

VIDEO TOASTER[®] USER

an avid publications magazine

THE PERSONAL VIDEO PRODUCTION MAGAZINE

JULY 1994 • \$3.95 US/ \$5.00 CAN

BREAKTHROUGH PRICE

Quality and Economy
in the Same Deck

Industry Responds to
Commodore Crisis

How to Save Money
by Buying Used Gear

Image Makeover:
Three Programs to Use



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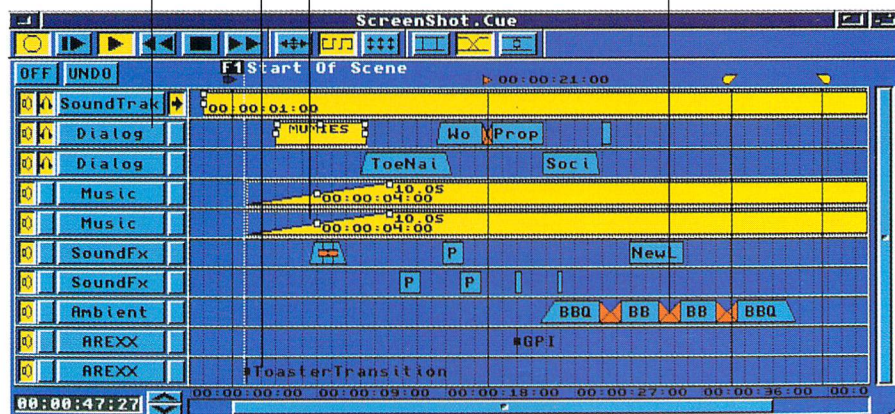
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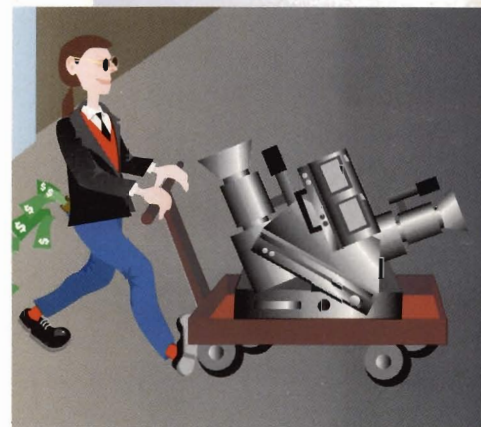
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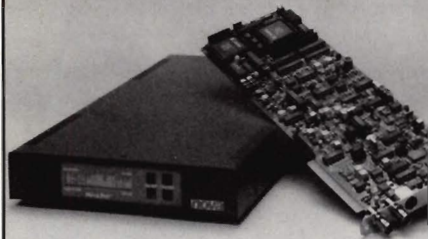
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Suggestions and comments should be sent by written correspondence to VTU, Letters to the Editor. Be sure to include your name, address and telephone number.

QUESTIONS AND TIPS

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)

Specific product information or press releases should be sent to the Managing Editor by mail or fax (408) 774-6783.

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

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FOR INFORMATION CIRCLE 100

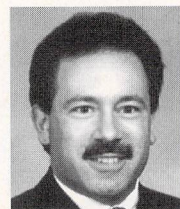
JVC. The three most important letters in S-VHS.

TOASTER TALK

The Great Confluence

Non-linear and Tape Meet in the Real World

by Phil Kurz



I can imagine what it must have been like standing high above the Panama Canal on the day the locks were filled and two distinct worlds—that of the Pacific and the Atlantic—met for the first time. Certainly, the event marked both a real and symbolic change in the nature of navigation, commerce and culture.

I can also imagine what it must be like to an outside observer watching the unfolding confluence of the linear tape-based editing world with the non-linear world of the Video Flyer. Certainly, this event will mark real and symbolic change in the nature of navigating through an edit, the way in which video services are delivered and paid for and the very culture surrounding the post-production process.

In May, I had the good fortune of moderating a segment of an International Television Association (ITVA) Foundation teleconference on non-linear editing. Participating in the panel discussion were three producers with non-linear editing systems (two ImMIX Video Cubes and one Avid 1000 user), David Leathers of *Video Systems* magazine's Digital Media Lab, Tom Ohanian, chief editor of Avid Technology, and foundation vice president Frank King. Scattered across the country at downlink facilities were ITVA members who called in their questions to our studio in Massachusetts.

As the evening unfolded, it became clear that the video producers on the panel and those who were calling in questions were awash in the great confluence of non-linear and linear video editing technology. Through their questions and responses, it became clear that each was seeking to stay afloat in this turbulent tide of change.

You as Video Toaster users are likely to confront many of the same issues these producers are facing if you integrate the Video Toaster Flyer, NewTek's non-linear editor, into your editing environment.

The Breakdown

Although the list of questions are too numerous to recount in this small space, they fall into some broad categories: How has non-linear changed the editing process? How should source footage be acquired? How are digitally compressed media assets—i.e. video and audio—archived? How has non-linear editing affected business?

If the experience of Video Toaster Flyer users tracks that of other non-linear editors, expect to become much more organized before you edit your footage. Because disk space is so precious (the price of tape pales in comparison to hard disks), two of the produc-

ers on the panel explained that non-linear editing has forced them to become much more organized before their editing session begins and selective about their footage.

Callers to the teleconference seemed to be particularly interested in the best video format to use to acquire source footage. While the producers agreed that BetacamSP was the format of choice, they were fuzzy on whether this format held an intrinsic benefit for non-linear editing over, say MII, or if it was simply the most widely used high-quality acquisition format. However, before the telecast and during the show the producers expressed their desire to see a digitally compressed, disk-based acquisition format that would seamlessly integrate with their non-linear editor.

Another issue of importance to panelists and callers alike was the matter of archiving digitally compressed audio and video elements. If a new version of a show needs to be cut after the master has been created, producers want access to their digitally compressed footage. They don't want to endure the time and expense of redigitizing material. Panelists explained that they use a variety of tapes, from DAT to 1/2-inch, to store digitally compressed source footage before wiping their hard disks clean for the next project.

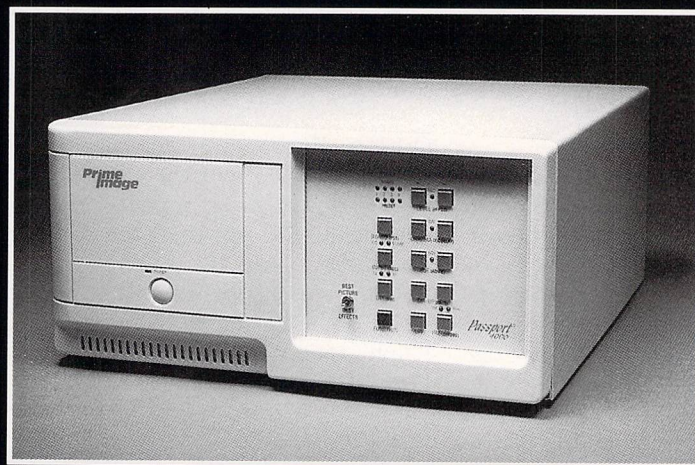
Finally, the question on everyone's mind was how non-linear was affecting business. Two of the panelists reported that they could in theory move more material through the post-production pipeline—or at least make more versions of the show in the time that a linear session would take—while one said that his clients found the non-linear process to be tedious and time-consuming. The former expressed that non-linear gave them the tools that they needed to bring their productions in on time and on budget. The latter expressed mixed feelings about non-linear, although he was comparing it to his experience with a digital D2 suite.

These mixed reactions to how non-linear editing affected business seemed to be tied directly to the clientele that each producer served. The two producers who pointed toward the time savings that non-linear editing offers primarily worked with corporate clients. The dissatisfied producer served an elite client base.

In the end, sitting on the panel gave me a bird's-eye view of the confluence of two vastly different video cultures: tape-based and non-linear. Not unlike a Panamanian looking down upon the great locks, I shall once again have a ringside seat to the mighty confluence when the Toaster world is carried away in the tidal wave of non-linear editing.

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LETTERS TO THE EDITOR

Dear VTU:

We at DKB would like to bring to your attention errors that have been published in your magazine by MacroSystemUS (or 'Macro Development, depending on the issue you are reading). The first discrepancy is in regards to the DKB 4091. The ad indicates the 4091 may work in the Amiga 3000, when in fact this is not the case.

The DKB 4091 will not work until such time Commodore releases the 3.1 operating system, and until this date that has not happened yet. The second discrepancy is in regards to the DKB 3128 where the ad indicates that the DKB 3128 does not use industry standard SIMMs modules, when in fact it does. The third discrepancy in the ad indicates that the DKB 3128 does not work in the Amiga 3000; this is clearly not the case. The DKB 3128 was originally designed to work exclusively in the Amiga 3000.

The last discrepancy is in regards to the question mark in Zorro III DMA or Buster problems. There are no known nor have there ever been problems with DMA or Buster. In closing, we at DKB would like everyone to be aware that the DKB 4091 and DKB 3128 are not accelerators and never claimed to be. If you have any questions to those two products, please feel free to contact me at (810) 960-8750.

Jerry Lee
General Manager
DKB

Dear VTU:

I noticed something strange about your April 1994 cover. While admiring the Toaster non-linear editor

(Video Flyer) interface, I noticed that the monitor was upside down. If the monitor was right side up, then the interface would be upside down. Is this a special display mode of the interface?
Ralph Ocampo
Port Washington, N.Y.

Editor responds:

You are very observant. Because the Video Flyer is destined to set the world of video editing on its head, NewTek has decided to display the Video Flyer interface only upside down. Just kidding.

According to our cover consultants, D3 Inc. of Kansas City, Mo., the image was displayed upside down on the monitor to provide creative tension to the cover image, or maybe we all were just having some fun.

Dear VTU:

I know your subtitle is "The Personal Video Production Magazine," but can't we stick a little more to the Toaster itself? After all, your real title is *Video Toaster User*. It would seem that would entail lots of information about actually using a Video Toaster! There are countless books and magazines on specific production aspects such as lighting, shooting, production products, editing, HDTV, audio, etc. Don't try to be "all things to all people."

J. Tad Newberry
Big Ya Productions
Portland, Ore.

Editor responds:

VTU is committed to providing up-to-date information on how to use the Video Toaster and related hardware and software, but we recognize that there is more to a Video Toaster user's life than the Toaster.

As for our Issues & Insights features, such as the HDTV piece in the March issue, I suggest that you consider taking a broader view of what you do. Toaster owners exist in a bigger video world and many forces shape and color that world. Understanding those forces not only puts what we do into perspective, but also lets us plan for tomorrow.

Dear VTU:

Warm and Fuzzy Logic must address the Letter to the Editor concerning LightRave as published in the April issue of *Video Toaster User*. First, we must object to the fact that we were not given the opportunity to comment and respond to this letter prior to publication.

The author, David Victory, makes numerous false statements about LightRave. Among these are the comments that LightRave "does not work with version 3.0" of LightWave and that LightRave "cannot be used in a farm." As any LightRave owner can attest, these statements are not accurate.

Addressing the issue of compatibility, LightRave on release was compatible with version 2.0 and 3.0 of LightWave. In our current release, LightRave is compatible with version 3.1 of LightWave and remains compatible with versions 2.0 and 3.0.

On the issue of framestore quality: This is a subject best addressed to NewTek. As the specifications of this format have never been released, all third-party implementations are somewhat different. Framestores saved out of ADPro, ImageFX, Image-master and LightRave will all look somewhat different than

those saved from the NewTek software. Different, however, does not mean worse. We find our framestore saving to be among the best and constantly work at making it even better.

As for the comment that LightRave is not usable in a render farm, we contacted the makers of the two largest render farm applications. To quote Dan Stephenson of Axiom Software, makers of WaveLink, "We find no difference between LightRave and LightWave. We've run hundreds of scene files with LightRave and LightWave; they've all come out identically." Allen Brooks of Interworks, makers of Toaster Net, also says, "Having run LightRave and LightWave, we find the performance to be identical."

Finally, we can't quite understand David's contention that "procedural textures are incompatible." Procedural textures are a feature built into LightWave, and cannot be loaded or saved from one system to the next. The only conclusion we can draw is that David is having some problems implementing the procedural textures in LightWave.

Michael Vunck
President
Warm and Fuzzy Logic Inc.

Editor responds:

Thanks for writing. Regarding your objection that you "were not given the opportunity to respond to this letter prior to publication," I have to disagree. The managing editor personally sent you a copy of Mr. Victory's fax and in a handwritten note on the cover sheet asked if you would like to respond. The only reply we received is your letter printed above, which arrived after publication of the May issue and beyond deadlines for insertion into the June issue.

A

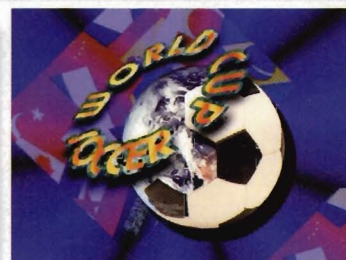
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FOR INFORMATION CIRCLE 124



NEW PRODUCTS

Compiled by Douglas Carey

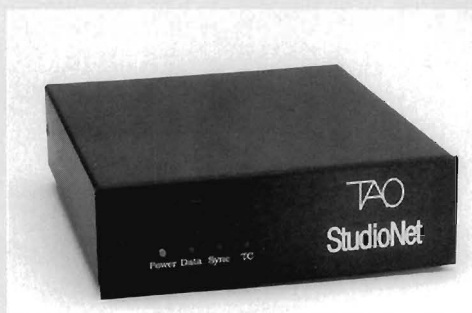
StudioNet

In the Studio

Product: StudioNet series
Description: Device control system
Price: Starting at \$34.95
Technical Aesthetics Operations, Inc.
P.O. Box 1254
Rolla, MO 65401
(800) 264-1121
Fax (314) 364-5631

FOR INFORMATION CIRCLE 1

Technical Aesthetics Operations, Inc., has released the *StudioNet* product series, which is offered in three packages ranging from a simple cuts-only, to an A/B-roll to an A/B/C-roll system, each upgradable to



an A/Z-roll environment capable of controlling up to 127 devices simultaneously. The series gives the operator the ability to control VCRs, laser disks, hard drives and audio recorders, in addition to audio/video switchers and mixers.

Light Touch

Product: Fren-L 650
Description: Frensel light fixtures
Price: Starting at \$365
Lowel-Light Manufacturing
140 58th St.
Brooklyn, NY 11220
(800) 334-3426
Fax (718) 921-0303

FOR INFORMATION CIRCLE 2

Lowel-Light Manufacturing, Inc., plans a September release of the *Fren-L 650*, capable of accepting 650, 500 and 300 watt lamps. The 650 is the first fixture in Lowel's



upcoming series of frensel lights. The 650 features 7:1 focusing range, sharp shadow quality and ball-bearing, rack-and-pinion lamp carriage. In addition, the light has a double-wall convection cooling system, an oversized, swing-down handle and single-yoke design, which provides for tilting range and helps to avoid cable snarls.

Pure Artistry

Product: Artworks Clip Art Library
Description: Contains more than 1,500 clips
Price: \$49.95
Visual Inspirations
809 W. Hollywood
Tampa, FL 33604
(813) 935-6410 Voice/Fax

FOR INFORMATION CIRCLE 3

Visual Inspirations opens the doors to the *Artworks Clip Art Library*, a collection of more than 1,500 original images. Ranging from pets to wedding figures, the images can be used for a variety of projects, including greeting cards, logos, T-shirt designs and animations. The clips can be used in programs such as

DeluxePaint, Scala, PageStream, OpalPaint, TVPaint, ToasterPaint and any other program that supports the standard Amiga IFF format.

3D Perspective

Product: Cinema 4D
Description: Animation software
Price: \$198
MediaDesk
1875 S. Bascom Ave.
Bldg. 116, Ste. 204
Campbell, CA 95008
(408) 374-7595
Fax (408) 374-7596

FOR INFORMATION CIRCLE 4

Cinema 4D is a complete 3D modeling, rendering and animation package that offers results through a new user interface. Dozens of effects can be applied to objects, scenes and animation without ever leaving the 3D perspective editor. *Cinema 4D* runs on all Amiga models with at least 1.5MB of RAM and OS versions 1.3 and higher. Graphic cards are supported. The package is capable of reading all major file formats, including Imagine, Reflections and DXF.

Mirror, Mirror

Product: The Image Mirror
Description: Image processing and special-effects software program
Price: \$113
Seven Seas Software Inc.
P.O. Box 1451
Port Townsend, WA 98368
(206) 385-1956
Fax (206) 385-3433

FOR INFORMATION CIRCLE 5

Seven Seas Software announces the release of *The Image Mirror*, an image processing and special effects software program. The Image Mirror provides features to generate frames for animations, an animation storyboard preview mode, back-



ground textures, montage and collage, high-resolution zooms, fades and dissolves, chroma keying, Mandelbrot distortions, rotations and flips, new warping techniques, tiling and other modular add-on capabilities.

Right on Time

Product: NovaMate XT Transcoding Time Base Corrector and Frame Synchronizer
Description: Modular time base corrector
Price: \$1,650
Nova Systems, Inc.
50 Albany Turnpike
Canton, CT 06019
(203) 693-0238
Fax (203) 693-1497

FOR INFORMATION CIRCLE 6

Nova Systems has released the *NovaMate XT Transcoding Time Base Corrector and Frame Synchronizer*, which is available in NTSC, PAL and PAL-M versions. High-resolution processing includes a three-line adaptive

digital comb filter with 6MHz bandwidth that eliminates cross color, cross luma and dot crawl. The NovaMate XT features Y/R-Y/B-Y (Betacam or MII), Y/C (S-VHS and Hi8) and composite video inputs and outputs. RGB and U-matic dub input and output options enable complete transcoding among any of the analog video formats.

Transition Stage

Product: CD-ROM disks, Vol. 1
Description: A complete Transition program

Price: \$69

Micro R&D

P.O. Box 130

721 O St.

Loup City, NE 68853

(308) 745-1243

Fax (308) 745-1246

FOR INFORMATION CIRCLE 7

Micro R&D announces the release of a series of CD-ROM disks for the Amiga user. Volume one contains the complete Transition program, designed for multiple platform graphics conversion. The program includes a built-in batch processing capability, color correction, scaling and more. In addition, volume one features 79 professionally composed LightWave objects from Gateway Productions and the associated texture and reflection maps.

Real Timing

Product: Magic Lantern Version 1.5

Description: Creates animations in real time

Price: \$95

Terra Nova Development

P.O. Box 2202

Ventura, CA 93002

FOR INFORMATION CIRCLE 8

Terra Nova Development announces the release of *Magic Lantern Version 1.5*, which allows users to create, edit and display animations in real time in up to 16 million colors on a variety of display cards and all Amiga display modes. New features include



support for EGS animations in 8-, 16-, and 24-bit in all resolutions, stereo sound, an improved user interface and animations in a window.

All-Purpose Editing

Product: EDDi Pro

Description: A/B-roll editing system for Windows

Price: Under \$1,000

PALTEX International

2752 Walnut Ave.

Tustin, CA 92680

(714) 838-8833

Fax (714) 838-9619

FOR INFORMATION CIRCLE 9

PALTEX International has introduced the *EDDi Pro* A/B-roll editing system for Windows, which features slow-motion control; drag-and-drop edit point and Marks transfer; interfacing to all professional RS-422 VTR formats, including the entry-level BetaSP, S-VHS and MII machines; and compatibility with Creative Labs' Video Blaster video overlay card. The system also includes serial control of the Video Toaster in the standard package; other switchers supported include the GVG-110, Panasonic WJ-MX50 and Echolab's PC-3 and PC-A PC-mount peripherals.

Immerse Yourself

Product: Immersion Personal Digitizer

Description: Digitizes 3D objects

Price: \$1,595

Immersion Corp.

P.O. Box 8669

Palo Alto, CA 94309-8669

(415) 960-6882

Fax (415) 960-6977

FOR INFORMATION CIRCLE 10

The Immersion Corporation announces the *Immersion Personal Digitizer*, which allows the profile of 3D objects to be traced with a pen-like stylus and stored as a data set in standard formats. The digitizer interfaces with any computer system via standard serial port and reports data points with position resolution as high as 3,600 points per square inch.

Sounds of Music

Product: Max-Trax

Description: Buyout MIDI music

Price: \$39.95

Accutone Productions

944 Winchester St.

Medford, OR 97501

(503) 772-4890

FOR INFORMATION CIRCLE 11

Accutone Productions presents *Max-Trax*, royalty-free, buyout MIDI music for video production. The package offers numerous advantages



over conventional music on compact discs, such as complete interactive control over arrangement, tempo, instrumentation and mixing. Song files come on 3.5-inch MS-DOS disks that can be played back on any IBM-compatible computer with an acceptable sequencer program.

EZ Forecasting

Product: ezADvideo

Description: Time and temperature video displays

Price: \$145

Boone Technologies, Inc.

NEW UPDATE

Sequel Redux

Product: Sequel's Version 1.2
Description: Music sequencing software

Price: \$139.95

Diemer Development

12814 Landale St.

Studio City, CA 91604

(818) 762-0804

FOR INFORMATION CIRCLE 12

Diemer Development has issued an update to Sequel, its music sequencing software for the Amiga. In Version 1.2 of Sequel, the user can transpose note playback by semitones to accompany singers and musicians in all keys. In addition, songs that are chained together from separate files can now be unchained into one file, allowing players to overdub across the song's seams. Also in version 1.2, more user preferences are saved to disk, including the Metronome sounds and the color palette.

