- Can be installed in any Amiga or PC-compatible computers. Includes Amiga and MS-DOS software.
- Exclusive feature of the TBC IV is the 50-pin CVC (Component Video Exchange) port. When this port is connected to a DPS Personal Animation Recorder you can capture and record real-time video on the animator's dedicated hard drive. This combination is ideal for rotoscoping and other video capture processes.
- Fully compatible with TBC II, III and Personal V-Scope. The TBC IV is operated via software, or by using an optional DPS RC-2000 multi-channel desktop controller.

DPS DR-2150

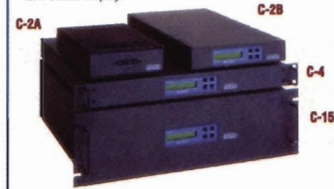
Personal Animation Recorder

The DPS DR-2150 Personal Animation Recorder is designed to record computer animation sequences directly to a hard drive and then play them back in real time. The DR-2150 is a card that plugs directly into an Amiga expansion slot and replaces both the single frame record VCR and the single frame controller. Bad edits, missed frames, tape dropouts and other mechanical glitches common to traditional VCRs are a thing of the past.

- Combines custom ICs and a proprietary implementation of the LSI chip set enabling component 4:2:2 digital recording to a dedicated hard drive.
- Variable speed playback lets you play back 24-bit (16.7 million colors) animation in real-time 30 frames per second, or you can choose a lower frame rate to play back animations in slow motion.
- Has composite, S-Video and component (Betacam/MII) outputs. Also has a genlock input enabling it to be easily integrated with virtually any video production system.
- Supports direct rendering of all common image formats including 24-bit 16 and Video Toaster frame store files and is fully compatible with all popular animation packages including Morph Plus, Lightwave 3-D, Fractal Pro, Imagine, Vista Pro, and Cinemorph.
- Real-time video capture for roto-scoping and other video capture applications is possible when used in combination with a DPS TBC IV card.

Nova SYSTEMS, INC. NovaBlox VIDEO PROCESSING SYSTEM

The NovaBlox Video Processing System is comprised of individual function modules called NovaCards. The range of NovaCard modules includes time base correctors, frame synchronizers, sync generators, encoders, decoders, transcoders, distribution amplifiers and routing switchers. NovaCards have the flexibility of plugging into either a computer or one of four NovaChassis that hold from one to 15 modules. NovaCards fit into an IBM or compatible expansion slot including Amiga. Most of the NovaCards utilize RS-232C serial data for operational control and include DOS, Windows, and Amiga software. For desktop and portable applications, the C-2B chassis hold two cards. There is also the C-4 single rackmount chassis that accommodates up to four NovaCards and the three rack C-15 NovaFrame, which features 15 slots. To provide operational control when using one of the NovaChassis there are two NovaTrol Serial Control Units to choose from. They provide LCD status display with four button operation or the NovaTrol2 which has enhanced operation with dedicated function controls and LCD status display.



NOVAMATE TBC/Frame Synchronizer

One of the NovaCard modules of the NovaBlox system, the Novamate is a unique TBC/Frame Synchronizer that satisfies a wide range of VCR signal correction and video interface requirements from desktop video to satellite systems. Novamate plugs directly into a computer or one of several chassis configurations. Control is performed either by software or NovaTrol control units. The flexibility of its modular design and microprocessor control plus its superior quality make Novamate the ideal alternative to stand-alone and computer based TBCs.

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Rx: An anamorphic lens is the same kind of lens that was used to shoot the original "Ben Hur." The lens acts as an image squeezer. It shrinks a wide-screen image into a size that can be scanned by conventional video. The major benefit is that you can use standard VCRs to record and play back the signal.

Anamorphic lenses are in prototype form right now, and I've seen some with price stickers on them. The only negative is that the prices were in yen. In the original "Ben Hur," a special attachment was added to the projectors in the theaters. This was a special lens that spread the image out again to a wide screen format. The rub is, what kind of gizmo will you use in front of your TV to achieve the same effect? The answer lies in the new digital TVs now showing up in larger department stores. These wondersets have the ability to play back in existing or wide aspect ratios, and can return an anamorphised image to normal.

Q: I only have one source going into my Toaster which is time-base corrected. Does that source still need to have a reference signal? I ask this because when I do transitions between framestore stills using the Toaster's digital effects, the video shows glitches right before the transition is to take place.