P.O. Box 15052

Richmond, VA 23227

(804) 264-0262 Phone/Fax

FOR INFORMATION CIRCLE 13

Boone Technologies has introduced *ezADvideo*, a complete hardware/software system for measuring temperature with the Amiga. Temperature data is collected using ezAD hardware and displayed by using ezADvideo. The program automatically generates text for the current time, temperature and date. An IFF image file can be loaded and used as a screen background image. The ezADvideo screen can be used alone, combined with other Amiga screens or genlocked with other video sources.

TOASTER TIMES

CIA Enlists the Toaster for Covert Operations

A dark-suited official standing on a busy Washington D.C., street corner holds a book-size black box. No one notices him as he blends in with the bustling crowd that evacuates the Pentagon for lunch. Finally, a limousine arrives and he jumps in.

The man, an imagery analyst/briefer for the CIA, shows the senior policy maker the black box, which is actually a Video Walkman, a portable 8mm, Hi8 VCR

Profile

with a built-in monitor. The analyst begins to brief his companion on a controversial political figure on the small device and just about anybody—from Nelson Mandela to Fidel Castro—could be on the screen.

These days, the CIA is just as aware of the evolving digital information age as any Silicon Valley tech company. The agency has a special appreciation for desktop video and audio applications that aid its mission to educate government officials quickly.

Darryl Garrett, division chief of the Office of Imagery Analysis (OIA, a part of the National Photographic Interpretation Center affiliated with the CIA), introduced Amiga/Toaster technology to the Office of Leadership Analysis in the late '80s. The Leadership system was based on an Amiga 2000, which Garrett would use to present scanned photos of foreign leaders for slide-show briefings. The Toaster was added

in 1991. In the past several years, Garrett built a complete production suite for the OIA, which includes several Toaster 4000s and 2000s, two Sony Betacam SP decks and a VHS deck.

"If you are trying to introduce a person to a senior policy official, video gives you the advantage of how someone looks and speaks and their body language. It's more advantageous than print media. When I was a research director in the CIA, I tried to convince management to use desktop video. I was arguing that we should try to use video more effectively since we had such a short time to work on most projects," Garrett said.

With such a pragmatic view, Garrett was not looking for impressive gadgetry to impress officials during lunch briefings, but rather a way to produce a wide variety of visual products for the agency. The OIA's DTV lab creates five- to 10-minute video presentations that include satellite imagery maps, line drawings and narrated animations. The OIA also uses the Toaster to integrate photo maps, 3D models and computer-aided design into a complete presentation.

In contrast to the communication problems between many government agencies, Garrett said that the DTV lab works closely with the imagery analysts who follow the issues of different countries. The lab is responsible for creating effective media presentations. When an analyst has

a particular concept in mind, Garrett organizes a planning meeting to determine what graphics and other visuals are to be used and what audience will be targeted. The imagery analyst is then

responsible for writing the script which is reviewed by the branch chief.

"We try to put the imagery analyst in the director's chair. They don't have to run the Toaster. That's left up to our production staff. It's a very collaborative effort," Garrett said.

The OIA's digital tools don't stop with video: The CIA productions are scored with the help of the AD1012 (from SunRize Industries), a four-track, 12-bit audio card that works with the Amiga. He said the OIA relies on the hard-disk recording system to

continued on page 13



The Office of Imagery Analysis is a component of the National Photographic Center, which is affiliated with the CIA.



Mike Kelly (left) and Kimberly Davidson work on a project for the CIA. The pair produces about 30 intelligence videos each year.

Doctor Educates Patients in Surgery

Video Toaster Serves as Key Tool

Josh Moscov

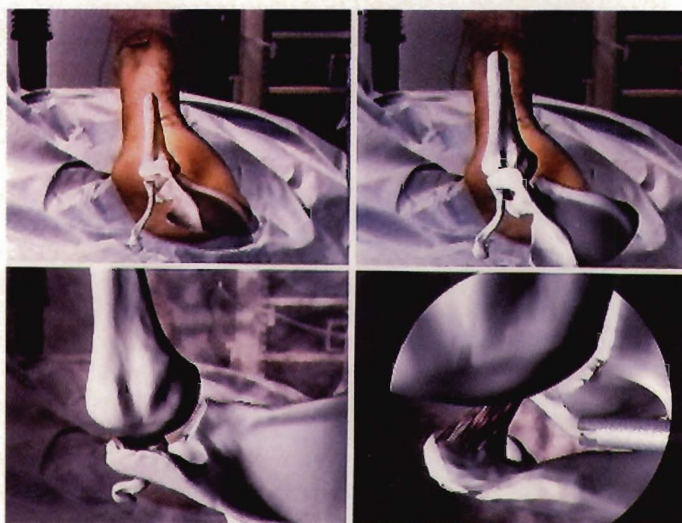
As the health care industry continues to be made impersonal through a bureaucracy of insurance companies and health-maintenance organizations, an orthopedic surgeon in San Francisco has found a way to make his medical practice more personal and understandable.

Thomas G. Sampson, M.D., of the Pacific Orthopaedic Medical Group, invites his patients to explore their injuries with him through video technology. With the help of an Amiga 2500, Toaster 2.0 software, various cameras and five monitors, Sampson videotapes all of his arthroscopic knee and shoulder surgeries for research purposes and to provide the patient with a lasting medical record.

His "miniature television system" also makes it possible for the patient to watch the procedure as it is performed and ask questions at any time.

"I've always wanted to use a format that could help teach the patient—one that was humane. This setup satisfies that," he said.

How did Sampson begin integrating video into the operating room? With an interest in computer graphics dating back several years, he became intrigued with the



The arthroscopic view of a shoulder surgery as seen in a medical video.

capabilities of the Amiga 2000 at a Bay Area computer fair. Purchasing an Amiga 2500, Sampson—an assistant clinical professor at the University of California at San Francisco—began working with DeluxePaint to make

Profile

lecture slides.

These days, the Toaster is the pivotal piece of equipment in Sampson's system, and he calls upon it for many tasks—even for those of a clerical nature. Prior to surgery, he uses the character generator to type the patient's name, the problem to be

addressed and the anticipated procedure. He then records the information on S-VHS tape along with an explanation of what will happen in surgery. Both are included as part of the soundtrack on the patient's video.

During an arthroscopic procedure, Sampson uses the Toaster in conjunction with a Sony E9000, the external camera that he relies on to view the point of surgery, and an arthroscopic camera that looks through the arthroscope (a 4mm telescope), so he can examine the inside of the joint. Sampson actually watches a monitor that has the images from both cam-

eras running simultaneously during the entire procedure; his eyes are always fixed on-screen. Three other monitors are used for the output from the Toaster screen, Preview and Program.

Sampson can also record still or "med" images that he views on another monitor. By stepping on a pedal, he can make a digital recording of these interesting surgical problems, which can later be included in his operative report.

The essential part of the system, though, is the Toaster's Switcher, which gives Sampson the ability to view the images of both cameras or choose one over the other. "When I'm doing a procedure and want to switch from camera to camera, I can have the anesthesiologist do a transition just by hitting the space bar on the Toaster," he said.

While this educational approach to surgery is not suited for everyone, Sampson indicated that most of his patients decline general anesthesia to remain conscious and have subsequently responded positively to the experience.

"I thought it would be interesting (to watch the surgery). In the beginning, it was less comfortable, but he (Sampson) talked to me and pointed things out," said Dara Murphy, a 30-year-old knee patient of Sampson's. "I would definitely do it again."

VTU

OIA continued from page 12

edit the buyout music used for video introductions and titles, and to record sound effects and narrations.

Garrett noted how effective the AD1012 was during a project that required military drum music. Since the piece was too short, the OIA video specialists digitally recorded

the music and then inserted a section to fill space at the end. "It was very easy to accomplish with the SunRize editing tools," he said.

Once the audio and video are in sync, many of the agency's completed productions are broadcast on the Defense Intelligence Network

(DIN). Referred to as "a classified CNN" by Garrett, DIN is a television network that broadcasts from the Pentagon to the military throughout the United States. Garrett said there are plans to expand the system worldwide, which would greatly benefit his efforts to inform.

"When we do our videos, we call up the DIN. We have a relationship with the schedulers, and they pick up our product," he said.

"It's a quick and timely way to disseminate information to a large audience."

VTU

DEAR JOHN

Third-Party Software

Using IFF Images for LightWave



by John Cross

Since most manuals don't include sections on experimentation, it's up to the more daring Toaster users to create their own chapters. This month's questions deal with taking your Toaster to a higher level.

Q: I have a pressing issue which needs addressing. I just got a Toaster 4000 along with some editing equipment. I can't figure out how to make the most of this setup.

I want to maximize the TBCs in my two VTRs. I want to use a camera to provide the signal for Toaster input 1 and send the player VTR into the second input.

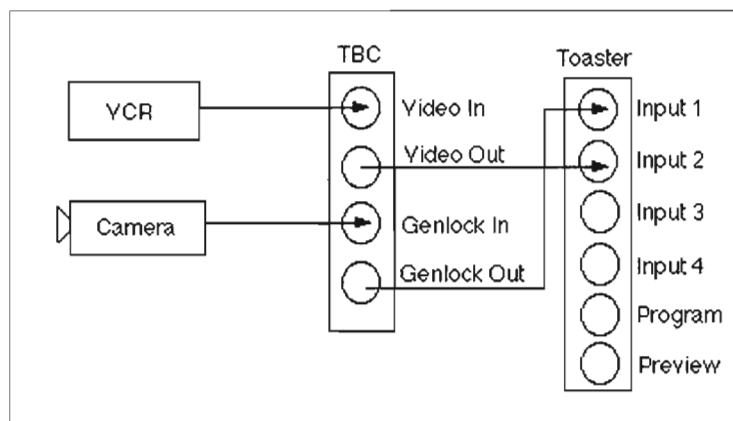


Figure 1: A typical, single camera plus VCR hookup to the Toaster.

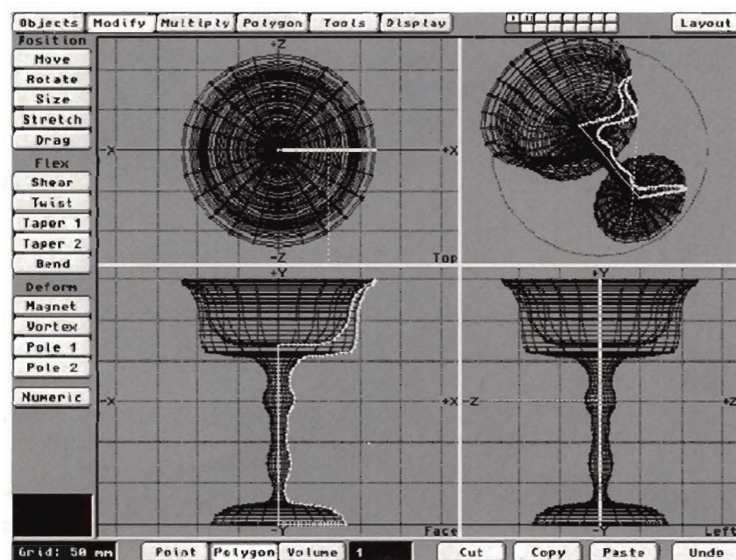


Figure 2: The Sketch tool was used to create the polygon that was lathed to produce this goblet.

In the past, when I had my Amiga 2000HD, Toaster 2.0 and two TBC cards, I used two prosumer AG-1960s. I could use the camcorder as a signal and my player VCR as the second source. I could also slip a videotape into the camcorder and use it as two sources, and the TBC would let me blend the video together.

I now have a Panasonic AG-7650 and AG-7750 with an AG-A770 controller. The VTRs both have TBCs and time code. The manuals that come with the equipment do not do me justice. Please help.

Leo Reyes

Videomix Video Graphics
Austin, Texas

A: In order for the different pieces of equipment to work properly with each other, you need to supply a genlock or sync source to all. You can use your camera source as a sync input to the player deck's TBC, since a camera feed (not a tape playback) is a steady electronic signal.

Ideally, you can use a blackburst signal (or equivalent) to supply sync to both the camera and the deck's TBC. Of course, this assumes that there is a genlock or sync input on the camera.

Let's assume the camera doesn't have a sync input, and you want to use it to sync up the play deck. Here's how to connect it through a standalone TBC:

1. Connect the video out of the camera into the sync or genlock in on the player's TBC.
2. Next, connect the sync or genlock out of the player's TBC into Toaster input 1.
3. Connect the player video out into video in on the TBC.
4. Connect the video out of the TBC into Toaster input 2.

That's all there is to it. With your specific deck, however, the process is a little different. The built-in TBC is only used to time base correct tapes played from that deck. There's no need to run a video out from the deck into video in on the TBC. It is connected internally. Just run video out into Toaster input 2. (Connect the camera as described.)

If you play a tape through the camera, run that through a separate TBC. If your camera has a built-in TBC, run the video out into a Toaster input, assuming that the camera is synced with the other equipment. If not, you can run the camera video out into the video in of the standalone TBC and then the video out of the TBC into the Toaster. Again, all TBCs and equipment must be connected to the same sync signal to work properly.

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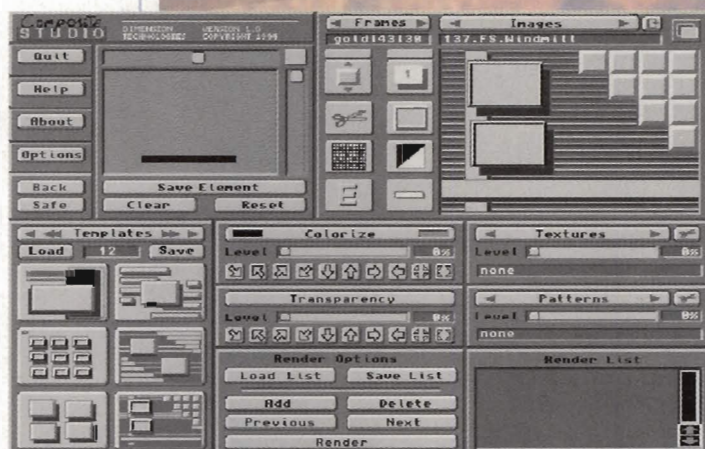
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DEAR JOHN

The main thing to remember about hooking up video into the Toaster is that input 1 supplies sync to the Toaster. Because of this, connect the most stable source here. Ideally it should be a camera feed or a black-burst signal. A tape source is not always the best option because the tape must be playing when you boot the Toaster.

Q: I recently purchased a Toaster for my Amiga 2000. I am interested in having my LightWave-created spacecraft models fly over realistic mountain scenery. Is it possible to use such programs as Scenery Animator (Natural Graphics) or VistaPro (Virtual Reality) for my animations?

Jeffrey Sibinski
Skidazzle Graphics
Coon Rapids, Minn.

A: No problem. Any program that lets you save IFF images can be used to create images for LightWave. What you need to do is use a sequence of images as a background for your LightWave-generated ship. Here's how:

Render the images from your favorite program (preferably at 752x480) and save them all into a directory on your hard drive. In LightWave, simply select Load Sequence in the Images panel and select the directory where the images are stored. Then select one image so the name is inserted into the File field at the bottom of the requester. Here's the important part—make sure to delete the last three digits at the end of your filename before selecting OK. For instance, let's say the images are rendered as Mountains.001, Mountains.002, etc., and you selected Mountains.024 as the filename. You need to delete the 024 so the filename reads Mountains. (keep the decimal point). After saying OK, your Current Image field should read "Mountains. (sequence)."

Remember, delete only the last three digits. If your images were named Mountains0001, Mountains0002, etc., use Mountains0 as the filename.

To use this image sequence as the background, choose the Effects panel (Background in Toaster 2.0) and select "Mountains. (sequence)" as your back-

ground image. LightWave then loads each image on a frame-by-frame basis (Mountains.001 for the frame 1 background, Mountains.002 for the frame 2 background etc.). Any objects in the scene appear in front of the background, so your task is to animate the spaceships so they appear to be flying over the background. You could try to match the camera moves from your scenery-generation program with LightWave's camera to achieve a more realistic animation.

Two tips for using image sequences:
1) Turn on Show Background Image in the Options panel to display the current background frame in the camera view.
2) Use Frame Offset in the Images panel to change which frames your sequence plays on. If you want frame 1 of the image sequence to appear on frame 25 of the animation, use a -24 frame offset.

If you want the spaceship to fly through the terrain, you must convert the terrain objects into a format that LightWave can understand. If your scenery-generation program can save objects in LightWave or VideoScape format, you can load them directly into LightWave; otherwise an object-conversion program such as InterChange Plus or Pixel 3D Pro is needed.

Q: I have been a Toaster user for nearly three years and recently added an Amiga 4000 with a Toaster to complement our Amiga 2000. I am fairly comfortable using all of the features with the exception of LightWave's Sketch command.

It would be helpful if you could give some examples of how Sketch can be applied.

Frank Hibbard
Senior Training Analyst
CNT Corporation
Maple Grove, Minn.

A: Sketch is a useful new addition to Modeler 3.0. This tool allows users to draw freeform shapes and turn them into either curves (splines) or polygons. I often use Sketch when I need to create mountain ranges or hills in the background or extreme foreground (so long as only the front of these objects are seen). We call these "terrasons" (terrain-polygons). These single-polygon mountain ranges can be mapped with a rock texture which gives them a convincing look.

Plus, they render quickly and take little memory because they are simple.

Sketch is probably most useful when creating splines in a particular shape. I often use Sketch in combination with BG Image (Display menu) to draw splines to fit the shape of a side or front image of a model.

Here's how Sketch works: After clicking on Sketch, the cursor changes into a pencil. Draw a shape in any view and click Make or hit the Return key. By default, Modeler creates a spline that follows along the shape you outlined. This is a great way to draw splines, and then you can modify them by moving points around.

Use the Sketch tool to create a polygon instead of a curve by simply clicking on Numeric (n) after selecting the Sketch tool and before or after drawing your shape. When the Draw Freehand requester appears, select Curve (default) or Polygon. Additionally, you can select the plane at which the curve or polygon can be created. For instance, if you select 10 for Plane, units are set to meters, and you draw the shape in the Face view (Z axis), the final curve or polygon would end up located at +10 meters on the Z axis. Similarly, if you select -10 for Plane, the curve or polygon would end up at -10 on the Z axis.

Some additional notes: The slower you draw the shape, the closer the points can be when creating polygons. Also, the first and last points drawn can be connected by a straight line when creating polygons. Curves are created open-ended. You often need to delete points after generating polygons with the Sketch tool, especially when you want straight lines.

VTU

John Gross is an animator for Amblin Imaging and editor of LightWavePRO. Questions can be sent to him care of Video Toaster User or electronically at 71740,2357 (CompuServe), Bubastis (America Online) or jgross@netcom.com (Internet).

EDITORIAL EVALUATION

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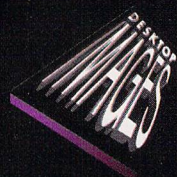
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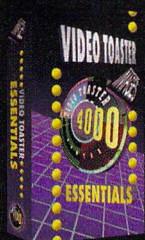
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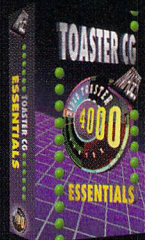
DESKTOP IMAGES INSTRUCTIONAL VIDEO TAPES THE FAST AND EASY WAY TO LEARN THE VIDEO TOASTER

VIDEO TOASTER 4000 & 3.0



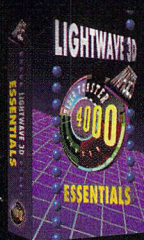
A step-by-step guide to the Video Toaster's digital video effects, set-up functions, ChromaFX and luminance keyer.

90 minutes



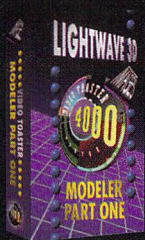
Complete instruction to ToasterCG's powerful text capabilities including font sizing, color brush loading, background & layering options.

100 minutes



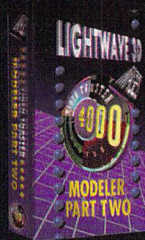
Discover the power of LightWave as basic 3D animation is explored. Learn scene creation, key framing, design and editing techniques for amazing animations.

120 minutes



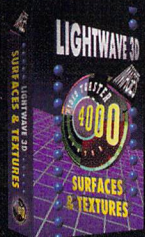
Create & modify basic shapes, making polygons with the freehand draw tool, using layers, creating text objects and assigning surfaces.

100 minutes



Change the shape and aspect of objects with modify tools, bending titles and logos, creating terrain using rail extrude, clone and lathe to create complex objects.

100 minutes



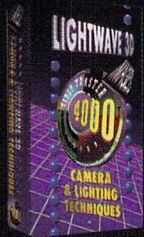
Professional surface and texture techniques, creating surfaces and increasing render speed by selecting the proper surfaces for your objects.

115 minutes



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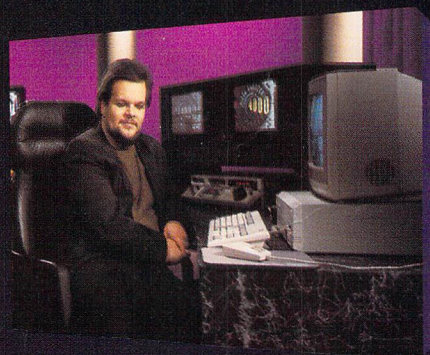
100 minutes



Give your animation depth and realism with camera placement & effects, lighting selection, envelopes and animation techniques.