E.S.

Seattle, WA

Rx: A time-base corrector will take a video source which is essentially unstable, such as a VCR, and make it stable. By stable, I mean that each video line will last the same length of time, and that the material on each line will proceed in a linear fashion, not in jerks and starts.

Even if a signal is stable, it may or not be in time with the other signals heading into the Toaster. This is the purpose of the reference signal. It gives the TBCs and cameras a type of beacon to lock on to. The timing can then be set on each device with

respect to that beacon, or reference signal.

While on the subject of framestores, however, some Toasters act strangely if a recorded framestore has improper sync feeding it. It makes the machine behave similarly if there is no video signal on input one during boot-up.

Q: Why would I want to use one of these new Toaster add-ons that convert Y/C to NTSC when there is an NTSC output from the same machine?

R.H.

Blaine, WA

Rx: NTSC is an important signal because it fits luminance information, color information and sync all onto one wire. Sync and luminance (called Y) go together easily, because the sync pulses only happen during times when the video beam is turned off, or blanked. Color (called C) is more of a challenge because it is active whenever luminance is.

The color signal also has nearly as

continued on page 94

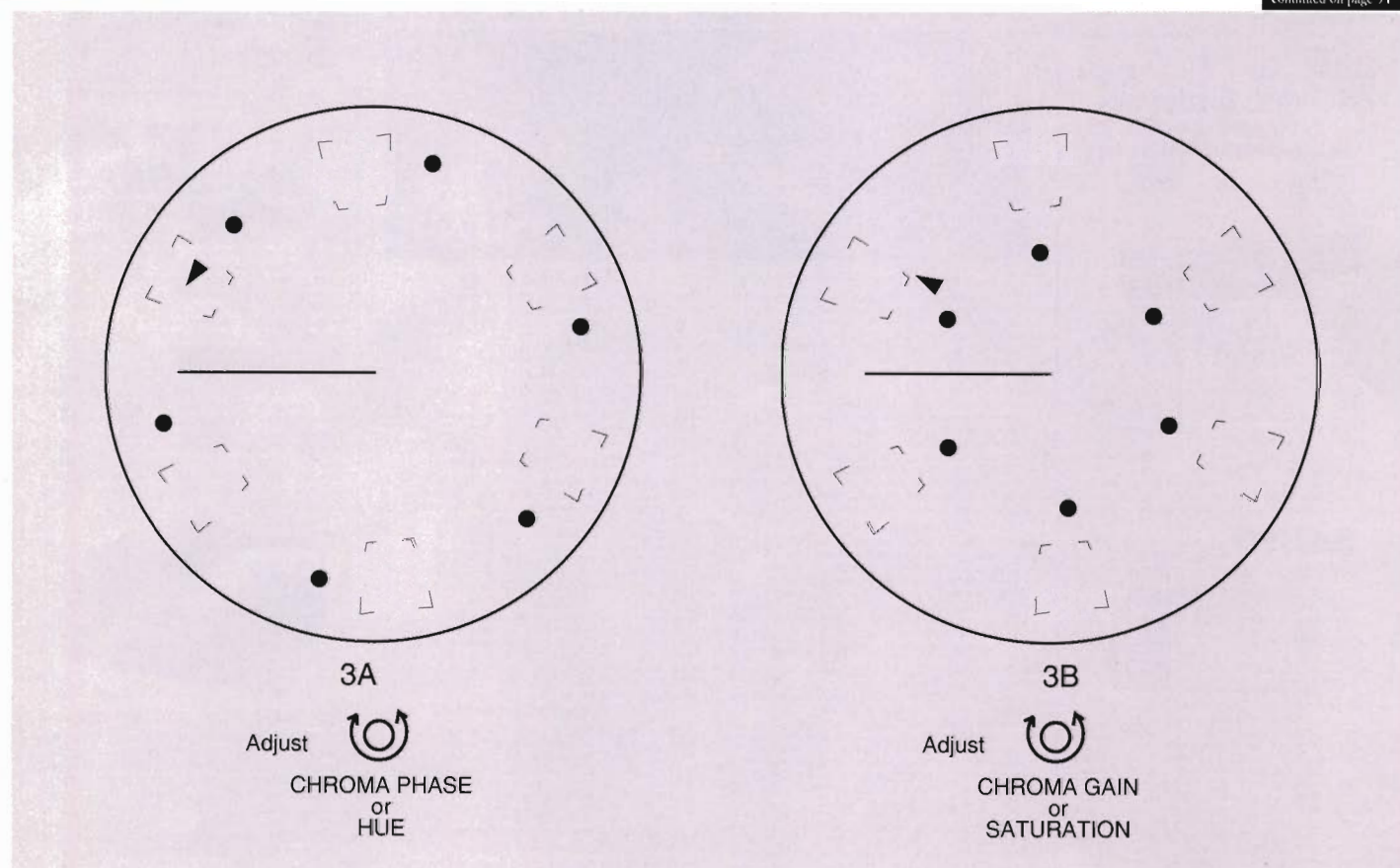


Figure 3: A) Use the chroma phase control, or hue control, to set the direction of the vector dots. B) Use the chroma gain, or saturation control, to set amplitude, or distance from the center, of the vector dots.

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much bandwidth as the luminance signal. This means that sneaking it onto the same cable that carries the luminance calls for some heavy magic. The magic is called frequency interleave, and it is the root cause of most of the defects in an NTSC picture.

It happens like this. If you were to look at a video signal with a special instrument called a spectrum analyzer, you would discover that most of the energy in the luminance portion of the signal happens at frequencies that are multiples of the horizontal sync frequency (15,750 Hz.). This effectively leaves spectrum holes at frequencies that fall between the luminance frequency spikes.

The color subcarrier frequency (3.579545 Mhz., or 3.58 for short) was chosen so that the energy peaks it generates when it is modulated with color information will fall into the spectrum holes left by luminance.

The problems happen when the two signals get in each other's way. Luminance information from busy pat-

terns such as pin-striped shirts often ends up displaying as a rainbow across the talent's chest (Moiré and cross-color contamination). Color information from complementary colors that adjoin each other often gets interpreted as luminance, and produces a pattern that tends to crawl up the screen like an inchworm (dot crawl).

S-Video systems avoid all of these problems by refusing to mix the luminance (Y) and chrominance (C). Instead, they are carried on two separate wires. This is why S-video is called a Y/C system. Most Y/C equipment includes a provision for merging Y and C into a composite, NTSC signal (a process called encoding). However, there is a limit to how much the manufacturer of a video tape machine can be expected to spend on encoding. There is a greater need to add user features which will make the unit appear to be an attractive buy.

This is what makes the advent of several Y/C to NTSC converters such a

big deal. Products such as the Y/C Plus provide state of the art encoding and decoding technology. Video has never looked better.

Q: What is the meaning of the terms RGBS and SOG?

N.E.

Newark, N.J.

Rx: The primary colors in the television system are red, green and blue. When each signal is carried on a separate wire, the whole group is called an RGB signal. There is also a need for sync to keep the monitor displaying the RGB organized. The sync signal contains a vertical sync pulse which tells the monitor when to move to the top of the screen and start writing a new field. It also contains a series of horizontal sync pulses, which tell the monitor to move to the left and start sweeping a new video line. The action of both pulses together creates the raster that fills the screen. The sync pulse is called S, and it is