120 minutes

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VIDEO TOASTER 2.0



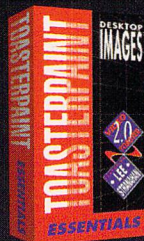
A comprehensive guide to the Video Toaster's swither and special effects, maximizing memory usage, ChromaFX transitions, and combining effects.

85 minutes



An easy step-by-step guide to the Video Toaster's character generator, font and palette controls, text file loading, and ToasterPaint CG backgrounds.

59 minutes



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62 minutes



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59 minutes



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120 minutes



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90 minutes



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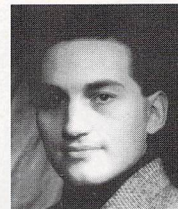
FOR INFORMATION CIRCLE 108

TIPS & TECHNIQUES

Get Bent out of Shape

Using the Right Tools for Curves

by Brent Malnack



Need a displacement map to make a fish swim or a strip of film curve? You'll need a "sine-wave" gradient that changes from black to white to black in a smooth, curved fashion. Most paint programs produce linear gradients that can break your fish's back, so to speak.

First, in a paint or image-processing program, make a linear gradient that goes from black (0,0,0) at the bottom, to white (255,255,255) at the top. (Art Department Professional's Backdrop Loader works

great for this.) The image should be 256 pixels high and approximately two pixels wide (slightly wider is OK). Save the image. To reduce memory usage, it can be converted to grayscale and saved as an 8-bit file.

In Modeler, make a curved strip (with multiple polygons), somewhat like a road that starts down in a valley, goes up over a hill and down into the next valley (Figure 1). Experiment with the Plot 2D and other similar macros to get a smooth, symmetrically curved strip. Name the polygon's surface and save the object.

Load this strip into Layout and assign the linear gradient as a Planar Image Map (Pixel-Blending off) so it makes the lowest parts of the strip black and the top of the hill white. This can be accomplished by adjusting the texture center until the white parts of the image hit the top of the hill, while the darker sections fall off both sides.

Depending on your object's orientation, this axis of projection can vary. The example image here benefits from a Y axis projection. Turn luminosity up to 100 percent.

Turn the camera zoom setting up to around 80 and position the camera directly above the hill and aim straight down so the strip runs across the screen from left to right and uses up most, but not all, of the screen's width. Set the background to a medium-bright color so you'll be able to see the ends of the strip clearly. Turn Dithering off. Render and save one RGB image in medium resolution.

Returning to the image-processing program, crop the 752x480 image to the width of the strip and at least one pixel high. Save the image and you're finished.

This image can then be used as a displacement map on the filmstrip (Figure 2). When applied to the flat filmstrip object, notice that the size of the displacement map repeats, causing a smooth flow. This is accomplished by setting the size of the displacement map to be smaller than the length of the object. Used in conjunction with a Texture Velocity, the displacement map can cause motion. This can give the appearance of a flag waving, a fish swimming or a filmstrip curling up and down during the course of an animation.

James G. Jones
Nibbles & Bits
Colorado Springs, Colo.

Dejuicer

When you're on a shoot, sometimes there's a need to use only a fraction of the juice in your Panasonic AG 450, 455 or 460 battery. What if you want to charge the battery so it will be ready for the next shoot with-

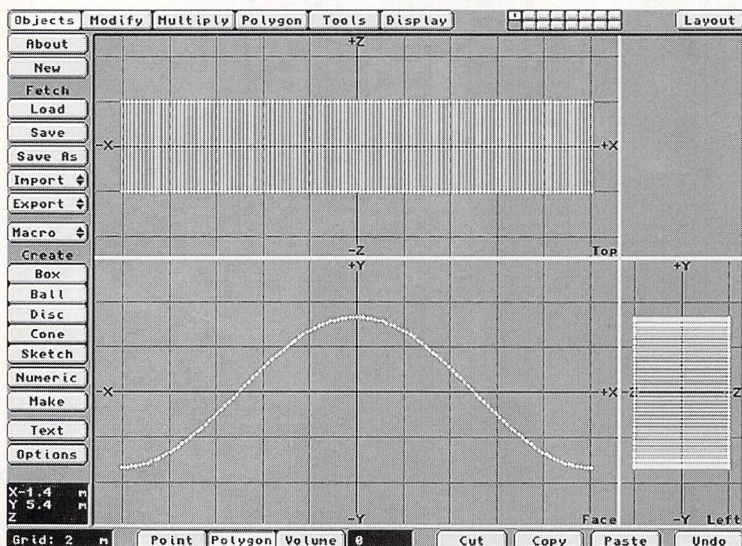


Figure 1: Make a curved strip in Modeler.

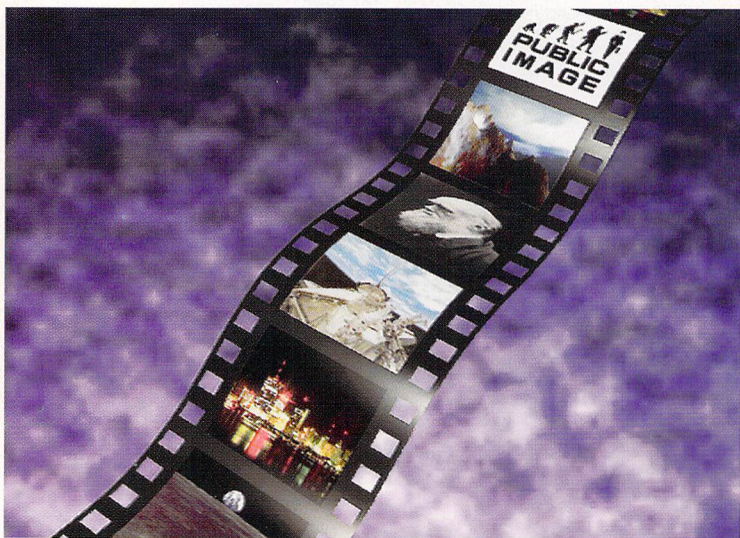
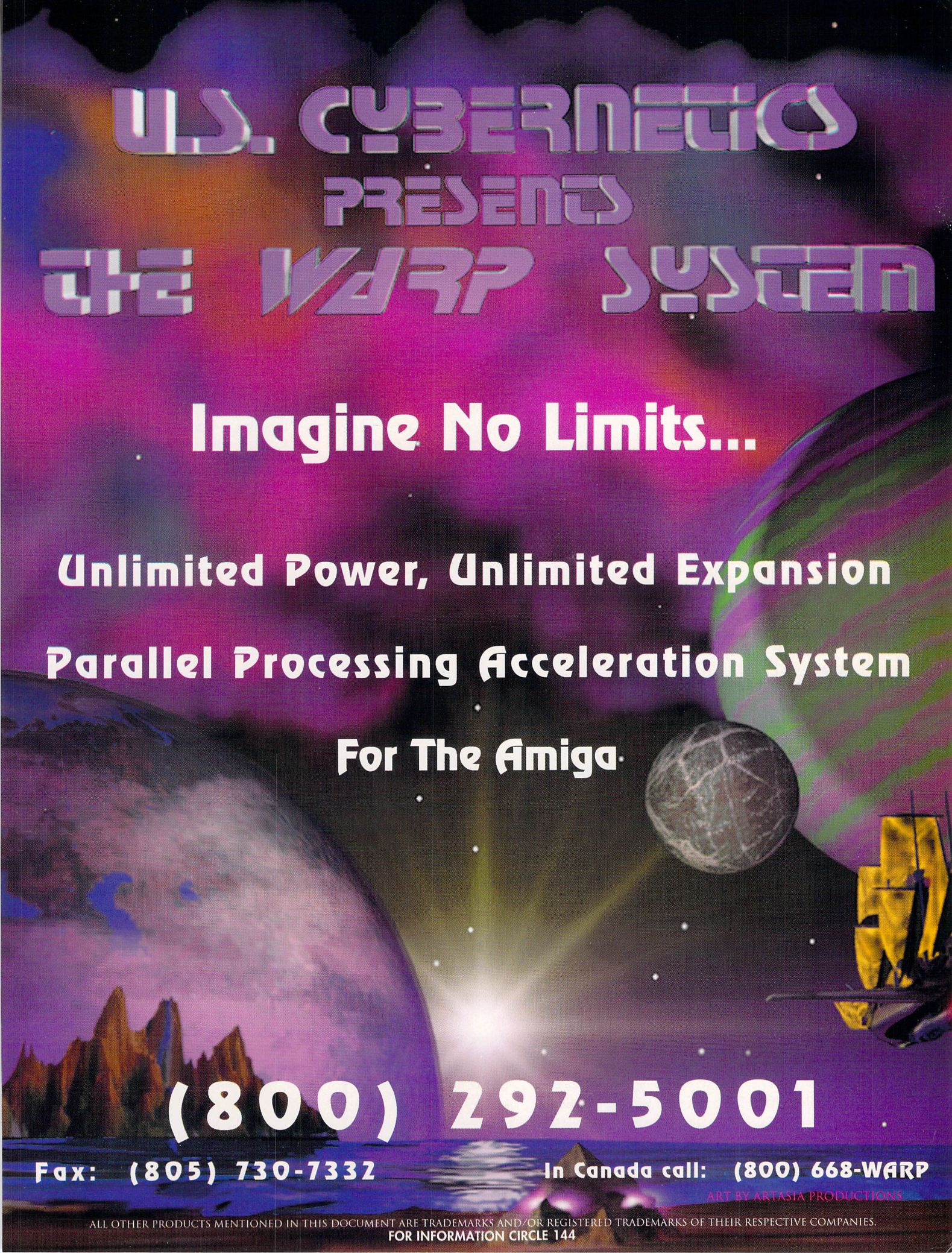


Figure 2: A "sine-wave" gradient applied to a filmstrip.



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FOR INFORMATION CIRCLE 144

TIPS & TECHNIQUES

out creating a memory problem?

Here's a money-saving tip: Go to a local discount store and buy a No. 4651 headlight. Squeeze the prongs on the back so it grips the battery. Let it discharge the battery completely before recharging. This process even revived an old NiCad battery that was given up for dead. The first run-through took about a half-hour, then it was repeated. Always remember, for longer life, let your batteries cool before recharging.

Ed Vinson

Vinson Media Group

Keokuk, Iowa

More Speed Hints

Even with a 33MHz, '040 system, LightWave 3D rendering seems to take forever. Here are some tips that take seconds off rendering each frame, which could make a significant difference on a large-scale project.

1. Turn off the Render to DV1 option found in the Record menu. This saves the three to four seconds it takes for LightWave to update the

Toaster's framestore buffer. Of course, the rendered images won't appear in the framestore buffer, but if the job is rendering overnight, there isn't a need.

2. Another one second per frame can be saved by shutting down all other programs running in the background (such as a virus checker or Workbench management system).
3. If your system is equipped with a removable media hard drive (SyQuest or Bernoulli), render images first to a regular hard drive then transfer them to the removable media drive. These drives' I/O processes are slower than a regular drive, making your system wait before it works on the next frame.
4. Some programs, such as MorphPlus, recommend moving the render screen behind the Workbench screen by holding down the left Amiga and m keys during the rendering process. It usually quickens the rendering process since screen updates are no longer necessary. LightWave users should not do this,

because it slows down the rendering process by one to two seconds per frame.

5. Only model and apply surfaces to objects that will be seen in your animation. For instance, it's not necessary to apply surfaces or textures to the backside of an object if it's never going to be seen. This is true for polygons as well.

Jim Stockton

Bellevue, Neb.

Creating Flick Files

I recently created an animation to play back on a PC. The logical step would suggest creating the animation on the PC with a program like 3D Studio.

However, this particular animation would be easier to set up in LightWave so I used the Toaster. The best-quality, PC animation format is the .flc format (referred to as Flick files). Although they don't compress as well as other choices, there is a reasonable chance that quality animation can be achieved.

Flick files can be generated in either low resolution (320x200), or a high resolution such as 640x400. Using a medium-resolution rendering from LightWave (with no Overscan) produces images in the proper resolution. Flick files are limited to 256 colors, so try viewing the rendered frames as 256 color images in Art Department Professional first. This helps set the best colors for rendering.

Next, converting the rendered LightWave frames into a Flick file can be accomplished in a couple of ways:

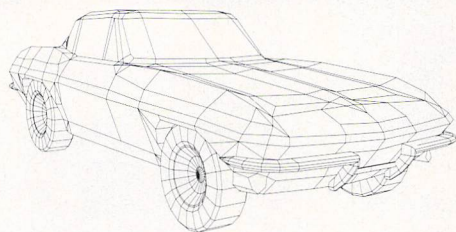
ImageFX from Great Valley Products generates .flc files quickly, but I had trouble with clutter at the bottom of the frame. Imagemaster R/t from Black Belt Systems does a much better job, but takes much longer. Converting 150 frames took six hours.

Remember, Flick files get quite large. The 150-frame animation I converted required more than 31MB. To view Flick files on the Amiga, try using a public-domain program called AmiFlick (I found it on Compuserve), which allows Amiga users to view any Flick file and export the frames as IFFs. An IFF-to-Flick converter is currently in development.

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DR. VIDEO

Horizontal Timing

Conventional Versus the Toaster

by Rick Lehtinen



A

fter showing how wiring problems can affect system timing in last month's column, it's time to review the impact of horizontal timing.

This month, I'll begin with a comparison of conventional system timing and Toaster timing. To time a conventional system, route the switcher output directly to the waveform monitor. It's important that no processing amplifiers be in this circuit (Figure 1).

Set the input of each source to a standard signal, such as color bars. To test VCRs, insert a videotape with recorded color bars in each machine as it's tested. Alternatively, each machine could be placed in EE mode with bars routed to the input, but the decks shown here are player only.

Play back the tape, slowly wiping between it and the bars signal using a standard vertical wipe. While viewing the waveform monitor in 2H mode, watch for disturbances in the waveform at the position of the wipe as it moves through the signal (Figure 2). If there is a horizontal displacement, the tape machine is mis-

timed. Adjust the H phase control on the TBC, whether it is built into the VCR or a separate unit, until the displacement goes away. Repeat the procedure with the other devices connected to the switcher.

That's the regular way, but Toasters are different. There is a built-in processing amplifier that uses the sync that appears on input one, regenerates it and uses it as the output sync for each of the other three inputs. If the waveform monitor were hooked up as shown in Figure 1, the relocked and reapplied sync would fool our measurements. Instead, each of the inputs must be timed to a common reference point. All of the timed inputs can then be connected to the Toaster.

Figure 3 shows how to do it. First, the wire feeding Toaster input one is connected to the waveform monitor input A. It is looped through to the reference input to the waveform monitor and terminated. This means that the waveform monitor reference signal is effectively what is on input one. Try to keep the cable between the loop-through cable short, about six inches or less.

Next, route the wire coming from the source feeding

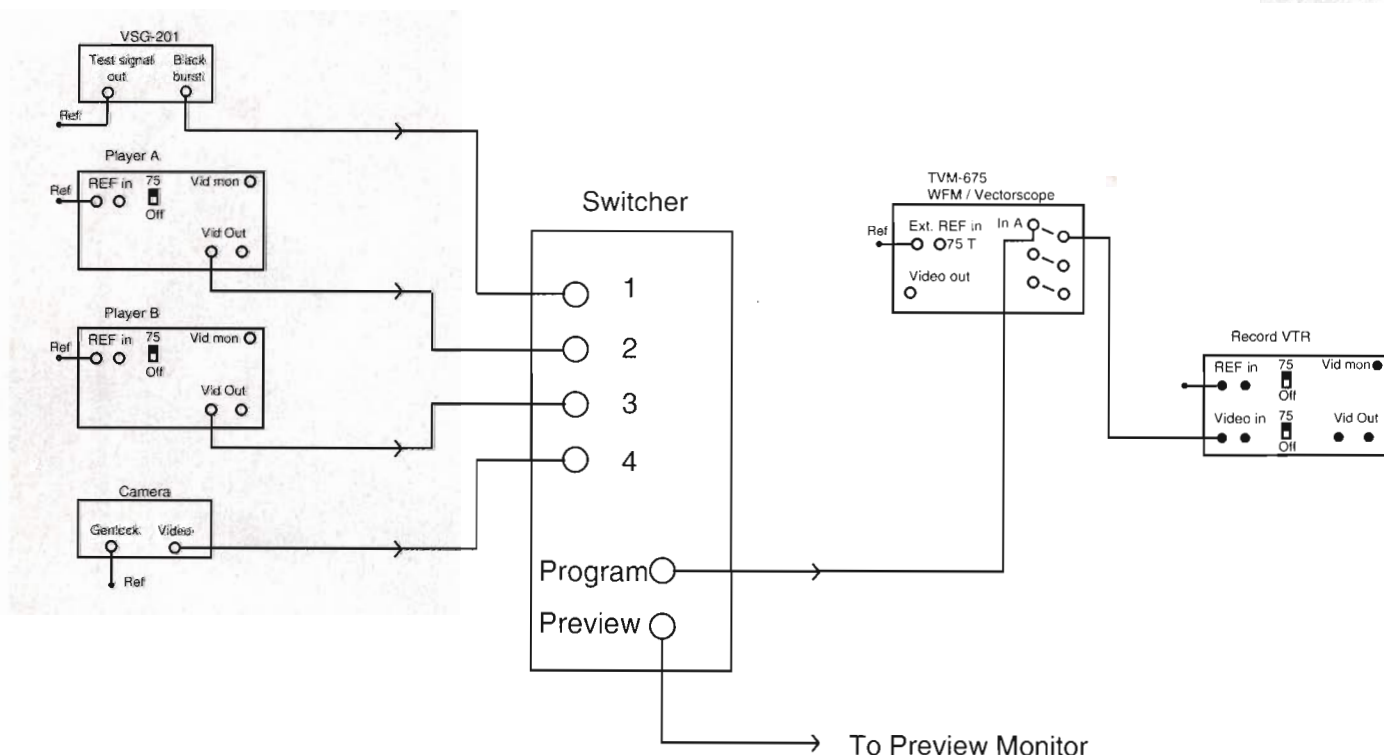
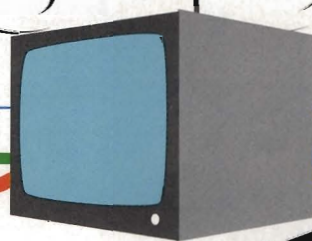


Figure 1: If the Waveform monitor were hooked up as shown, the relocked and reapplied sync would fool our measurements.



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FOR INFORMATION CIRCLE 121

DR. VIDEO

Toaster input 2 directly to waveform monitor input B and terminate it. In the drawing, this is shown with two matched extension cables. This makes the process easier, but increases the likelihood of error.

This is where the Toaster would sit in the system if it were hooked up. Instead, use a waveform monitor to time the sources and place them in phase with each other, then put the Toaster back in the circuit. Check the timing by rapidly switching between waveform monitor input channels A and B (Figure 4). When there is a displacement between the two, horizontal timing is incorrect. Adjust the H phase control until it's possible to switch freely between A and B without noticing a displacement. (There is a catch; make sure the waveform monitor is in external reference mode. Otherwise, both inputs can lock up in the same position on the waveform monitor display, tricking you into thinking that the job is complete before it began.)

When H is finished, it's time to tackle the subcarrier (which I'll talk about next month).

Q: Should the sync select switch on my tape machines be in the normal or external position?

D.C.

Wayne, N.J.

Rx: For most cases, external is best. This allows all the machinery to be hooked to a signal-control computer. If you run your decks internally referenced, there is no guarantee they will remain locked together. They may drift in frequency up to the tolerances of the individual units.

Q: I have a VHS deck, an 8mm deck and a Sony Betamax, all consumer grade. Is there any way to insert time code so I can use a software editing package and get away from the tedious record, rewind and try-again grind?

D.P.

Longwood, Fla.

Rx: Time code could be recorded on any unused audio track, but that only gives a location on tape and wouldn't provide machine control. For the most part, consumer

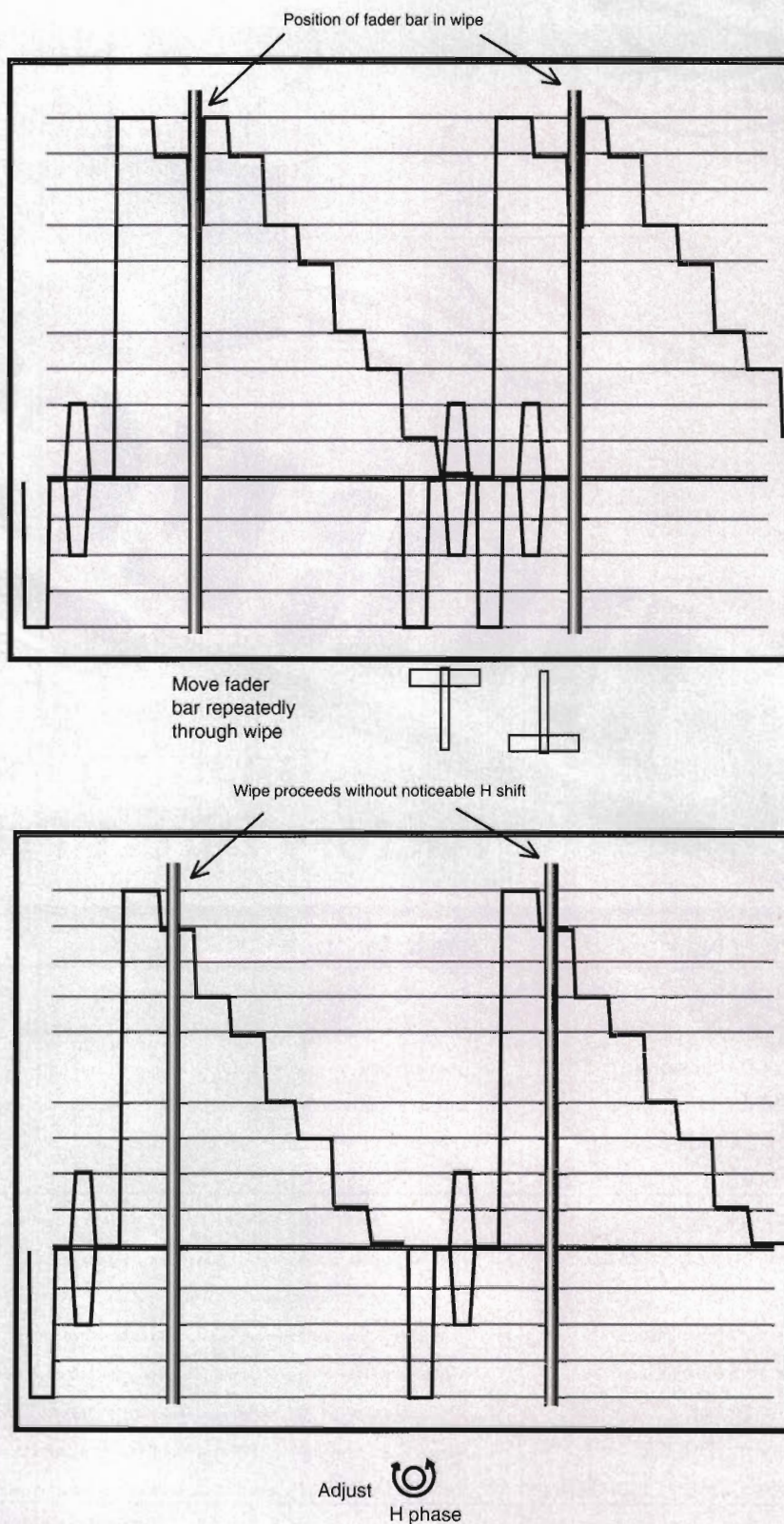


Figure 2: While viewing the waveform monitor in 2H mode, watch for disturbances in the waveform at the position of the wipe as it moves through the signal.

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FOR INFORMATION CIRCLE 135



DR. VIDEO

decks are not typically set up for external control.

However, there are a number of companies that specialize in controlling lower-priced decks. These systems make use of Control-L, Control-S, Matsushita 5-pin or some other control port. Other systems drive VCRs by synthesizing the infrared signals that emanate from a handheld remote control unit.

The disadvantage to such systems is that they are not frame accurate. However, they're an improvement over the line-'em-up and knock-'em-down paradigm you are currently using. A couple of companies to check out are Videonics and Future Video.

There is a little trick to make editing decisions easier. Use a camera to photograph the tape counter and set up a super using either a box wipe or the key function of your Toaster. Now make a copy of your field tapes onto a work print reel to design a rough cut list. Record the dub through the Toaster to obtain a "burned-in" time reference. Next, off-line shuttle through the work print, logging scenes and selecting the best available. Come next morning, your post-

production chores will be much easier because you not only know what to do, but you also have time code numbers to point out desired scenes quickly.

Q: I had a tape rejected at a local TV station because they said there "was a problem with the breezeway." What does this mean?

K.L.
Jefferson City, Mo.

Rx: More than likely, you are facing a case of Toaster prejudice. The breezeway is a small portion of the horizontal sync interval (Figure 5). It is important that there be a breezeway, but since it is measured in nanoseconds, it is unlikely that an out-of-spec breezeway would hurt anything.

I've shown several other items in the drawing. The H blanking interval is a period of blacker-than-black used to eliminate retrace lines between horizontal scan lines. Included in the blanking interval are the front porch and back porch. The color-burst package sits on the back porch, following the breezeway. Of course, a vital part

of the H blanking interval is the horizontal sync pulse. This instructs the monitor to back up and start a new scan line. Making all of the H sync pulses occur at the same time is the purpose of system timing.

Q: Are PC, card-mounted waveform monitors and vectorscopes better or worse than external units?

E.S.
Seattle

Rx: Mounting a video test and measurement device in a PC makes sense for several reasons:

1. It does away with the expensive and cumbersome oscilloscope tube used on conventional waveform monitors and vectorscopes.
2. It eliminates the several manufacturing steps involved in fabricating the chassis and front panel.
3. It doesn't require any potentially dangerous high-voltage circuitry.
4. They are typically lower in cost than conventional scopes.

On the downside, however:

1. It ties up a PC card slot that could be used for other production functions.

continued on page 28

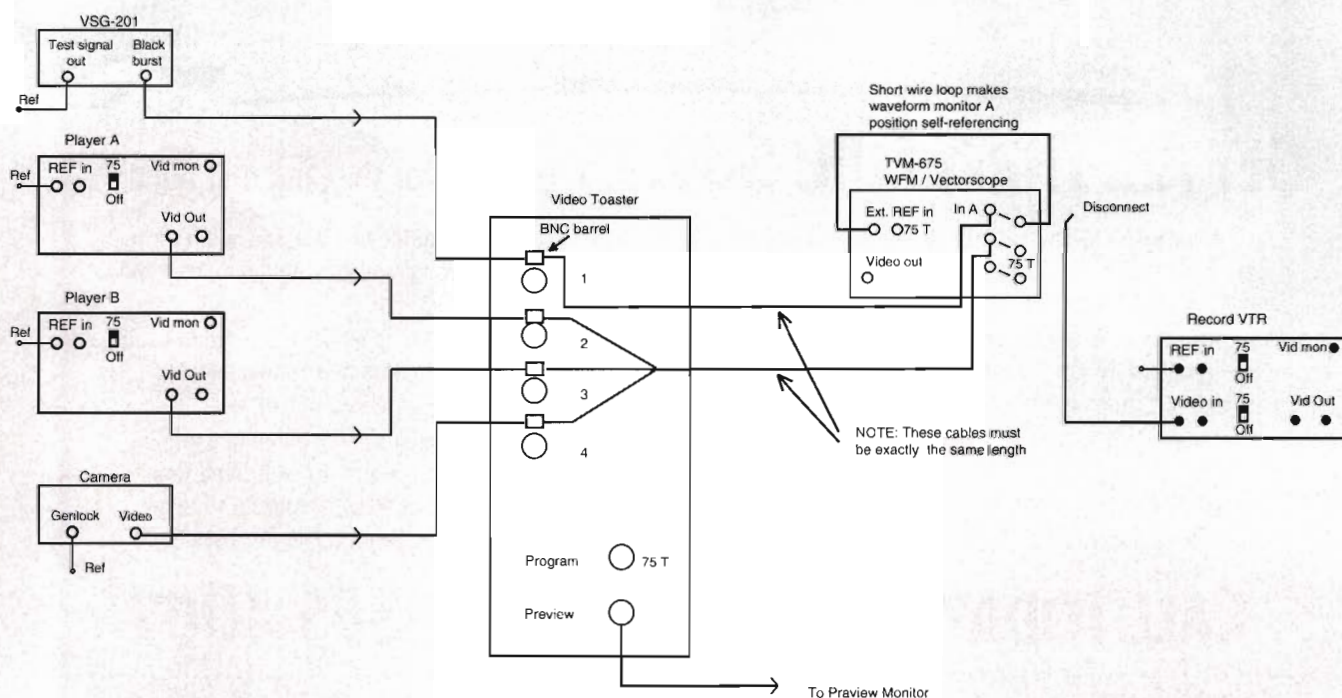


Figure 3: Connecting all of the timed inputs to the Toaster allows the built-in processing amplifier to serve as an output sync.

THE DOMINO THEORY.

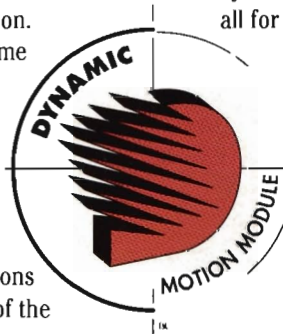


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FOR INFORMATION CIRCLE 136



DR. VIDEO

2. It ties up a certain amount of display space and processor cycles.
3. The interface (the back panel where the connectors plug in) is rarely as beefy as in a conventional scope.

As a result, both PC and conventional scopes have their niche.

There are hybrid systems available from several manufacturers which feature the measurement and operator tools of a conventional scope, but use standard video monitors for display devices. Some of these include sophisticated alarm capabilities, which are ideal for situations where quality is critical.

A good waveform monitor lasts for decades and can easily be brought back to its original performance (until the specialized CRT gives out). This durability means that nothing can take the place of a conventional waveform monitor and vectorscope, where one is truly needed. However, there are plenty of situations in which the ruggedness of the conventional scope is not required. In these situations, the modern alternatives shine.

Q: Will the liquidation of Commodore affect me as a Video Toaster owner?

G.S.

Redwood City, Calif.

Rx: Yes and no. Obviously, you should be concerned that the future of the Amiga is uncertain (as we go to press, anyway). This could be devastating if supplies run out and you were planning to expand. However, "The Commodore Question" has been on the lips of NewTek and third-party developers for months, maybe years. The people who provide your equipment saw it coming.

Rest assured, NewTek hopes to sell Video Flyers into the installed base of Toasters. This means they'll make concrete plans and take the necessary steps to protect and further increase their customer base.

However, there is a glitch. Some sources report that the Commodore 1084 monitor used as the Toaster preview screen is no longer available. It is a CGA-style monitor, and the Korean factory supplying it has moved on to other projects.

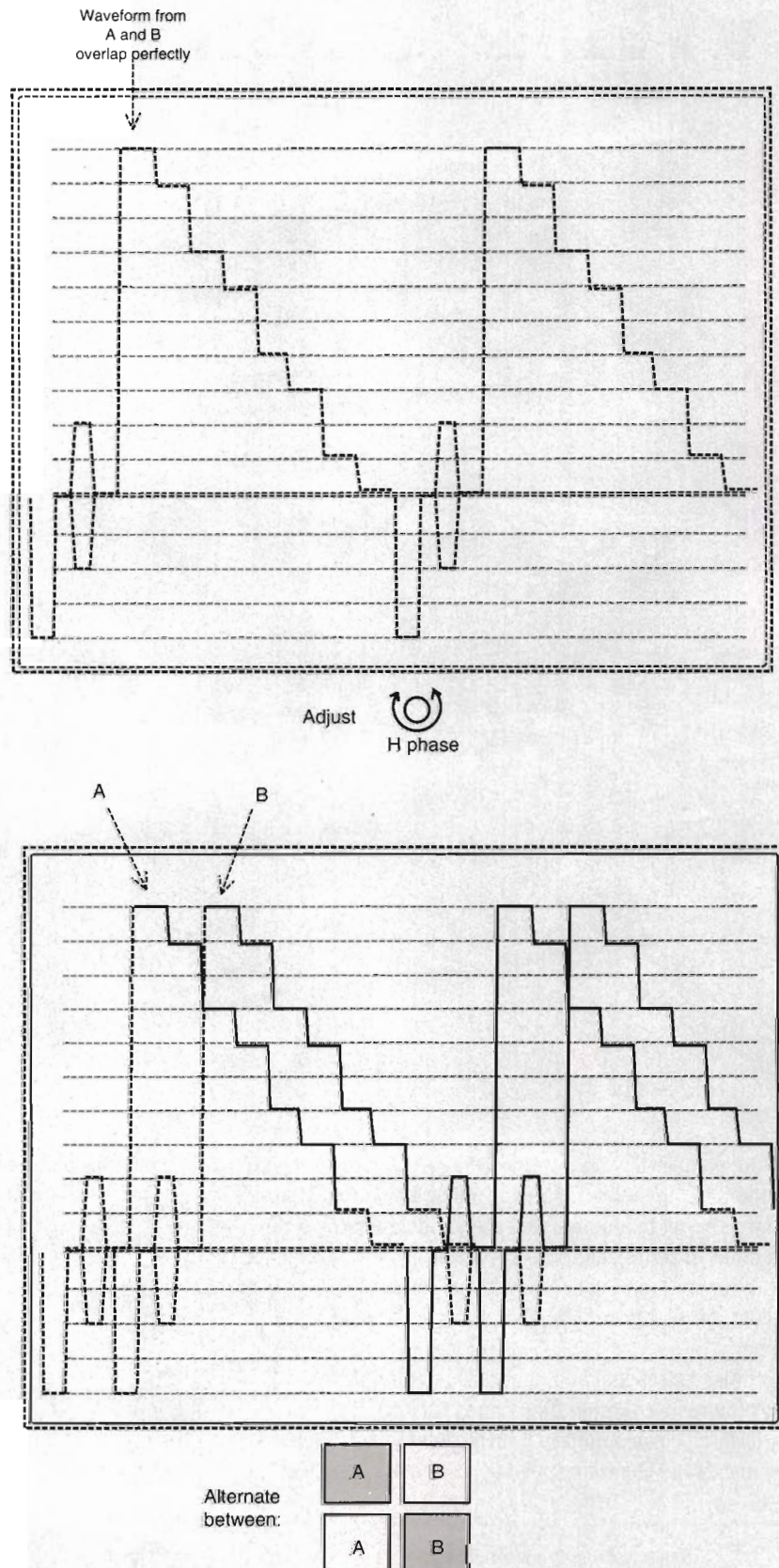


Figure 4: To check the timing, switch quickly between waveform monitor input channels A and B.

The Commodore multisync monitor works fine with the Amiga, but not with the Toaster. (There is a modification concerning adding resistors to the control cable which is said to help.) However, the quickest way out of this box may be to order a brand new tool from Y/C Plus—the YCP-GA. This cable has sophisticated, surface-mount circuitry built into the 23-pin plug shell which allows it to convert the preview monitor signals to S-video. This means Preview can be viewed on any S-equipped monitor.

Fancy producers can route the YCP-GA output into a Y/C Plus, and from there into a Toaster input. This makes it easy to produce Toaster training videos, as the control panel can now be directly recorded.

VTU

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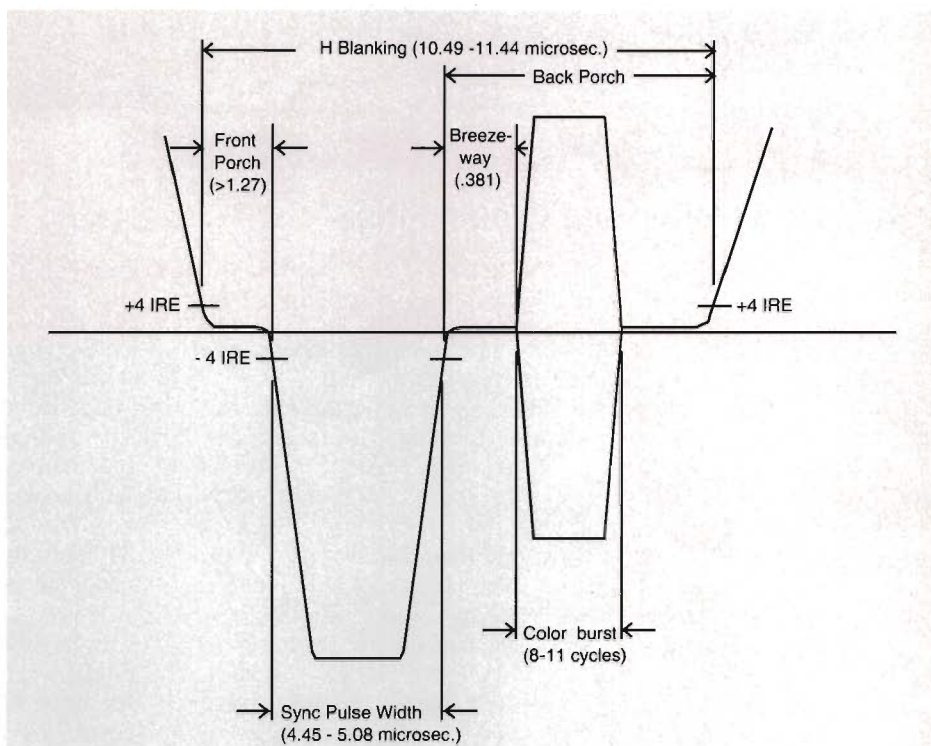
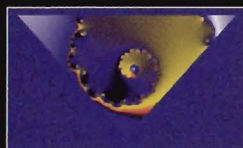
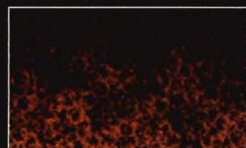
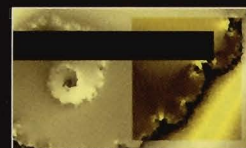


Figure 5: The breeze-way is a small portion of the horizontal sync interval.



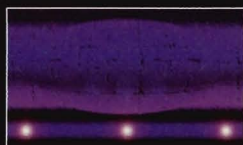
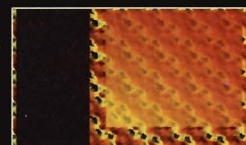
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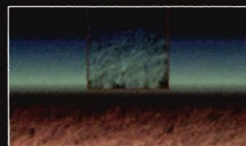
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SOUND REASONING

Field Microphone Techniques

With Fishing Poles and Broom Sticks

by Cliff Roth



Shooting video in the field is challenging on a number of fronts: locating your equipment, lighting, setting up a tripod and so forth can all be problematic. But of all the elements likely to suffer in the frantic atmosphere of adapting to a new location, none can potentially wreak as much havoc as problems with sound pickup. Your audience will most likely forgive problems with tint, shadows and camera shake much more readily than they'll accept weak or distorted sound. After all, most video shot in the field is essentially audio to begin with: Interviews, wedding services, musical events and legal depositions are all good examples of video that demand effective audio.

So how do you record the best sound? The golden rule of audio recording is to get the microphone as close to

noise, and are thus better than condenser microphones and more appropriate for holding by hand. An omnidirectional pickup pattern is more forgiving in the hands of a less-experienced interviewer, but picks up slightly more background noise than a directional type.

The interviewer should point the microphone at the lower throat/upper chest area and not directly at the mouth. This produces a deeper, more resonant tonal quality. Holding the microphone low also helps keep it from blocking the camera's view of the faces of interviewer and interviewee. A foam wind shield (available in music stores and Radio Shack) should always be used outdoors, even when the weather seems calm.

For dramatic work, a fishpole microphone system is essential. The fishpole is a six-foot long telescoping tube with a microphone mount at the far end. It is usually held like a boom over the heads of the actors at a height that is just barely out of the camera's frame. (*Editor's note: Many consumer camcorders don't quite show the complete frame in the viewfinder. Therefore, a black-and-white underscan monitor—about \$200—is highly recommended for precise boom placement.*)

For medium and closeup shots, the fishpole is sometimes held low below the bottom of the frame with the microphone facing up towards the actors' mouths. As dialogue is recorded, the operator of the fishpole rotates it to change the facing of the microphone to point towards whichever actor is speaking. The fishpole operator should always wear headphones to hear the quality of the sound being recorded.

Professional fishpoles cost about \$200, including a shock mount to prevent vibrations in the pole from thumping the microphone. You can mount any tubular microphone on the fishpole, but directional condenser microphones are usually used. When shooting outdoors, a large windshield, called a zeppelin (because it looks like a blimp), is usually placed around the microphone; this is the setup professional film crews always rely on.

If on a low budget, you can use a broom stick as a fishpole. Attach a microphone clip—available at most music stores that sell public address (PA) equipment—to the end of the pole for the ability to quickly mount and dismount the microphone. Wrap the microphone cable around the pole to keep it from drooping.

Laying Cables

Microphone cables longer than five feet should always be the thick, professional type with three-pin XLR connectors at each end. Only buy microphones with this type of connector (also called a Cannon plug)—they cost a bit more than the mini-plug variety and offer far superior performance.



the sound source as possible—within a few inches, if possible. A camcorder's built-in microphone, therefore, is usually acceptable only when you're shooting from just a few feet away from someone speaking indoors. Usually, the best location to set up the camcorder for recording video is not the best location for sound. That's why external microphones are so commonly used in professional video and film shoots.

Common Microphone Techniques

For TV news-style interviews, the use of a single, hand-held microphone offers the simplest way to get the best sound. Dynamic microphones are usually used for this purpose because they're bigger, more rugged, resist wind

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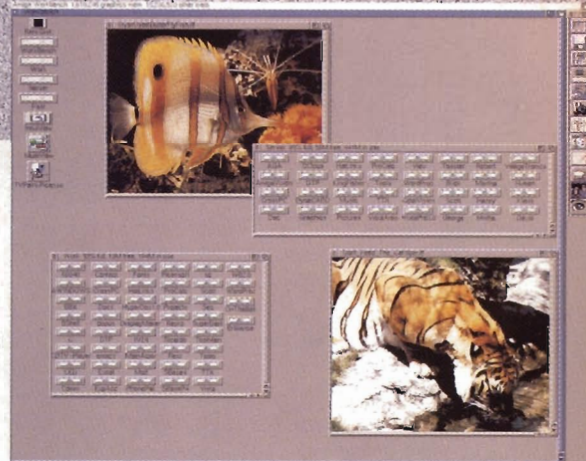
The Picasso II has an on-board Blitter which supports drawing speeds up to 30 megabytes per second. The Picasso II Blitter has been fully integrated into the RTG emulator. Any program running under the RTG emulator will automatically take advantage of the Blitter. Off screen displays are moved into Picasso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



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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.