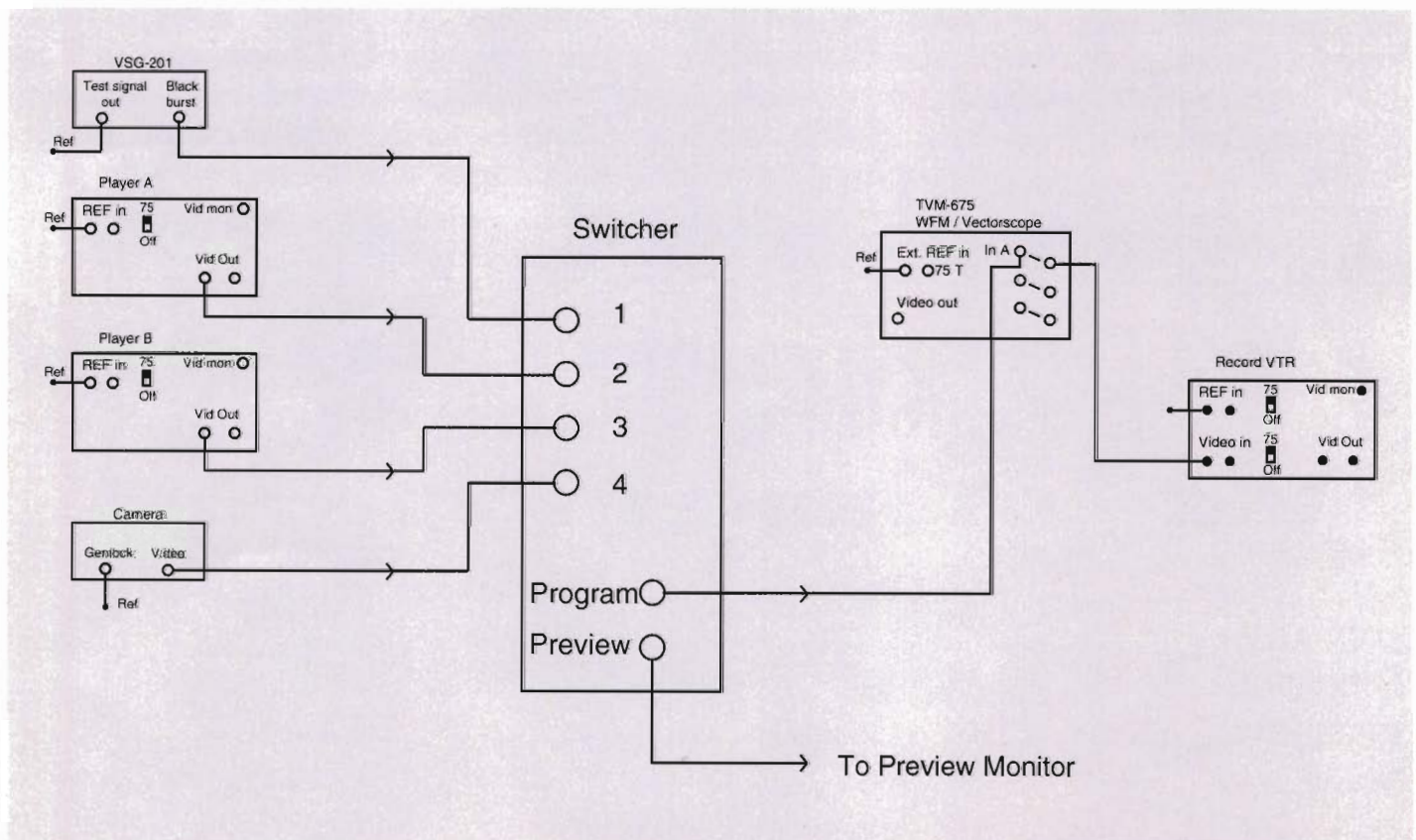


Figure 4: After the system timing adjustments are complete, restore the video system to its operational state. Reconnect the video inputs to their respective sources. Remove the loop-through to the external reference from the WFM/vectorscope A channel. Connect the Toaster Program output line to the WFM/vectorscope A channel. Reconnect the record VTR to the WFM/vectorscope loop-through.

carried on a separate wire, making RGBs. Sometimes the sync pulse rides along as part of the green video signal. In that case, it is Sync On Green (SOG).

Q: How can I connect the output of the sound card in my Amiga into a hotel sound system? I give presentations and at trade shows and I want to be able to wire into the house sound system.

T.M.
Hamilton, Ont.

Rx: My prescription for patching into hotel sound systems is *don't*. I'd prefer, by far, to use a set of self-powered loudspeakers for a number of reasons:

1. Hotel sound systems are often of poor quality. They are designed for speaker support, not for high-quality applications.
2. It could just be a fluke, but I have never been in a hotel where the sound system didn't have a residual noise or buzz when the room was quiet.
3. The wiring into and out of the hotel's system invariably is hard to get to, and the connectors you are carrying somehow never match what you find on site.
4. When you need to turn a hotel system's volume up or down, the amplifier is always hidden behind a locked panel.

Go ahead and use the hotel system for your podium microphone. After all, if there is trouble, you can always either speak a little louder or move back from the mic a little to compensate. For computers and VTRs, however, I think you save yourself a lot of anguish if you keep fate in your own hands.

VTU

Send your questions and comments to: Dr. Video, c/o Video Toaster User, 273 Mathilda Ave., Sunnyvale, CA 94086.

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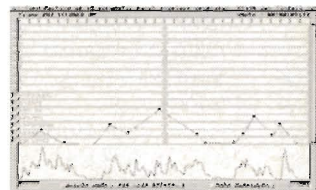
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Here Comes the Bride

continued from page 55

to \$550, while in Riverside, the rate was \$400 to \$2,500.

"Once again," Chapman said, "it's training and marketing skills that make the difference.

"There are people with single-chip cameras making \$2,500 per wedding. And there are people using Betacam equipment that can't even get \$800 per wedding," he said.

More videographers are learning that lesson, Chapman said, but there are an incredible number that haven't. His *Wedding Videography Today* magazine (301-869-6878) caters to those interested in improving themselves, as does the magazine-sponsored Wedding Video Expo, which this month held its fourth annual international convention and trade show for wedding videographers.

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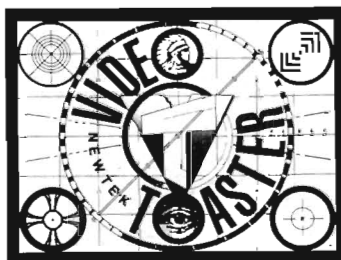
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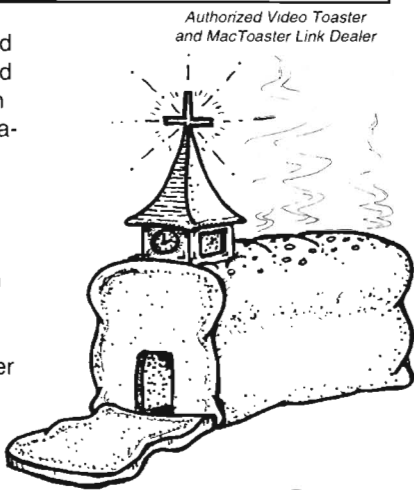
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LAST WORD continued from page 106

for computers you can build almost instantly. OK, Mr. CEO, here's a chance to show off your executive savvy.

The scenario I just drew is not that far-fetched. In fact, I'm sure that many of you know the name of the major electronics company I'm talking about. Funny thing is, as I write this in late June, they aren't even the highest bidder. Another group, which is more excited about building new Amigas, is currently the front-runner to purchase Commodore's valuable assets. The bottom line is this: the Amiga technology is just too good to die. Because of this, there is no doubt in my mind that new Amiga computers will be rolling off the assembly line in the near future. I'm betting they will be Amiga 4000T's, an ideal machine for a Toaster/Flyer combination.

As far as NewTek is concerned, I believe they will look back on this Commodore situation as nothing more than a bump in the road. I have taken several trips and spent a considerable amount of time in Topeka, Kan., this year, trying to understand and get a gut-level feel for where NewTek is headed (after all, I think you'd agree that we have a vested interest). In all the years I've worked with NewTek, I have never felt more comfortable or confident in NewTek's future. This may sound like a strange thing to say, considering these are tough times for NewTek. But I just have a lot of confidence in Tim Jenison's vision for the future of video production and his ability to keep NewTek in a dominant position in the marketplace.

Looking back over this column, I can see that I haven't really directly answered many of the questions that were posed. Fact is, they are trick questions. Nobody really knows what is going to happen to the Amiga-Toaster dealer network. Nobody knows what the service and parts situation will be. Nobody knows what the developers will do. I've given you my opinion. Your only choice is to learn as much as you can, weigh your options and alternatives, and then make the decision you are most comfortable with. Having said that, I think you all know what on-line, non-linear video production system I'll be using this fall.

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Art Baldwin
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Sun Valley, CA 91352
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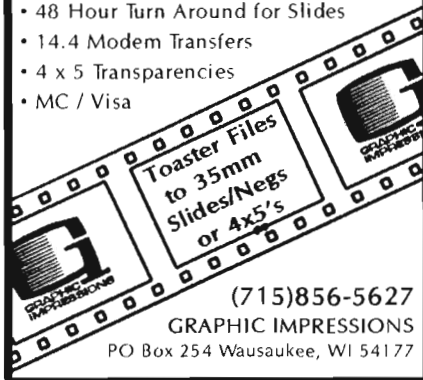
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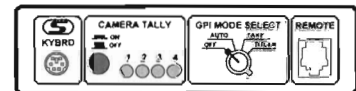
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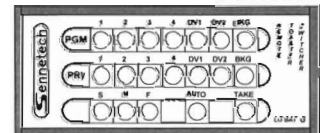
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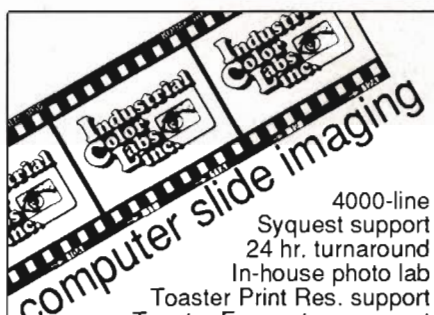
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LAST WORD