The following names are trademarks of the indicated companies: Picasso II RTG: Expert Services, Professional Page; Gold Disk Inc., PageStream; Soft-Logik Publishing; Deluxe Music Construction Set; Electronic Arts; Amiga, AmigaVision Professional & Workbench; Commodore Amiga, Inc., Art Department Professional & Cygnus Ed; ASDG Inc., ImageFx; Great Valley Products, Inc., ImageMaster; Black Belts Systems, Real 3D; RealSoft International, TVPaint Jr.; Techsoft Images.

SOUND REASONING

Called "balanced line" connections, the three-wire scheme has the potential to reduce the amount of hum and other noise picked up in long cable runs. They're always used in professional studios.

The microphone jacks found on most inexpensive camcorders are simpler, unbalanced mini-jack types—some are stereo on better models. To use a standard, professional monaural microphone (such as the Electrovoice EV-635A, Shure SM-58, Sennheiser Modular, etc.) you need two adaptors. First, get a balanced-to-unbalanced transformer (usually it has an XLR jack on one end and a monaural 1/4-inch plug on the other.) Second, it's necessary to have a monaural-to-stereo adaptor with a 1/4-inch mono-jack on one end and a stereo mini-plug on the other.

If you're handy with a soldering iron, you may wish to build an adaptor using flexible microphone cable for the stereo mini-plug. If you stick a bunch of rigid, heavy adaptors into the camcorder's flimsy microphone jack, the jack can break. Tape the adaptor to the side of the camcorder and deliver the signal to

the microphone jack with a short piece of cable from the adaptor; this helps preserve the camcorder's microphone jack.

Now equipped, you can comfortably run microphone cables of 50 feet or more without worrying about hum. This facilitates shooting lectures, theatrical performances and other auditorium activities. The camera is usually best placed a distance back from the stage, but unless the microphone is moved up close, you can end up recording more audience fidgeting and talking than you want (our ear/brain system can tune out these noises, but a camcorder's microphone isn't as intelligent.) Run your microphone cable along an aisle and be sure to tape it down securely so people in the audience don't trip over it (use 2-inch-wide gaffer's tape or duct tape).

The Wireless Option

Theoretically, wireless microphones offer a panacea to the field recording dilemma; you can locate the microphone dozens of feet from the camcorder with no need to lay cumbersome cables. But in practice, wireless micro-

phone systems should be viewed with some caution, especially in congested urban areas where radio interference can turn up and disappear as quickly as passing taxicabs and delivery trucks whiz by.

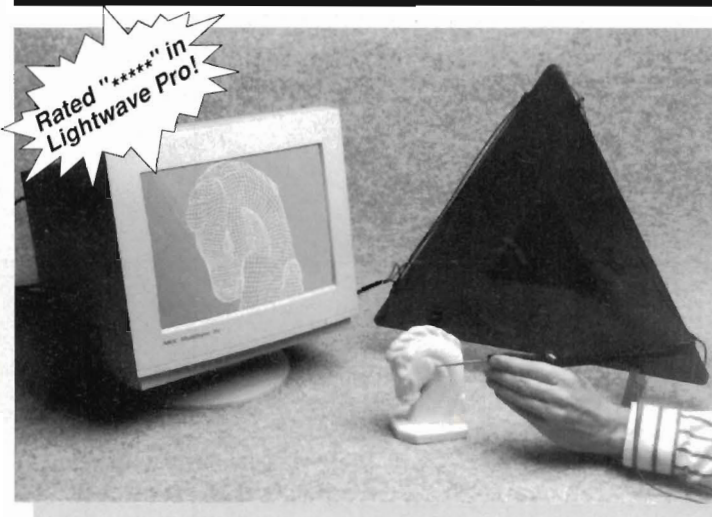
All wireless microphone systems consist of two parts: a transmitter and receiver. The receiver plugs into the camcorder's microphone jack. Both units normally run on standard alkaline batteries, which usually last just a few hours.

The most inexpensive wireless microphones use the same frequencies as cordless telephones: 49 MHz. These should be avoided. Priced between \$150 to \$200, VHF wireless microphone systems operating at about 170 MHz are available from manufacturers such as Nady and Azden. The less-expensive versions have microphones permanently attached to the transmitter; pricier models feature a professional microphone jack that lets you attach any microphone.

As important as it is to wear headphones whenever you record sound, it becomes doubly important when using a wireless microphone system, because

continued on page 35

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4	19	34	49	64	79	94	109	124	139	154	169	184	199
5	20	35	50	65	80	95	110	125	140	155	170	185	200
6	21	36	51	66	81	96	111	126	141	156	171	186	201
7	22	37	52	67	82	97	112	127	142	157	172	187	202
8	23	38	53	68	83	98	113	128	143	158	173	188	203
9	24	39	54	69	84	99	114	129	144	159	174	189	204
10	25	40	55	70	85	100	115	130	145	160	175	190	205
11	26	41	56	71	86	101	116	131	146	161	176	191	206
12	27	42	57	72	87	102	117	132	147	162	177	192	207
13	28	43	58	73	88	103	118	133	148	163	178	193	208
14	29	44	59	74	89	104	119	134	149	164	179	194	209
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SOUND REASONING

interference can strike at any time. If you'll be shooting something professionally, it's advisable to visit the location in advance and test your wireless system.

Mixing on the Fly

The most elaborate field-video recording situations may require the use of more than one microphone. Suppose you're recording a panel discussion, live music or a four-way interview. It would be impossible to get a single microphone close to the many sound sources. With multiple microphones you can obtain excellent pickup from each source simultaneously.

Ideally, you'd record each microphone's signal onto a separate track of a multitrack audio recording and put off the mixing decisions until post-production. That's how professionals do it when recording live music. But working on a low budget, you'll probably need to mix all the microphones together and record the mix live onto a mono or stereo camcorder audio track. Microphone mixers are commonly available in music supply stores.

Unfortunately, most camcorders won't accept incoming line-level audio signals while recording the camera image. You must therefore use the microphone jack. A mixer's line-level output signal can overload this sensitive microphone jack and cause distortions—you'll need an attenuating patch cord to reduce the signal level. A mixer with a microphone-level output signal is preferable. Keep the connecting cable between the camcorder and mixer as short as possible to minimize hum pickup.

A more elaborate setup, but one which can potentially record better sound, is to take a VCR along on location. Use the line inputs; feed the video signal from the camcorder and the audio signal from the mixer. A hi-fi VCR produces the best recordings, of course.

When recording a public event in an auditorium or a live concert, an audio-mixing console can usually be found if there's a PA system. If you can take a direct feed from this system, you can save a lot of time and hassle duplicating the microphone setup. But get permission. And you'll need appropriate adap-

tors and enough cable to get the signal from the mixing board to the camcorder. Beware of hum, buzzes and other problems that can creep in; run a test before the show.

In fact, that advice makes sense for just about any field recording. Professional video-recording equipment features confidence heads—separate playback heads that let you monitor the recording a fraction of a second after the tape is magnetized. With lower-budget consumer and industrial equipment, the only way to really know how things will come out is to make a test recording and play it back.

VTU

Cliff Roth is the author of The Low Budget Video Bible, available from PDS book distributors at (800) 345-0096. He teaches communications arts at St. Thomas Aquinas College in Sparkill, N.Y.

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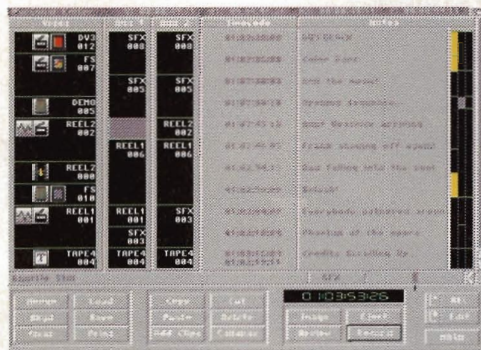
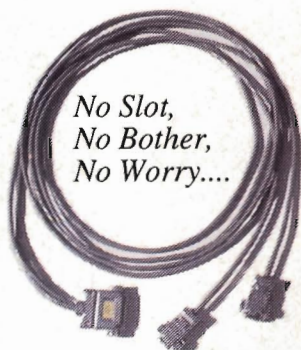
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SLICES

Amiga Shortcuts

Speed Up Your Toaster Work Sessions

by James Hebert



There are many aspects of Toaster operation that relate directly to the underlying hardware—the Amiga personal computer. Although NewTek's early advertising once claimed you didn't need to know how to operate a computer in order to work with the Video Toaster, it certainly helped. It still helps today.

This month's column reviews easy Amiga-based tricks that speed your work sessions in the Toaster. The benefit of learning these shortcuts is twofold: The skills you acquire in the use of the Amiga computer translate directly to your use of the Toaster. It works the other way too; many of them are just as effective when working with the Amiga and its application software. If you know the Toaster better than the Amiga, you'll find controlling an Amiga to be an extension of your current abilities.

For example, take *requesters*, sometimes called *dialogue boxes* on the Mac and PC. Requesters come in several flavors on the Amiga. Some present messages, others request further information, while still another group allows you to select or enter filenames. This last type is called a file requester.

Figure 1 shows the LightWave file requester; Figure 2 displays the ToasterCG file requester; and Figure 3 is the ToasterPaint file requester. Although these three tools within the Toaster look quite different, each functions in much the same manner. (After you read this column, you may even catch on to the fourth file requester in the Toaster; we'll compare notes later.) In fact, if you're familiar with the Amiga, you can find a few more capabilities than what appears on the surface.

You are not limited to the choice of directories that appears by default. If you've ever been frustrated by your inability to get to another directory to locate a file, you'll love this tip.

Notice the text field labeled *path* in each of these requesters. (I've labeled it for the ToasterPaint requester since it is not otherwise identified.) The path indicates which Toaster directory is currently selected. A set of buttons on each requester allows you to look at other locations, DF0:, RAM: and others. But how do you get to drives or directories not shown on any button? Enter a new path in the path text field.

Key to Success

The path text field is your key to maneuvering from drive to drive or directory to directory. Type any valid drive name here, press Return, and the requester provides you with a list of the directories and files. If you are in LightWave and wish to load an object that was copied to your second hard drive, select Load Object. Click in the Path field, delete the word Objects and enter DH1: (or the drive where your object is located) to access the drive. The file requester responds by listing the files on disk DH1:.

The Toaster's file requesters are preset to automatically go to specific locations on the hard drive the moment you select any file requester operation. For example, if you need to load a new font into ToasterCG, select the Add



Figure 1: LightWave's file requester

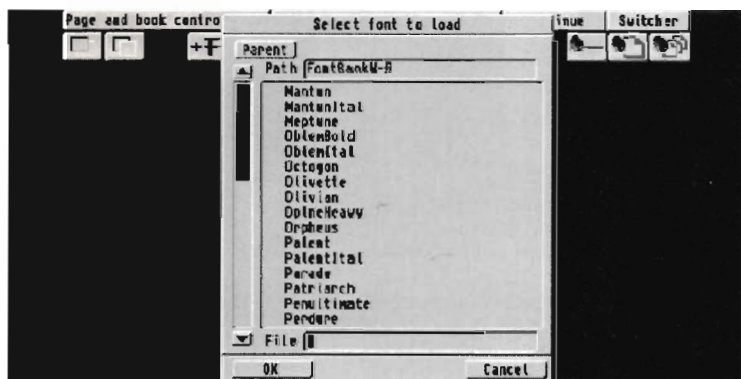


Figure 2: ToasterCG's file requester

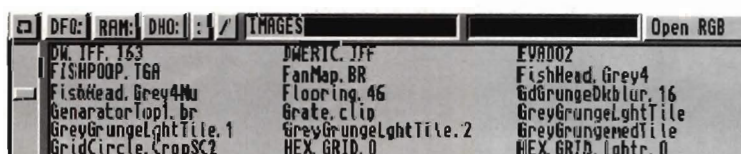


Figure 3: ToasterPaint's file requester

you receive some form of an error message (they can vary, depending on what you have selected). Make certain that the file requester's title matches the item you are attempting to load. This saves you a great deal of confusion.

General Shortcuts

Before closing this month's column, I want to offer a few keyboard shortcuts that make any kind of requester operations more efficient.

- When you call up any requester that has a cursor in a text field you wish to change, the field can be cleared instantly by holding the right Amiga key and pressing the x key. The cursor remains in the field so you can enter a file or path.
- To jump the cursor from one end of a text field to the other, hold the Shift key and press the left or right arrow. This is handy if you need to change a character or two in a filename rather than retyping the entire line.
- Load File requesters accept a double-click as a two-step command. The first click selects the file beneath the pointer. The second, if engaged immediately after the first, loads it, saving the step of locating and clicking the OK button.
- Save File requesters in LightWave also accept double-clicks. Be careful, though. Make sure the file selected is the correct one. If you accidentally double-click the wrong file, the current file is written over the previous one.
- The Parent button in a file requester reverts one directory at a time. For example, if you entered three different subdirectories, three clicks of the parent button returns the requester to the original directory.

Once you understand how the file requesters work, you'll have greater control over the Amiga/Toaster system.

In the meantime, have you figured out the other file requester in the Toaster? In a broad sense, much of the Setup screen contains the controls found in a file requester. You can select different drives, locate files, load and save files, etc. The Setup screen contains other controls as well, but in some ways it acts like a giant file requester itself.



EDITORIAL EVALUATION

Circle number on Reader Service Card

I found this article:

Very Useful

Circle 026

Useful

Circle 027

Not Useful

Circle 028

Video Toaster Directories

Here's a list of the important directories known to the Toaster and its video applications. For this list, I use SYS: as the main system drive where the Toaster has been installed. If your startup drive does not contain the Toaster, simply insert your own drive name in its place.

SYS: Framestore

SYS: Project

SYS: Toaster

These three directories reside at the base level directory of the hard drive, often called the root directory. The Toaster directory contains a number of subdirectories (listed below) as well as the majority of core files needed to operate the Toaster.

SYS: Toaster/3D

SYS: Toaster/3D/Envelopes

SYS: Toaster/3D/Images

SYS: Toaster/3D/Motions

SYS: Toaster/3D/Objects

SYS: Toaster/3D/Previews

SYS: Toaster/3D/Scenes

SYS: Toaster/3D/Surfaces

Found within the main Toaster directory, these directories are used for LightWave files. The Images directory is also used by ToasterPaint and ToasterCG.

SYS: Toaster/ARexx_Examples

SYS: Toaster/ARexx_Examples/lwm

SYS: Toaster/ARexx_Examples/TPaint

The ARexx_Examples directory contains the LightWave Modeler macro scripts, ToasterPaint macro scripts and additional example scripts.

SYS: Toaster/AuxLibs

SYS: Toaster/ChromaFX

These two directories contain a library and the color filters for ChromaFX.

SYS: Toaster/CGTextFiles

This is the default directory for the Load Text button in ToasterCG. The file requester allows you to look elsewhere, however.

SYS: Toaster/Effects

This is the directory that contains the Switcher effects.

SYS: Toaster/TIO

SYS: Toaster/TIO/Converters

This is the directory for LightWave's foreign file format converters.

SYS: Toaster/ToasterFonts

SYS: Toaster/ToasterFonts/AGFA

SYS: Toaster/ToasterFonts/B&PGraphics

SYS: Toaster/ToasterFonts/ColorFonts

SYS: Toaster/ToasterFonts/FontBankA-C

SYS: Toaster/ToasterFonts/FontBankD-G

SYS: Toaster/ToasterFonts/FontBankH-M

SYS: Toaster/ToasterFonts/FontBankN-R

SYS: Toaster/ToasterFonts/FontBankS-Z

SYS: Toaster/ToasterFonts/OldFonts

SYS: Toaster/ToasterFonts/SoftMaker

This group of directories contains the ToasterCG fonts.

SYS: Toaster/ToasterPaint_Startup

Contains files necessary for launching ToasterPaint.

SYS: Toaster/Utilities

This directory contains miscellaneous utility programs and scripts, including the genlock utility, the PICT image format converters and additional utilities.



Requester Files

The Toaster file requesters default to specific locations (listed below) where the Toaster maintains and expects to find files.

Setup

- Load, Save, Rename and Delete Frame default to the Framestore directory.
- Load and Save Project default to the Project directory.
- Load Book defaults to the Project directory.

Switcher

- Framestores load from the current Framestore directory, selected from Setup.
- CG Pages load from the current book in ToasterCG, selected from Setup.
- LightWave preview animations load from the current Framestore directory, selected from Setup.

ToasterPaint

- Load and Save Frame default to the Framestore directory.
- Load and Save RGB default to the Images directory.
- Load and Save Brush default to the Images directory.

ToasterCG

- Load Font defaults to the ToasterFonts directory (within the Toaster directory).
- Load Brush defaults to the Brushes directory (within the Images directory used by LightWave).
- Load Text defaults to the CGTextFiles directory (within the Toaster directory). LightWave Layout (each of the directories shown resides within the 3D directory inside the Toaster directory.)
- Load and Save Preview default to the Previews directory.
- Load and Save Scene default to the Scenes directory.
- Load and Save Object default to the Objects directory.
- Load and Save Surface default to the Surfaces directory.
- Load and Save Motion default to the Motions directory.
- Load and Save Envelope default to the Envelopes directory.
- Load Image/Sequence defaults to the Images directory.
- Save ANIM File defaults to the Framestore directory.
- Save RGB Images defaults to the Images directory.
- Save Alpha Images defaults to the Images directory.
- Save Framestores defaults to the Framestore directory.
- Play Framestores defaults to the Framestore directory.

LightWave Modeler

(Each of these directories resides within the 3D directory inside the Toaster directory.)

- Load defaults to the Objects directory.
- Save defaults to the Objects directory.
- Save As defaults to the Objects directory.

Note: You could make the argument that ChromaFX has a default directory as well, since it stores both its own effect filters and your modified filters as a file within the Toaster directory. However, you are limited to two files: yours and the default's. You cannot change drives, directories or filenames. I consider this "hard-coded" aspect of ChromaFX too restrictive to include in this discussion.

For this same reason, I consider the Switcher controls for selecting and loading framestores, animations and CG pages out of bounds for this topic. The Switcher only loads from the directory locations that have been selected from the Setup screen, and it cannot save files. The true file requester for the Switcher is in fact the Setup screen, which has the controls for selecting, loading and saving files.

VTU



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ARexx to the Rescue

Amiga's Advantage Over Other Platforms

by Geoffrey Williams



The dinosaur, hopelessly mired in tar that was pulling it towards its doom, bellowed, "Mammals are a passing phase!" This closely parallels the cries from manufacturers such as Quantel that insist their closed-architecture black boxes are the best solution to video. "Personal computers for video are only a passing phase!" Hard as these manufacturers try to make this argument (and the literature is quite amusing), their days are numbered, and they can't help but know it. Stubbornly refusing to accept the pull of technological evolution, they are believed by almost no one, including, I think, themselves.



Amiga users have welcomed ARexx with open arms.

One of the arguments that Quantel makes is that dedicated hardware designed expressly for video can't help but be superior to a general-purpose computer designed to do nothing in particular. This effectively describes the Amiga. However, the Video Toaster, with its dedicated hardware designed specifically for video, sits inside this general-purpose computer and takes advantage of its unique capabilities.

Many users wish the Toaster was available for the IBM or Macintosh platforms rather than the Amiga. However, there are some definite benefits to the current setup. Besides the custom chipsets that make the Toaster possible, the Amiga also has an advantage with ARexx—a computer language designed for interprocess communications which allows programs run-

ning at the same time to talk to and control each other. This standard is supported by most professional Amiga programs.

A fully implemented interprocess communication needs to be adopted on the PC and the Mac because it is so important for video production (there are fledgling efforts, but they are not yet fully supported by programs). Here is why: In video, we typically think of an edit bay with different components. The edit controller, which controls the video decks and the switcher, would be pretty useless without interprocess communication. Hardware is quickly being replaced by software, and just as video components need to communicate so everything is synchronized, software needs a standard way to communicate. You can't run a cable from one program to another as you can with hardware. The best solution is a communications standard for all computers, which would allow different computers to control running programs by using a null modem cable or through the phone. For Amiga users, though, ARexx solves this dilemma and helps in other areas as well.

Batch processing (the ability to apply similar manipulations to a series of frames) is made easy. Most image processing software on the Mac and PC is designed to work on a per-frame basis; they are not designed for animation. With ARexx and the Amiga, every image processor and nearly every paint program can work together to batch process images into an animation. Expensive, highly specialized animation programs are unnecessary.

Another great advantage of ARexx is that it eliminates many software limitations. For example, the Video Toaster does not have a way to sequence transitions, yet many programs have been written with ARexx that control the Toaster, significantly expanding its capabilities. Third-party programs control LightWave through ARexx, and some of the recent entries add a surprising range of new effects. These are not just add-on modules, but fully integrated programs.

Programming ARexx

Do you need to learn how to program ARexx? In most cases, no. Most third-party software for the Toaster comes with ARexx scripts to handle a variety of tasks. And, of course, there are many ARexx scripts available through the Internet, local BBSs and commercial services that control and automate image processors and paint programs, plus directory utilities for automated functions such as using JPEG compression on a series of frames.

ARexx Libraries

One problem with collecting ARexx scripts from the nets is that many require special libraries. These libraries must be stored in the libs: directory. Two libraries, rexxsupport.library and rexxsyslib.library, come with ARexx as part of Workbench 2.0 and 3.0. Other libraries must be acquired. I'll list a few which I find useful.

The most commonly used library is Willy Langeveld's REXXARPLib. It gives ARexx programs access to the Workbench 2.0 file requester, font requester, gadgets, windows, menus and much more, with more than 50 functions. This allows ARexx programs to act like regular Amiga programs using the resources of intuition for a complete graphical user interface. Many scripts use it because it adds considerable power and is easy to incorporate. Another is REXXMathLib.library, which gives ARexx scripts access to the IEEE math libraries.

Rafael D'Halloweyn's REXXReqTools.library provides a variety of ARexx requesters. It requires Nico Francois' ReqTools.library, a popular-shared library used by many programs.

There are also some unusual libraries that are useful for more specialized projects. A good example is Joseph M. Stivaletta's REXXSerDev. It allows users to send and read messages through the serial port. This capability opens up many interesting possibilities. If a device can send ASCII information to the serial port, an ARexx-capable program can read that information. If a device such as a laser disc player is serial controllable, any ARexx-capable program can control it if the proper command string is found. ARexx messages can be sent through the serial port of one Amiga

and into the serial port of another for dual machine control. You could have a separate Amiga with a multimedia program handling sound and animation with strict timing requirements controlling the transitions in another Toaster machine. (If you run a multimedia program in the same machine as a Toaster, timing and other problems could occur; this setup would rectify the difficulties.)

ARexx Scripts

Public-domain ARexx scripts for the Switcher aren't very common since most scripts are customized for a specific project. ToasterPaint ARexx scripts are rarer, still.

LightWave, however, has significant ARexx support. Stuart Ferguson's WrapToSphere.lwm takes data and wraps it onto a sphere. It is similar to Imagine's Conform to Sphere operation. Points2Particles.lwm converts all points into single-point polygons using the default surface and creates new particles in an empty layer if there is one. It uses all points in the layer, but can easily be restricted to using just selected points. CommandSeqProc.lwm allows any command in a shell to be repeated over several files. This makes it useful for renaming a series of frames, deleting a series or every other file, and for one-line processing of a sequence of files such as LightWave image sequences.

Darren Reid has released a set called Shockwave Scripts. MoveAbs.lwm moves an object by its absolute coordinates, using the calculated center. MoveAbsQuick.lwm moves an object by its absolute coordinates using a bounding box center. Points2Objects.lwm takes points in the foreground, objects in the background, and replaces points with objects in an empty layer. PosRel.lwm

**Public-domain
ARexx scripts
aren't very
common,
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scripts are
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moves an object to the relative center in the background layer.

Standin.lwm, by J. Eric Chard, constructs a simplified version of an object, resulting in an enhanced bounding box, which is very useful for debugging motion paths and saves a lot of time.

Setting up a directory structure for various LightWave files can take some effort, especially if you lack a directory utility. Nir Hermoni wrote DirStruc to automate the process. It creates a directory called Images for surface pictures, Objects for objects and Frames for frames (which makes sense). The Objects directory contains an archive directory for objects that are not used directly in the scene, and it also copies the null object to the Objects directory.

Chris Hurr wrote three scripts that edit your LightWave configuration using Modeler's ARexx GUI: ConfigEditor, ConfigMiscEditor and ConfigPathsEditor.

Dan Bloomfield's Batch, which does batch rendering of LightWave scenes,

renders either RGB files or framestores.

Have you had trouble loading DXF files into LightWave? Here's why. For each triangle or polygon, there is a list of points separated by a 0. For some reason, some DXF file creators put text there instead of a 0. Pixel Pro and LightWave will not load these files. Richard Hillius' FixDXF takes care of the problem by rewriting the DXF files, putting the zeros where they belong. Files should then load without any problem.

Jason Mussetter's Load_Project speaks for itself. The script loads a project that was saved with the "Save_Project.lwm" macro into separate layers again.

Another useful script (author unknown) is ExportAll, which converts each of the given stills on a specific Personal Animation Recorder directory into RGB files on another device. This should prove handy to LightWave animators.

Have you ever wanted to batch process framestores using Art De-

partment Professional and FRED (the included animation utility)? It should be easy, but it isn't. Todd R. Olson wrote FSFRED and DIRFRED to make it simple. FSFRED creates a .seq file for ASDG's frame editor, FRED, from a user-specified series of Toaster framestores. DIRFRED does the same thing, but instead of selected files, it processes all of the frames in a selected directory. They require REXX-ARLib 3.0 or greater.

I tip my hat to those who have been generous enough to share their work with others. These are the folks who make the Toaster community great.

Learning ARexx

I certainly would not want to learn ARexx from the manual included with Workbench. Fortunately, there is an ARexx class in AmigaGuide format (the hypertext standard in Workbench 3.0). Look for a shareware tutorial written by Robin Evans. In addition, be sure to get the patch that brings it up to version 1.0a. Along with examples and clear explanations, it also provides easy access to explanations of many technical terms and jargon that can be quite confusing to novices. Learning ARexx is not a snap, but this guide makes it a lot easier.

For most of us, using ARexx is a simple matter of launching a script. Most programs make this quite easy, but real power users want to know how to write their own scripts. Whether you use prewritten scripts or write your own, ARexx is an indispensable part of the Amiga working environment designed to make your work faster and easier.

VTU

As usual, I have put all of the scripts and libraries and the ARexx class discussed in this column on a disk. Send \$5 to: Geoffrey Williams, ARexx Disk Offer, 1833 Verdugo Vista Dr., Glendale, CA 91208.

[Editor's note: Geoffrey Williams' Computer Artist & Videographer Report is published by Creative Business Communication. For more information, call or fax (818) 240-9845.]

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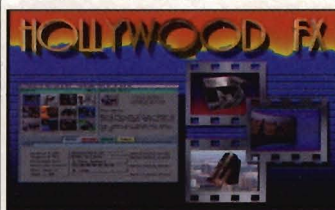
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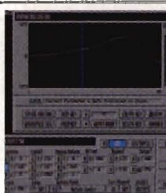


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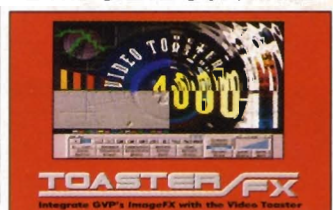
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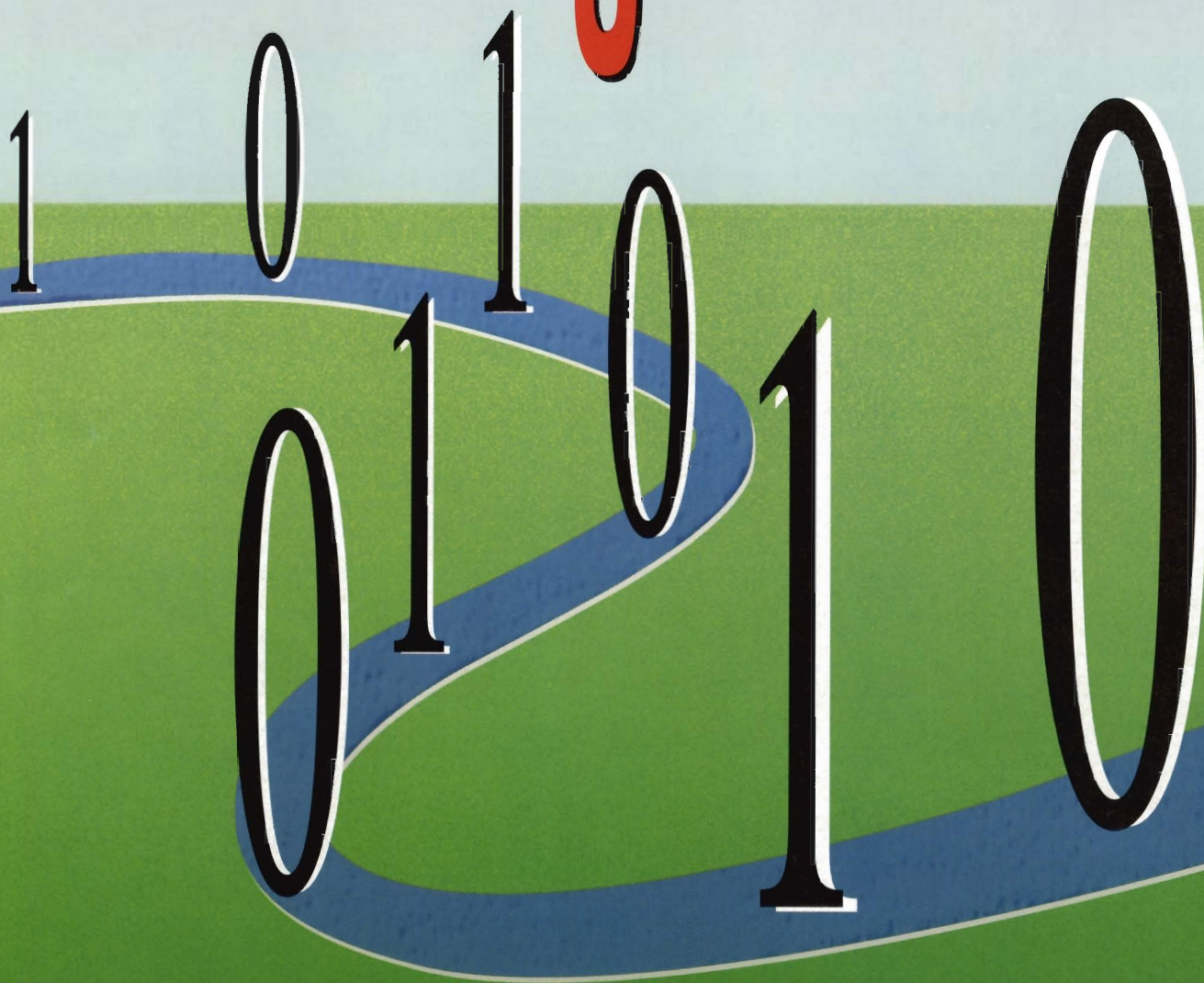
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Looking down the



Information Highway

Why the Government Is So Interested

by Rick Lehtinen

Vice president Al Gore champions it. Government and industry join forces to organize it. Everyone from *Penthouse's* Bob Guccione to on-line services like CompuServe and America Online try to make a buck off it.

What is it? The information superhighway, coming to a computer, television set or some hybrid device near you.

For Video Toaster users who stood at ground zero of an explosion that continues to change the face of video communications, the so-called information highway may seem somewhat nebulous—somehow out there in a less concrete form than an in-your-face Toaster transition like Falling Sheep.

However, this ethereal thing called the information highway is taking form bit by bit every day, and as it becomes a reality, it increasingly appears that government wishes to use a heavy hand to mold its shape.

In part one of this series, we explored what the information highway is and how Toaster users might benefit commercially from its presence. In this concluding article, we will seek to answer why the federal government is so interested in *helping* the information highway to grow and why it's in the best interest of all communicators, including Video Toaster users, to keep government out.

Government Help

Government has promised access to the data highway for all, but what exactly does that mean? Are the governmental and institutional forces at work more interested in providing access to the highway or an exit ramp of commercialism into the home and office?

On Jan. 11, 1994, Gore explained that the administration's vision of the National Information Infrastructure (NII) is driven by five basic principles: to promote investment; to provide and protect competition; to secure open access; to provide for universal service; and to ensure that

government regulation is itself flexible and adaptable.

Providing universal access was re-emphasized in President Bill Clinton's State Of The Union address this year. The president challenged the nation to see to it that by the turn of the century the NII reaches all classrooms, libraries, hospitals and clinics.

this process is sped along if the predator can coax a naive participant to reveal his or her address or phone number. Televised reports have indicated that a typical lure is reportedly a request to come over and help with computing equipment or else an invitation to drop by and see some piece of hot, new gear.

polling place than the voting booth. In the 1950s, psychologist Erich Fromm picked up on the idea. Future shocker Alvin Toffler touched the string again in the early '80s. Perot brought it up again in the '90s, and it looks like Clinton and Gore may carry it across the finish line in the form of the information highway.

But will it work? In trial form, it has done extremely well. Evan I. Schwartz, writing about direct democracy in *Wired* magazine, cited a study by Eon Corp. of Reston, Va. Eon is one of several companies planning to roll out interactive TV applications. Eon commissioned a survey of 1,465 random television viewers and found that the most anticipated use of interactivity was for political-opinion purposes. Eighty-five percent of the respondents looked forward to two-way TV politics, compared to only 70 percent who were interested in electronic shopping. Sixty-four percent wanted most to play along with game shows and less than half (42 percent) wanted to play along with televised sporting events.

Schwartz pointed, however, to a few of the repercussions of using the information highway as "an ultimate house of commons" (to quote Fromm). First, media moguls will likely hate the idea of giving up their stance as gatekeepers of public opinion. Second, instant, electronic democracy might tempt us to alter our existing system of senators and congressmen. (After all, if they can be replaced by a yes/no button on our TV set or computer, wouldn't it be easier and cheaper to send them packing?) Finally, it would do away with a subtle protection provided by voting on people instead of voting on propositions. In an electronic continuum, elected officials, who in theory are supposed to represent the voters' best interests, would have a harder time defending what's right in the face of what's popular.

Society must not confuse accessibility with enlightenment. Instant and total public access may be great for shaking things up in a gridlocked era of government-by-lobbyists, but in a day when the public has a full electronic voice, what will provide the check and balance against a potentially uninformed or intentionally misinformed populace?



ILLUSTRATION BY DAVID SMITH

However, given the tremendous commercial opportunity and the spectacular growth of several on-line service providers over the past few years, one must ask: Why is the federal government so eager to help bring the data highway into existence when it appears to be well on the way to spontaneously generating itself?

Protection

One possible but unlikely answer is that the government seeks to protect the citizenry from those in society who prey upon the naive and powerless.

A disturbing new development is that life in the data lanes isn't always safe. Recent reports confirm that some rapists and child molesters are stalking the highway. Such persons lay in wait around bulletin boards and conference areas, gradually soliciting conversation with, then the trust of, their victims. Eventually they set up a meeting, and at that time or subsequently after may attack.

Apparently the familiarity gained by computer conversation leads some people to drop their guard. Of course,

Although horrifying, this method of entrapment is little different from what could occur using amateur radio, CB radio, 900-number "party chat lines," or even the U.S. mail via pen-pal clubs. So the notion that the government wishes to steer the development of the information highway to protect us from ourselves doesn't seem to hold much merit.

Fostering Democracy

In a day when fewer than half of the registered voters turn out to choose their leaders in any given election, perhaps visionaries in government see the information superhighway as a means to allow people to easily inform themselves on issues of the day and directly make their voice heard in government.

All this bears a resemblance to the electronic town hall proposed by former presidential candidate H. Ross Perot, which is actually a seasoned idea. In the 1940s, scientist R. Buckminster Fuller proposed that the telephone could be a more effective

Thus, despite the surface-level appeal of such electronic democracy, the potential for electronic mob rule is so evident that it's difficult to imagine that the government is motivated to help establish the information superhighway simply to put itself out of business and bring about what might amount to anarchy.

The Dark Side: Technological Totalitarianism

Some have speculated that the information highway is a giant excuse for the government to gain access via a two-way portal to every home, office and public building in America. While Orwellian visions of the information highway may seem a little alarmist, recent events indicate that the government is at least cognizant of the potential to use new digital communications technologies to look in on its citizens.

One of the fundamental communications laws in this country is the Privacy Act. It is technically illegal to divulge the contents of a phone call you have overheard, or for which you provided the telephone connection. However, law enforcement agencies can eavesdrop on telephone traffic if they can show a need and obtain what amounts to a warrant. To monitor your phone calls, the government is supposed to go through the courts and gain authorization for a wiretap, which is similar to the process for obtaining a search warrant.

In the Internet today and the wired world of tomorrow, there is no true privacy of communication. Most transmissions can be freely monitored. Any privacy that exists comes because the message is encrypted. The government appears to be concerned and has taken a few steps toward permanently invading our privacy.

First, the government proposed the DES encryption algorithm. All messages were supposed to be encoded with DES, a magnanimous offering of our government to help commerce. The only problem was, DES wasn't secure. The unbreakable code provided by our leaders could easily be broken if you knew the trick and had enough resources—the kind of resources available to governments.

The second step was the Clipper chip. There is legislation pending that would require all telecommunications equip-

ment to include this chip, which is allegedly a security system. Once again, the Clipper isn't secure—the government recently announced that it can break its codes, but argued that it should be able to do so as a tool for law enforcement.

Telecommunications industry leaders have expressed alarm that these proposals have advanced as far as they have. That the government is too hot and bothered to think deeply about this is obvious from the ease with which opponents have shot down government arguments. For instance, think of what the Clipper chip would do to the telecommunications export business. Which country will buy equipment that is guaranteed to be subject to eavesdropping by Uncle Sam? Or bringing the thought closer to home, would you want the government watching your video sent to a client via the highway?

It is one thing for legitimate law enforcement agencies to obtain warrants to monitor suspected offenders and quite another for dark and ambiguous forces to troll the network. Some pundits have privately expressed the opinion that both DES and Clipper are government spook games gone wrong.

when the current administration is trying to make public-opinion brownie points by disclosing previous administrations' abuses, like intentionally exposing citizens to the risks of nuclear radiation without informing them of the serious danger.

Fortunately, although the citizens of this country have been spoiled by receiving government gifts of everything from cheese to student loans, the populace still hasn't lost its ability to sniff before biting.

While there is clear evidence that elements within the government are attempting to sow the unfolding regulations that will shape the information highway with the seeds of surveillance, it remains unlikely that those in power are so paranoid that they could possibly hope to hoodwink the nation into paying the billions of dollars it will take to establish the data highway infrastructure simply to look in on its citizens.

An Unholy Alliance

So, if it's not for the safety of its citizenry nor the fostering of democracy or simply about spying on its citizens, why has the government taken such a keen interest in *helping* to establish a



ILLUSTRATION BY DAVID SMITH

In the proposed scenario, both were supposed to filter into society without mention of the eavesdropping capability, like a spun-off NASA technology.

It is ironic that both Clipper and DES have come to light in a time

telecommunications superhighway—especially when one looks like it would arise on its own? Sadly, it appears to be all about establishing another cozy relationship between big business and big government that

benefits both at the expense of the average citizen.

Adam Smith, the economist, once said that in the process of working to better themselves, people invariably create opportunities and jobs for others. He said that it was almost as if an *invisible hand* was following their efforts, spinning out jobs as a result of their initiative.

Somehow it's different with government. Rep. Dick Arney of Texas once

put an interesting twist on Smith's words to describe the clumsy complications of government meddling as the actions of an *invisible foot*.

Left to itself, the information highway would likely evolve from the Internet. Eventually, anyone with access to a computer could cruise all sorts of information services, perhaps preview and purchase Toaster produced video or LightWave-created animations and models, or seek out spe-

cialized information or contact individuals who share common concerns to discuss their interests. No one could make big profits. No one could censor or control the information.

To prevent this intolerable situation, the Clinton administration took immediate and decisive action. It formed a committee.

Fox Guarding the Chicken Coup

In early January, the administration appointed a committee of 28 people to "advise the federal government on technological developments" regarding the information highway. The committee, co-chaired by U.S. Secretary of Commerce Ronald Brown, Ed McCracken, head of Silicon Graphics Inc., and Delano Lewis, president of National Public Radio, is supposed to make recommendations on pending federal legislation that would pre-empt certain local laws regulating communications networks.

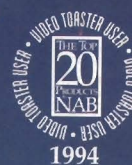
Of course, the committee includes some important industry leaders from the telecommunications field, including Bert Roberts, chairman of MCI Communications Corp., Bellcore CEO George Heilmeyer, and Alex Mandl, CEO of AT&T's Communications Services Group. Moguls from the cable groups are represented as well. There's John Cooke, president of the Disney Channel and Robert Johnson of the Black Entertainment Television-District Cablevision. John Sculley, the former chief of Apple Computer Inc. is on the committee, as well as Nathan Myhrvold, senior vice president of Microsoft Corp.

Other members of the committee include Deborah Kaplan, vice president of the World Institute on Disability, and Bonnie Bracey, who teaches fourth and fifth graders at Ashlawn School in Arlington, Va. A few state and city officials and representatives of union and community groups are also on-board.

While it's not exactly clear what advice the committee will offer the government on technological developments shaping the information highway, it is extremely clear that this policy advisory group is dominated by CEOs from some of the nation's strongest phone companies and heavyweights from the cable TV and computer arenas. To provide at least an appearance of balance, the admin-

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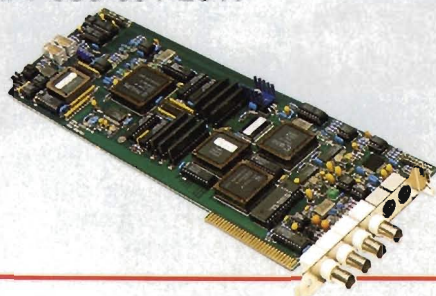
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istration has invited union representatives and a school teacher.

Some have speculated that the creation of this committee may be a way for the administration to re-empower the phone companies without having to touch the issue directly.

On the legislative front, the government appears to be working towards just that. Both H.R. 3626 and the Communications Act of 1994 are applauded by the administration as being steps toward putting the NII on the map. Although these bills are touted as breaking ground for the NII, much of the language is aimed at giving back to the telephone companies some of the power they lost when the Bell System was ruled a monopoly and ordered to divest of its regional operating companies. Such wholesale cooperation between both houses and the White House may indicate that the NII is going down too easy. It may be time to duck and cover.