CRYSTAL BALL

An Inside Look at Commodore's Wild Ride

by Jim Plant



It has been a while since I last wrote, and with so much going on in the Amiga and Video Toaster world, I thought it was high time I dropped you a line or two. It's been quite a year. What with Paul Montgomery and friends leaving NewTek, and NewTek wowing NAB with the Flyer and now Commodore disintegrating right before our eyes, we've certainly been kept on our toes. Over the last few months we've been on a real roller coaster ride, and just like the real thing, we've felt exhilarated and we've also felt a little green around the gills. One thing is for sure: life has not been boring.

Commodore's plunge into liquidation has sent out ripples that have radiated through all segments of the Amiga marketplace. Nervous customers have put Amiga-related software and hardware purchases on hold. Many are hesitant to invest further in a platform that may have no prospects. This hesitancy proceeds up the food chain, with slow dealer sales causing slow distributor orders while pinching developer revenues. As developers' incomes dwindle, they start considering the development of other platforms and face the prospect of going out of business. Once end users hear this, they become even more reluctant to continue investing in their current system. It's a vicious cycle.

A lot of Toaster users have been favorably impressed with the Flyer and its on-line video production premise, its smooth integration with the Toaster, its easy-to-use interface, its D2 video output quality, and of course, its low price. But in light of the Commodore situation, a number of troubling questions have cast a dark shadow over the potential purchase. Will the third-party development community, which has been so important to the success of the Video Toaster, continue to support the platform as it has in the past? How will this affect the dealer channel? Will crucial parts and service be available? Will NewTek support future product development on the Amiga? Does the price functionality advantage of the VT Flyer outweigh the risk of investing in a potentially dead-end computer platform?

The Amiga issue has, of course, been a factor in every NewTek purchase since the company was founded. But that didn't stop Digi-View from being one of the best selling video digitizers (on any platform) ever produced. Nor did it stop the Video Toaster from creating and dominating the desktop video market. That's why I'm going to make a bold prediction by saying not even Commodore's demise will stop the VT Flyer from taking its position next to Digi-View and the Video

Toaster in the NewTek Top Sellers Hall of Fame.

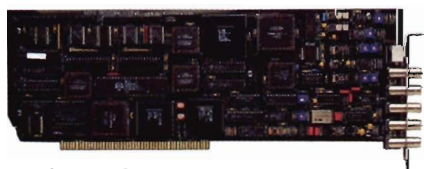
Now, you might accuse me of wishful thinking or even naivete for making this prediction, but I have some good reasons for feeling this way. Let's start with the death of Commodore. Am I the only one who thinks this is one of the best things that has ever happened to the Amiga? I bought my first Commodore product back in 1982 and I can think of very few instances, before or since, when I was impressed with the management of this company. I'm sure I can count them all on the fingers of one hand. Let's see, there was the acquisition of MOS Technologies back in the 1970s. Then, there was the development and mass market distribution of the VIC-20 and the Commodore 64. Of course, the purchase of the Amiga in the mid-1980s was probably one of the smartest things they ever did (and the worst thing to ever happen to the Amiga). OK, that's three pretty smart moves over a 15-year period. Anything else? Hmm...see what I mean?

Now, to nobody's surprise, a large number of entities, including some of the biggest companies in the world, are looking to incorporate the Amiga technology into their future plans. Why? Because they know that when the Amiga technology was first developed, it was so far ahead of its time that it still compares favorably with today's cutting edge technology—even with Commodore retarding its growth. They recognize that the rest of the computer world is just beginning to catch up by introducing features that have been standard on every Amiga since 1985. They know that the Amiga's **colorful** animation and video processing strengths are big-dollar opportunities these days. They also know about some exciting next-generation Amiga technology that Commodore's R&D labs have developed. For obvious reasons, though, the technology has yet to find its way into any commercial applications.

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