Your Tax Dollars at Work

The interstate highway system has rarely, if ever, performed the task for which it was created. General Dwight Eisenhower had seen firsthand how the Germans helped defeat themselves by putting all of their transportation eggs into the railroad basket. When Eisenhower became president, he was in a position to create a system of good roads so traffic could move two ways at once and keep moving, even if a bomb blast ruined a lane.

Of course, we will never know if that's what the public bought, or merely what it was sold. It is certain that trucking companies and bus lines stood to benefit from the interstate highway network, and railroads stood to lose. Whatever debate may have ensued, a population full of World War II veterans could easily sign off on the concept of highways for defense. Thus, while voting for mom and apple pie, this country built the backbone of the land transportation industry at the taxpayer's expense.

It doesn't matter today if the end result was for good or bad—after all, many small towns came and went with the opening of the interstate highway system. What matters today is that the rhetoric for the information highway is essentially the same as it was for better roads 40 years ago.

The cost of the information highway is estimated at between \$100 billion and \$200 billion with a construction time of 10 to 15 years. And in the names of national competitiveness, improved health care, better education and a concern for the information have-nots, taxpayers are inevitably going to be asked to pay for it.

However, consider this: The telephone companies are not poor. Their equipment is not aged. By law, telcos

are limited as to how much profit they can take. The rest they must plow back into refurbishments. As a result, the public-switched telephone network in this country is likely the finest in the world.

It is true that the telcos have managed to drag their feet on ISDN installation, strangling the videoconference industry, but this may well have been by design. Some of the legislation surrounding the information highway

continued on page 101



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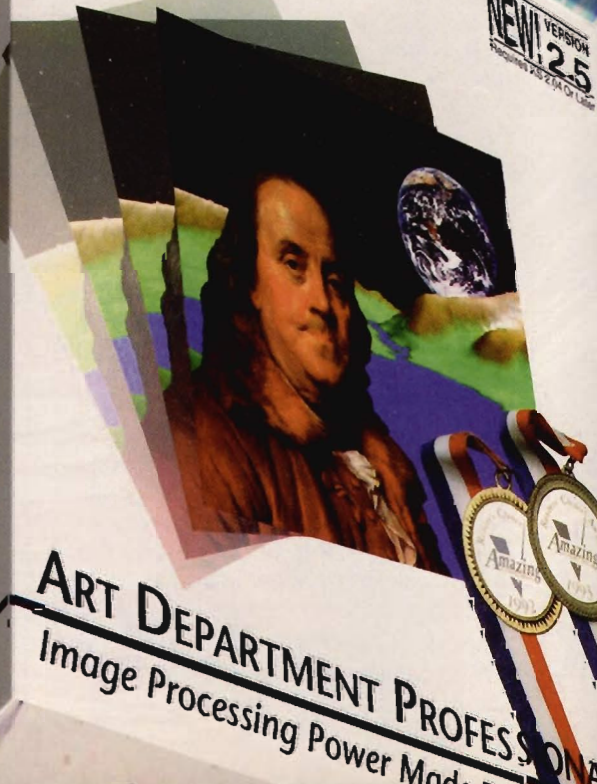
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Altered States:

Three Programs to Make over Your Images

by Maury McCoy

Image processing has come of age on the Amiga. A few years ago, it seemed the only reputable image processors were available on other platforms.

With the advent of the AGA chipset and an increasing number of third-party display boards, this is no longer the case. Today, a variety of image processing programs are available to harness the power of the Amiga.

Who Needs 'Em

A good image processor is an essential tool for anyone working with the Toaster. It is almost difficult to read a tutorial on any aspect of computer graphics these days without seeing wording like: "Then take this picture into your favorite image processor." An image processor is such an essential part of the Toaster that I have often wished it could gain *slice* status right next to ToasterPaint and LightWave.

Perhaps it is better that NewTek has not entered the fray, because a variety of high-quality, third-party support has sprung up to fill the void. Art Department Professional (ADPro) from ASDG, Imagemaster R/t from Black Belt Systems and ImageFX from Great Valley Products (GVP) have all come to the aid of Amiga artists. Both ASDG and GVP have been longtime supporters of the Amiga community, while Black Belt Systems, although newer to the Amiga, has gained almost cult status for its policy of providing users with frequent software upgrades and excellent customer support.

Gotta Have It!

So why should every Toaster owner have one of these wonder tools? Image processors serve a variety of functions that could otherwise not be accomplished with the Video Toaster software alone. These programs can be used for converting images between different file formats and restoring, compositing, retouching and enhancing images. They also can be used with a variety of scanners and framegrabbers and to produce a variety of increasingly popular special effects.



Original picture before processing

Altered States:

Although an individual might not need all of these features, chances are that the common user will need the assistance of an image processor at some point or another. A good example of this is in the case of file conversions. One of the strongest advantages the Amiga had when released was an adopted file standard. The IFF standard made it easy for images to be transferred between a variety of programs on the Amiga, which gave users the benefit of a variety of tools.

Unfortunately, standard file formats weren't incorporated into most other platforms, which resulted in a slew of different file types that hindered the exchange of images and thoroughly confused just about everyone. After leaving



A fresco operation performed by ADPro

the comforts of the Amiga platform, artists find themselves confronted with a variety of image formats including JPEG, TIFF, TARGA, GIF, BMP and PCX to name just a few of the more popular. Chances are, if you want to output images to slides or for use on desktop publishing systems, you need to convert them to one of these formats.

The Nature of the Beast

Being confronted by the various options of convolving, filtering, cropping and compositing can be somewhat intimidating at first. Add to that the fact that ARexx is an essential part of image processing programs because of the need to communicate with other applications, and one can get confused rather quickly. After reading the manuals, it's easy to wonder if

you're an artist or a programmer. Although the power is there for those adept at ARexx, with any of these it is relatively easy to get in and do file format conversions along with numerous operations and special effects. Those who wish to get a grasp of these programs better be prepared to do a lot of button pushing and manual reading (not necessarily in that order).

The Imagemaster manual states: "You will never be able to use every feature in the program to anywhere near the range each tool has." That is probably an understatement. All three of these programs allow processes to be combined in a variety of ways and in different sequences producing uniquely different results each time. The good thing is that with so many options, there is the

ability to produce just about anything you can imagine and quite a few things you can't. All three of these programs provide the basic image processing features of color balancing, file conversions and such, while at the same time providing unique strengths and features for individual tastes.

ADPro

ADPro has been around the longest time and has become an essential tool for reliably doing the basic image processing requirements that most people need. In its latest release, version 2.5, ASDG has revamped the interface of the program so that familiar menus, gadgets and file requesters of the Amiga are used. The latest version also provides more keyboard shortcuts and is capable of rendering images on a variety of third-party display boards. The ability to send images to high-quality display boards, such as the Retina, FireCracker and Picasso II, is an extremely valuable feature. It allows images to be viewed in true 24-bit color as opposed to the Amiga's native resolutions, which only give moderate representations of the true image. This is especially true of non-AGA machines.

ADPro is more or less a workhorse used to manipulate full-screen images, and in this capacity it serves quite well. ASDG makes no claims of this program being a paint program, but rather a tool for manipulating complete images. ADPro handles the vast majority of file formats, and with the purchase of a separate Pro Conversion Pack (\$90), the program handles the file formats of many higher-end systems.

Toaster users also can rejoice because ADPro allows loading and saving of framestores and the ability to save directly to, or grab from, the framebuffers while the Toaster is running. Although this takes a few moments, having direct access to the Toaster makes working with ADPro convenient.

The Frame Editor utility (FRED) that's included also allows users the ability to batch process frames using the multitude of ADPro operators. Although FRED is adequate, third-party products, such as ASDG's own ProControl and MacroSystemUS' MultiFrame, are perhaps a better option for those who wish to do a lot of batch processing. ASDG also has included the ever-popular Splitz and Joinz programs for transferring larger images to other platforms. Both IBM and Macintosh versions of these utilities are available, which makes it easy to transfer images that won't fit on a standard floppy.

ImageFX

ImageFX is probably the easiest of the programs to use while providing a wide degree of flexibility. It sports a friendly interface with a variety of powerful tools available from the main control panel, including those more commonly found in paint programs. ImageFX also allows you to edit large and small images by incorporating virtual memory. This feature allows users to edit images much larger than the screen and regionalized processing, which permits you to use the program's painting tools to affect smaller portions of the screen.

ImageFX also supports an undo option, giving artists



An example of rubbersheeting from the CineMorph program, which is included with ImageFX.

the freedom to experiment with the multitude of features offered by the program. ImageFX has extensive, well-documented ARexx support and the ability to launch hook programs, such as the included CineMorph morphing package and IMP (ImageFX Multi Processor), from within ImageFX. IMP is easy to use and makes batch processing images a snap.

CineMorph is an incredibly powerful morphing program, which provides spline-based morphs and morphing over a sequence of images. GVP claims ImageFX is the only truly integrated image processor because it includes a morphing package and image conversion modules that cost extra in ADPro. Ironically, this program requires a separate utility, ToasterFX from Byrd's Eye Software, to read and write the Toaster framestore format. Now in version 1.5, ImageFX seems to be gaining popularity among users by providing the basic image processing features needed along with a few bells and whistles for a reasonable price.

Imagemaster R/t

Imagemaster is without a doubt the most powerful of all three programs. The R/t in the name is derived from the program's ability to retarget its display and interface to third-party devices such as the Firecracker, HAM-E and OpalVision. The latest version also has a new and improved interface that makes performing operations less difficult than in previous releases.

Imagemaster is an incredibly complex program. The interface consists of a labyrinth of panels and buttons hiding hundreds of features and effects throughout. Compared to other programs, such as ADPro which offers a more or less click-and-go operation, Imagemaster offers complete control of almost every aspect of every feature. If you want an image processor that can set you apart from the competition, look no further.

Imagemaster has regionalized processing and an undo/redo option that makes trying out different features and settings quick and painless. Another unique feature of Imagemaster is its manual or lack thereof. The manual comes on disk and uses a hypertext-type information system to shuffle through data. This unique system is also capable of providing on-line help while the program is running. By placing the cursor on top of the icon and pressing the help key, users are whisked to that portion of the documentation. Extensive pictures are also shown throughout the manual demonstrating some of Imagemaster's many operations. The virtual manual is an attractive feature; however, it requires users to sit in front of the old CRT to absorb information.

Imagemaster, like ImageFX, has features similar to a paint program, but neither stands up to standalone packages such as Brilliance or DeluxePaint. Imagemaster also includes a morphing program that holds its own against the competition, making this package all you would ever need for special effects.

Tool or Toy?

One thing to keep in mind when purchasing an image processor is what type of features you are most likely to use. Imagemaster has hundreds of features, but I'm not

sure how often projects are going to require you to Droop or Zig-Zag an image. Chances are if you are going to be doing a lot of format conversions and simple clean-up operations, you would be hard pressed to find a more straightforward program than ADPro. ADPro probably isn't for the experimental artist, however, and those looking for more special effects and artistic tools should probably look into both ImageFX and Imagemaster.

The Future

Recently the line between image processors and paint programs has been starting to blur. With both ImageFX and Imagemaster supplying artistic tools and new paint programs, such as TV-Paint 2.0 offering image processing features like convolutions for blurring, sharpening and embossing images, it's likely that paint programs and image processors will at some point become one and the same. This has already started to happen with programs for PC compatibles and Macintosh, such as Fractal Design's Painter. However, both of these platforms are more or less stuck editing still images.

The Amiga is the only platform whose image processors have been designed with animation in mind. The release of products, such as the Personal Animation Recorder from Digital Processing Systems, has made it relatively easy to grab a sequence of frames to be processed, and I'm sure we could be seeing improved features that take advantage of this ability in the near future. ASDG, Black Belt Systems and GVP have done a wonderful job of supporting their products and will undoubtedly continue to improve upon these already fine packages providing Toaster owners with easier and more powerful ways of altering their images.

VTU



After cropping and performing a woodcut convolution, this image was merged with a wood pattern in ImageFX for the above effect.



A few of Imagemaster's many effects. Clockwise from original: Shear & Melt, Shine & Asterize, Shadowed Elevation, Motion Blur, and Ripple.

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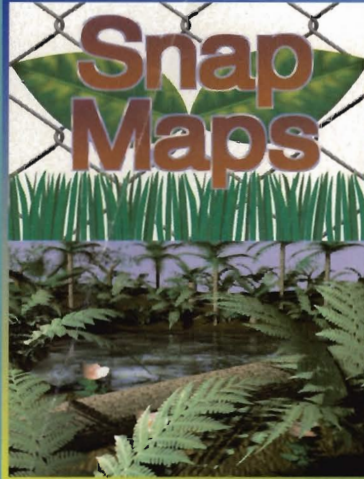
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FOR INFORMATION CIRCLE 101



Making a Music Video

by Bob Anderson

It seems like most music videos these days are completely geared to the masses' love of mayhem, sex and chaos. Just watch a couple of the hottest videos in heavy rotation on MTV or even the latest Trisha Yearwood video on Country Music Television to see what I mean. But over the last few months, I had the opportunity to work on a unique video project. This unconventional band, looking for some crossover success in mainstream music, wanted to do something different.

The goal of the project involved integrating live video with LightWave animations for the Vix 9 track from the Bela Fleck and the Flecktones (one of my favorite bands) album, *Three Flew Over the Cuckoo's Nest*. Even though the production staff had plenty of experience with live shoots and animation, the project was more difficult than we anticipated, and the final product was quite a surprise. We ran into many unforeseen circumstances that you can hopefully learn from as well.

I met with Bela at several of their concerts, and he had explained that they had done several music videos in the past in support of their first album; however, due to the unusual nature of the band's music, these videos saw little airplay. They aren't really an MTV kind of band and wouldn't exactly fit on VH1 either. As a result, Warner Brothers wasn't going to supply much financial backing; thus, it was vital that this be an unusual and exciting video produced on a limited budget.

Production

The team for the video shoot consisted of three cameramen, a gaffer/grip and two members of the Flecktones' road crew. We shot with three cameras and recorded on three Sony Betacam decks. We had planned a number of shots, but also wanted to keep things loose and spontaneous. The band participated throughout the process, and several of their ideas were incorporated into the final product. However, upon completion of shooting, we had entirely too much footage: over 15 hours of tape for a four-and-a-half minute video.

Post-Production

First, we edited a complete, live video-only tape synced to the audio track. This version incorporated any video segments that would later be processed through a Personal



Spoiled by the Screamer

This is an example of an extremely simple model that provided a spectacular result. The three diamonds each contain a plane where the band's images were texture mapped. The images were set to about 80 percent luminous so that they would be bright enough, yet react slightly to external light sources. The glass was set to 100 percent transparent with opaque edges. The edge threshold was set very low (.04)—just enough to provide the appearance of an edge.

The glass was also set to a refractive index of 1.2. This is relatively low, but a higher setting made it difficult to see the images of the band. The glass was set to 30 percent reflectivity. These images were rendered with trace reflections and refraction.

On an Amiga 4000 '040 these images were rendered in two hours and 43 minutes. The Screamer rendered them in 34 seconds.



Big Bang for No Effort

I thought very little of this was a shot prior to seeing it in completed form. There was little effort involved, but it turned out perfectly. We needed a cube with rounded corners, so we used one from the Texture Examples scene that comes with every Toaster. We used the PAR-captured images as a cubic image map. I set the specularity to about 70 percent with high glossiness and the surface to about 80 percent luminous.

Three of these cubes were loaded and parented to a null object. The null object rotates to create the orbits of the cubes (each individual cube rotates, too). When mapped with live video, these rotating cubes created a cool, seemingly random movement.

Animation Recorder (PAR) for image mapping into animations. By capturing frames from the pre-edited footage, we got the exact frames needed to sync correctly.

However, once we started editing, one thing became very clear: the footage was high quality, but unfortunately it didn't look like a music video. It was decided that more animation was needed; in fact, we ended up animating the entire video.

I had previously created several LightWave models for the Flecktones' *Three Flew Over the Cuckoo's Nest* album cover. Working from the band's album graphics, I modeled most of the LightWave objects in the video. There were several instances where the models could not be exact, because the original album artists had taken liberties with perspectives.

I'd run into similar problems in the past, trying to model some logos created by an artist who was obviously a fan of M.C. Escher. Modeling illusions is hard work. However, most of the models that appeared in the video are relatively simple and were modeled in about a week. As we designed new shots, some additional objects were created along the way.

Problems

When we started image mapping the PAR-captured sequences, there was a real problem with digital artifacting, especially in areas with a lot of motion. This can be seen in the opening sequence, where there are several closeups of hands playing instruments. After speaking with Digital Processing Systems (DPS) about the problem, they had some good advice regarding field rendering the images.

The problem occurred mostly when the image-mapped areas were rotated slightly on the Z axis. Once they were rotated above 20 degrees, the problem wasn't apparent. We've traced the source of this to the way LightWave handles mapping frame-captured images (images with integral motion). Field rendering and limiting Z axis rotation gave us acceptable results.

DPS also informed me of a company that performs firmware modifications to the Seagate hard drive used by the PAR. This modification allows the PAR to capture video at a considerably higher "Q factor." In the end, the image sequences looked great. (By the time this article goes to press, the DPS PAR card should be working with a Micropolis gigabyte hard drive. This new drive could improve live video capture rates by an additional 25 percent.)

We had hoped to speed production by sending the PAR's output to a Betacam deck for final output, but we soon discovered that single framing to the deck looked considerably better. For this project, using the PAR for live capture worked perfectly, but not for final output.

A great advantage in rendering these animation segments was using a beta version of NewTek's Screamer. We were able to render much of the animation in a fraction of the time that would have been required on traditional Toasters. But even this caused some prob-

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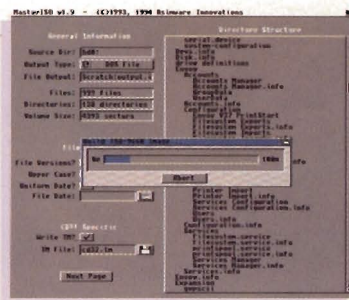
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FOR INFORMATION CIRCLE 145

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Taking Inspiration from Elsewhere

I was inspired for this shot by a scene I remembered from the film *Lawnmower Man*. In the film, the evil Lawnmower character dispatches several people by turning them into a swirling mass of spheres which end up exploding in every direction.

I originally set up this scene with a rotating group of tornado-shaped spheres. I rendered the band's images as a front projection map. Unfortunately, this left the spheres looking like flat cutouts, not spheres. The swirling also made it difficult to recognize what was being mapped onto them.

In the end, the spheres were modeled as a grid using the array tool and saved as a single object. These spheres were created using 12 rings and eight segments, because once they were turned into the array, the polygon count increased. The surface was mapped with the images using a planar image map. The surface was set to 90 percent specular to make them look like glass. They were also set to 80 percent luminous.

I also tried several designs with this grid of spheres, from using a displacement map on the object to creating interesting twists and turns using bones. But these also turned out to be difficult to recognize. In the end, the spheres looked great.



Two Image Maps

Creating this shot was fairly simple. It has two surfaces that require image sequences. In order to avoid sync problems between the two sets of images, we edited the first shot onto the master tape in sync with the audio track and then grabbed it with the PAR. Then we edited the second shot (also in sync with the audio) over the first. This way, when the images were rendered, we were sure that they would be synced together to audio.

We captured the images at a very high resolution; when exported from the PAR as RGB files, they were about .9MB each. The shot lasted 700 frames with two sets of image maps. As you can imagine, this required huge amounts of hard drive space. Since the images were going to occupy less than a quarter of the screen, we decided to halve their size. We used Art Department Professional's scale function, and in the final output there was no loss of quality.

lems. Through much of the production, the Screamer wouldn't load image sequences. This meant that any part of the video that didn't show the band in action was rendered in a few seconds per frame, but any elements with mapped live video had to be rendered on standard Toasters—costing valuable time.

Working at NewTek, I've had the advantage of meeting deadlines by using 15 or 20 Toasters rendering to a 1GB hard drive. But since our network was down as a result of the company move to a larger facility, we had to rely on external drives and removable media drives, such as the Iomega Box. This was difficult since scenes were rendering on many different Toasters; also, moving all the required objects and textures from machine to machine was quite a challenge.

Axiom Software

Our network problems were addressed by using Axiom Software's latest release, WaveLink. This is a simplified front end for an Amiga ParNet. WaveLink features an automated means to send scene information, as well as all associated objects, textures, images, etc. between two Toasters. (ParNet networks will only connect two Amigas.) Each animator on this project owned at least two Toaster systems, and we used WaveLink for our overnight (or in some cases, over several night) renderings since many of the scenes had such high-polygon counts.

WaveLink began its rendering process by sending the entire scene from one machine to the other through a parallel computer connection. This turned into a lengthy process and often led to hours of wasted time because I would accidentally leave "Limited Region" on or forget that I had been rendering a test in super-low resolution. Once these complex scenes initiated the inter-computer data transfer, I might have waited 10 or 12 minutes before I could abort the process, only to have to wait another 10 to 12 minutes to start it again.

Continuing on, we realized that rendering time could be reduced by operating more intelligently. Because of the Screamer's problem with image sequences, we needed to figure out a way to reduce the rendering time needed on networked 2000s. One big timesaver came after re-examining our LightWave scenes. If camera movements were eliminated, we could render space backdrops, complete with lens flare stars and transparent nebula, and use these as a single backdrop image, rather than rendering the background over and over. In most cases, this cut the rendering times in half.

We also finally devised a scheme to use the Screamer to render elements of scenes that didn't contain sequences and later composite in elements rendered on the Amiga 2000s. One shot in particular involved flying through space toward a floating drive-in movie screen. As the camera approaches, live video is displayed on the movie screen. Obviously, we could have used the Screamer to render up to the point where the texture mapping began, but we con-

tinued and rendered the entire scene. Then we re-rendered these images as a background image sequence and used the 2000s to render just the actual surface of the drive-in screen with the live video mapped upon it in the foreground. Obviously, everything lined up exactly and by rendering just the video screen, we drastically reduced rendering times.

Often, members of the NewTek technical support team are enlisted to create animations for company demo tapes. These animations are usually short clips that illustrate new features of the Toaster. Because of the scope of this project, it provided everyone with some insight into managing a major project. We had to design systems to keep track of the rendering network, track who was working and keep Warner Brothers, the band, and the band's management company in the loop about the status of the project. (These were a lot of details that we hadn't really thought about prior to production.)

Fortunately, all of the parties involved were pleased with our efforts, and I appreciated all of their creative input. Their management had really given us free reign to do whatever we thought looked good, plus we learned some new production techniques. It was a unique video, indeed.

VTU

Bob Anderson is NewTek's technical support manager.



Direct from Earth

This animation was based on a simple technique where two similar, yet different images are used to create the illusion of movement. I captured two video frames and used TVPaint to trace the image with a bright, neon-like color. I then used TVPaint's stencil function to remove everything but the tracing. This left only the neon-looking lines. I then painted the background grid and placed the tracing on top of it. The procedure was then repeated for the second image. These images were mapped onto the screen surface, and I alternately faded between the two. The sign area at the top of the object was image mapped with an image that was too big to fit in the window properly. The entire sign reads, "Tonight at the Saturn Cafe... Direct from Earth...Bela Fleck and the Flecktones." I used automatic sizing to set the height of the window correctly and multiplied the width several times. With a little experimenting, I found a proper width for the letters. I used a velocity to scroll the image across the window and once again with some experimenting, found a velocity that looked right.

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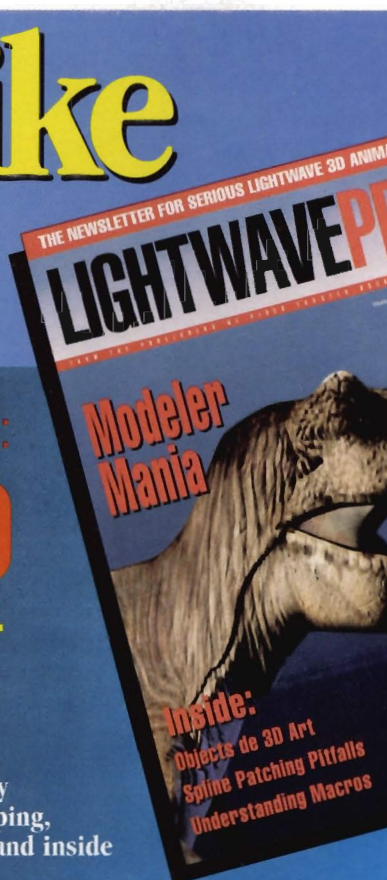
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Life After Commodore:

The Industry Looks Forward

Josh Moscov with Douglas Carey

They say history occurs in cycles, and in the case of Commodore International Ltd., the cycle seems to be defined every 10 years. The company's April 29th, Black Friday announcement that it was entering into an "orderly liquidation" came nearly a decade after the company purchased Amiga Computer Inc. for \$27 million in cash and stock in October 1984.

That, in fact, may have been the most savvy Commodore business decision of the '80s. The introduction of Amiga products between 1985 and 1994 brought the company sporadic success over what many industry insiders would call the decade of demise for Commodore. This was the period that defined the struggle of the Amiga platform, its committed user population and third-party developers.

The future of the Amiga technology remained in question at press time. On June 1, Commodore entered official trustee liquidation, essentially reaching an auction status. Despite the deadline, Commodore trustees Franklin Wilson and McGregor Robertson, who are based in the Bahamas, continued to hold discussions with several potential buyers, including Korean-based Samsung Inc. While the negotiations were not confirmed by Commodore, a Samsung spokesman said the company was continuing to pursue a purchase of the technology.

Some last-minute reports indicated that a Commodore/Samsung deal was imminent.

According to Channel 4000, an independent Toaster dealer news service, the trustees and the creditors were negotiating for a deal that would produce a quick financial return. The report also indicated that to expedite the purchase, the technology may be licensed to several groups and portions of Commodore would be sold piecemeal.

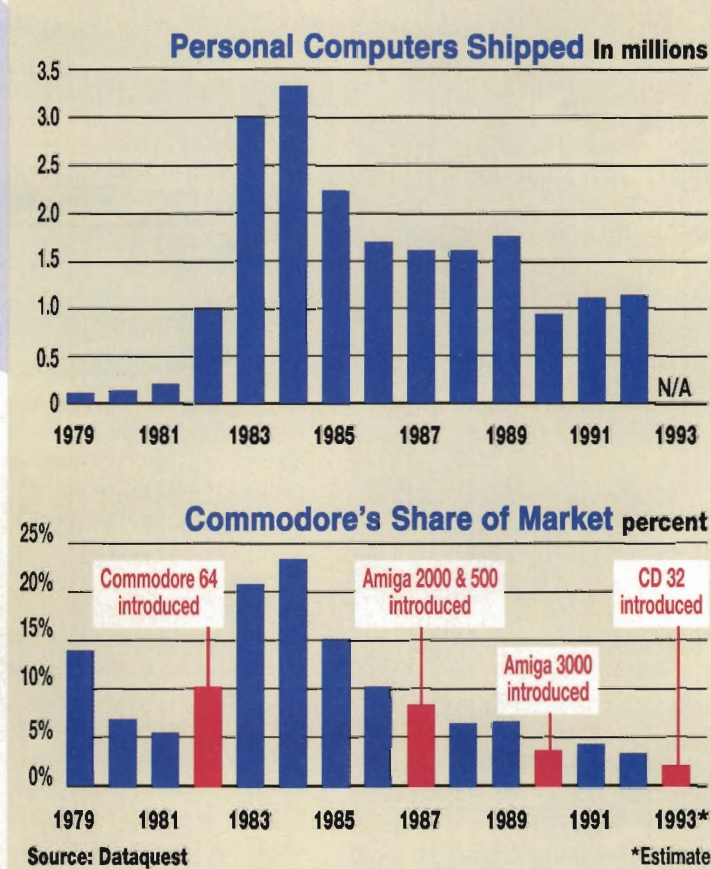
"There have been significant interests in the Commodore assets. Based upon that interest, there seems to be a lot of people who think that Commodore is valuable," Wilson said. "We have an obligation to sell."

Samsung was not the only company that expressed an interest in the Amiga. A consortium of interested companies headed by Creative Equipment International (CEI), the largest Commodore distributor of Amiga parts in the United States, made an official offer on May 13.

According to company president Alex Amor, CEI was working with a number of different corporations that want to use the technology for other applications, including medical imaging or as a cable converter box.

Industry Responds

Topeka, Kan.-based NewTek, which introduced the Amiga platform-based Video Toaster, also has a vested interest in the outcome. In a May 5 letter addressed to Video Toaster dealers and users, company president Tim Jenison attempted to reduce anxiety about the future of the Toaster by outlining a five-step plan of action. Jenison empha-



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Life After Commodore

sized that development of the Flyer was on schedule for shipment of demo units to dealers in July and to end users in early fall. He added that the company was investigating an Amiga refurbishment program.

"The refurbishment plan is still in the planning stages and is just a precautionary measure," said Jud Alford, NewTek's director of corporate communications. "The plan would involve taking trade-in Amigas that are Toaster compatible and completely checking them out from a system standpoint. They could be made available as used gear."

Alford went on to explain that the company has been watching the supply of Amigas, monitors and Toasters through the worldwide Amiga distribution channel.

"Our sources say that there are plenty of Amigas and Toasters out there," Alford said.

The availability of Amigas has been a major issue to all interested parties and is related to other Commodore business problems. In early March, CEI was notified by Commodore officials of an injunction that was to prohibit the sale and distribution of Amiga products in the United States. According to Amor, the injunction was put into place after Commodore violated a patent involving video-display technology. He noted that the injunction does not affect Amigas that are housed at distribution centers or on dealer shelves.

As a result of the injunction, CEI began building up stock of Amiga products "We have enough product to meet demands for the next four or five months for the entire country," Amor said.

The Service Management Group (SMG), whose SMG Pro Care program has provided support for Toaster owners, has also been affected by the injunction. SMG president Paul Bielski said the company, like CEI, has been actively purchasing Amiga parts during the past year. In addition, SMG is working with Commodore suppliers and subsidiaries worldwide.

"We continue to process warranty returns and believe that we can continue to tend to Amiga users," Bielski said. "Commodore has worked actively with us, and we have made significant investments in spare parts. The only things we have had a hard time getting are A4000 motherboards."

In terms of SMG's relationship with Commodore, Bielski noted that the outsource contract was written with specific contingencies should either company cease to operate. "No matter who buys Commodore, we will be able to provide service for the Amiga through our network of 100 Amiga dealers and service centers," Bielski said.

Problems the Amiga Couldn't Fix

Commodore has a long history of problems in the United States, with the liquidation being the financial nadir. What is perplexing to many financial analysts is that the company had a stronghold on the marketplace in the late '70s and early '80s.

A 1989 *Marketing Computers* report credited the company's Personal Electronic Transactor (introduced in 1977) as helping to launch the PC industry. According to research from Dataquest, Commodore sold 80,000 units in 1979; in that year sales amounted to \$33.6 million dollars. The company's worldwide market share was 32 percent in 1983—far more than any company has held since.

But by 1988, the financial situation had changed dramatically. The *Philadelphia Business Journal* reported in 1988 that Commodore reached \$1.27 billion in sales in 1984 but "stumbled amid fierce competition and posted five quarters of losses totaling \$273 million." Much of the competition was coming

from Apple Computer, which introduced the Macintosh in 1984. Commenting on the company's financial situation at the time, one analyst said that "without the Amiga, Commodore most likely would not be around today."

The dawn of the '90s proved no better for Commodore. In 1991, Commodore lost a breach of contract suit filed by former president and CEO Thomas Rattigan and subsequently settled the case for \$9.2 million. According to the *Philadelphia Inquirer*, the payout was nearly 90 percent of the firm's third-quarter earnings in 1991.

Sinking deeper into financial trouble, Commodore received a \$60 million investment in 1987 from Prudential Insurance Company of America. The creditor was issued 2,250,000 warrants in connection with the private placement of subordinated debt, according to PR Newswire Association. After repurchasing 750,000 stock warrants for about 17.40 dollars per share, (\$4.5 million) in 1991, Commodore said that Prudential still held 750,000 of the original warrants. In 1993, Commodore reached an agreement with Prudential and another institutional leader that waived the company's non-compliance with certain note agreements through 1994.

Third-Party Developers React

Despite the turmoil caused by the Commodore liquidation, it's business as usual at Interworks, a company that has been developing networking products for the Amiga since 1990. Interworks owner Allen Brooks, a former Commodore technical support manager for the western United States, said that interest in his products is currently high.

"Interworks has not been affected at all by the liquidation. If anything has occurred, people seem more interested in networking now than ever," he said.

Brooks recently acquired Commodore's license on the Transmission Control Protocol/Internet Protocol and developed it with Network File System, a universal protocol that will enable the Amiga to connect and share information with PCs and SGIs.

InnoVision Technology marketing director Tom "Patrick" McAuliffe said that the company has no plans of slowing down product development as a result of the current questionable status of the Amiga technology. The company plans to introduce Alpha Paint, a 36-bit paint program, this summer.

"Somebody somewhere will be producing Amigas for a long time to come. The technology is too good not to survive," he said. "Regardless of what happens with Commodore, there is an installed base of three and one-half mil-

lion Commodore users in the United States. We're not panicking, but I can understand people's concerns."

DevWare president Scott Pincus said that the number of Toaster-related calls has diminished since the Commodore announcement, but the parties calling are more qualified. The company is currently developing the professional front end for the NewTek Flyer, and Pincus is excited about what a company like Samsung could do for the Amiga and the Toaster.

"This is the best thing that ever happened for DevWare," Pincus said. "We may see multiple platforms for the Amiga technology."

Pincus' optimism, however, was balanced with a dose of reality. He said that even if Commodore is purchased soon,

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Life After Commodore

there is going to be at least a three- to four-month delay in production of the new technology.

But Scott Thede, president of Axiom Software, disagreed with the optimism of other third-party developers. He said Axiom began planning for its exit from the Amiga market more than a year ago and that the soon-to-be released 3D Pixel 2 would be its final Amiga product.

"It's been a lot different in the last two years," Thede said. "I don't know anybody who's doing well right now. Everyone is so strapped."

Thede went on to comment that no one in the industry can predict what a powerful company such as Samsung could do

with the Amiga or how long it will take any buyer of the technology to do something positive with it.

CEI's Amor, whose consortium hopes to have an opportunity to own the Amiga, summed up the current situation in a manner that aligned the past decade of frustration with the possibility of a better tomorrow for the industry.

"We don't agree with the lack of effort that (Commodore) has put into the U.S. market. The future can only be better," Amor said. "Just imagine what could be done if the consumer knew how powerful the Amiga was and third-party developers were supported properly."

VTU

Jeffrey Porter: Amiga Pioneer

An Analysis of Commodore's Marketing Myopia

Josh Moscov



Three weeks after Commodore International Ltd. declared bankruptcy, Jeffrey Porter, the company's director of advanced technology, worked his final day before moving to SCALA as vice president of engineering. But to the Commodore industry, he will always be considered one of the principal Amiga developers.

In various positions over the last decade, Porter worked on nearly every Amiga prototype—from the PAL Amiga 1000 to the Amiga 3000, and a variety of peripheral products. Coupled with his expertise in Amiga technology, Porter has a strong understanding of why Commodore was successful in certain computer markets and not so in others.

"The biggest misconception people have is that Commodore never marketed their products," Porter said. "That's only true in this country. The marketing was successful around the world."

Porter explained that Commodore's European marketing divisions attained high sales in the early '80s by making transitions between new technologies. The Commodore 64 (C64) had been successfully mass marketed with the unique sales strategy of display in department stores and discount retail outlets alongside TVs and VCRs. The Amiga 500 followed suit and enjoyed similar success while maintaining the same marketing strategy.

In contrast, the United States marketing team decided to sell the A500 in computer stores such as Computerland and phase out the C64. Porter said that the emphasis on the high-end retail market reflected the backgrounds of Max Toy and Harry Copperman, the Commodore presidents during the late '80s.

"In the United States, they attempted to sell a \$500 computer in the wrong channel and never found the right niche for it. These people [Toy and Copperman] were used to selling \$3,000 IBMs and Compaqs," he said.

The transition from the A500 to the A600 in the marketplace was also vexatious. Marketed as featuring a "cost-reduced design," the only difference between the two was the A600's new box.

"There was a problem of knowing which one to build. There was no clear decision on that," he said. "The newer model had fewer features and was no cheaper to the end user but was mar-

ketted as a 'cost-reduced' design. People thought the A500 was not as good a machine because it had a lower number. It confused the marketplace."

A year later, Commodore erred again during the transition from the A600 to the A1200. This time, however, the newer A1200 was loaded with new features, including the AGA chipset and its 60 million colors. Commodore failed to set an appropriate price point for the A1200 to reflect its technological advances and maintain the marketplace's interest in the A600. As a result, sales of the A600 dropped drastically.

"The A1200 had a 68020 versus the A600's 68000, two (megabytes) instead of one, the AGA chips instead of the ECS chips and an extended keyboard. And it was only a hundred dollars more," Porter said.

The impact these and other marketing decisions had on the company became increasingly apparent. Commodore inventory became devalued and had to be marked down, which was reflected in the company's extreme financial losses over the past two years.

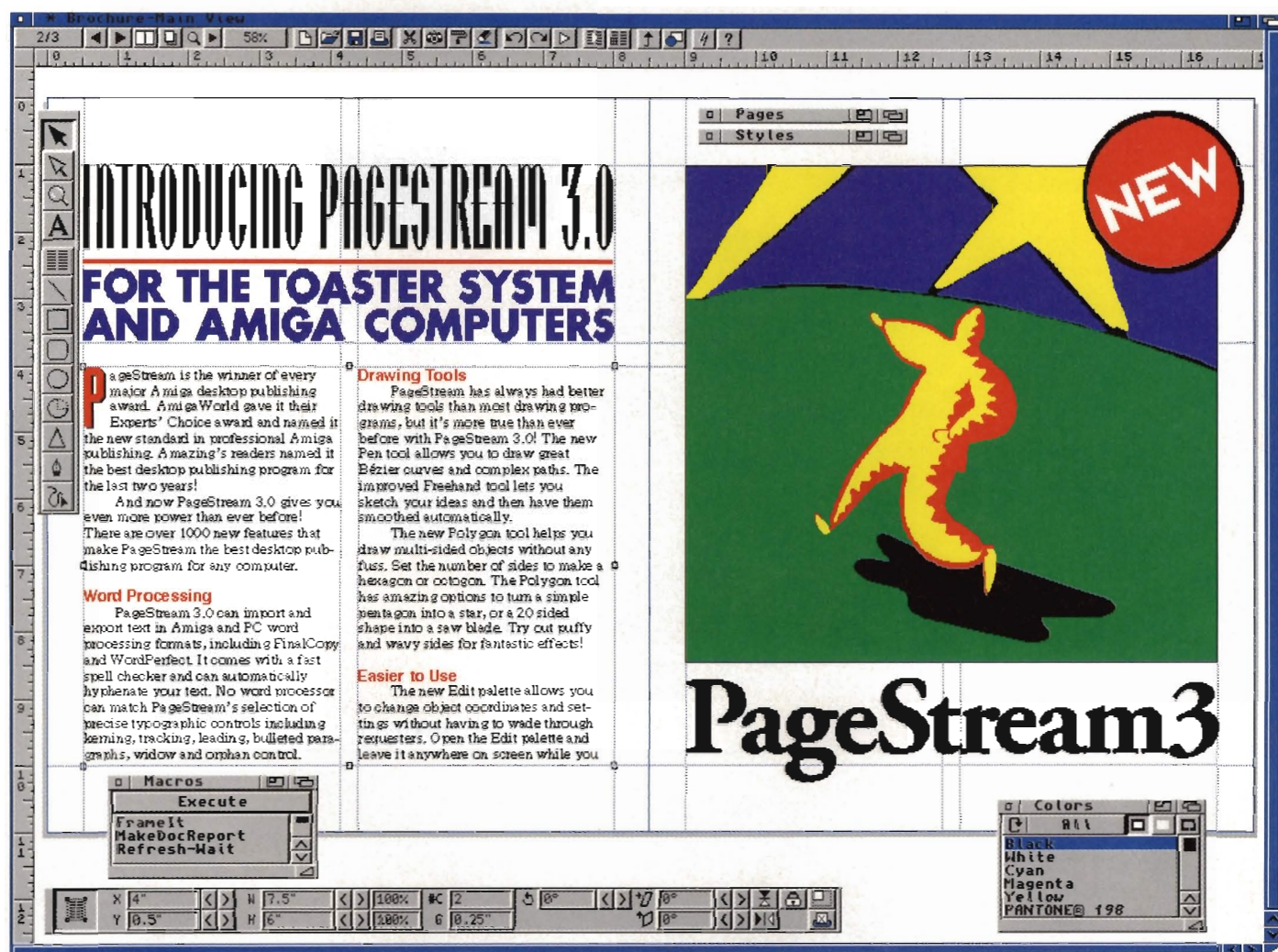
As the company saw its share of the overall U.S. computer market dwindle in the early '90s, Porter said that Commodore tried to find different markets for the Amiga technology in an effort to boost domestic sales. NewTek's Video Toaster had been a solution in part to the Commodore dilemma.

"Once you've lost the consumer market share and the money share in the United States, the only thing left to do is focus on the vertical markets such as video. And from that point on, you've admitted that you have failed in the mass market ... The Video Toaster has been a strong reason why Commodore has had any success in the United States at all," Porter said.

While Commodore is now part of the past, Porter believes that the success of the AGA chipset in video and graphics applications will enable the technology to enjoy a bright future. "The bankruptcy situation is one of the best things possible to happen to the Amiga," he said. "The technology will get licensed to a variety of people. There are many vertical opportunities in games and cable. The Amiga technology will be the 6502 of the '90s."

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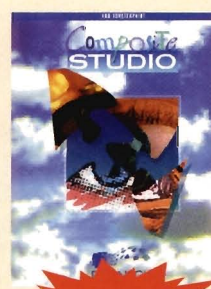
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5150

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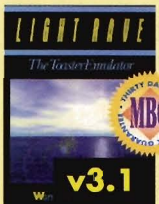
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The MII "W"

Panasonic's



Chrissy Borgatta

The Panasonic "W" series of MII videocassette recorders consists of the AU-W32H basic editing player (\$8,800), the AU-W33H editing player with auto-tracking (\$10,400) and the AU-W35H editing player/recorder (\$10,400).

by Tim Doherty

T

he price war in the professional video equipment ranks turned a little hotter with the introduction of the Panasonic "W" series of MII videocassette recorders.

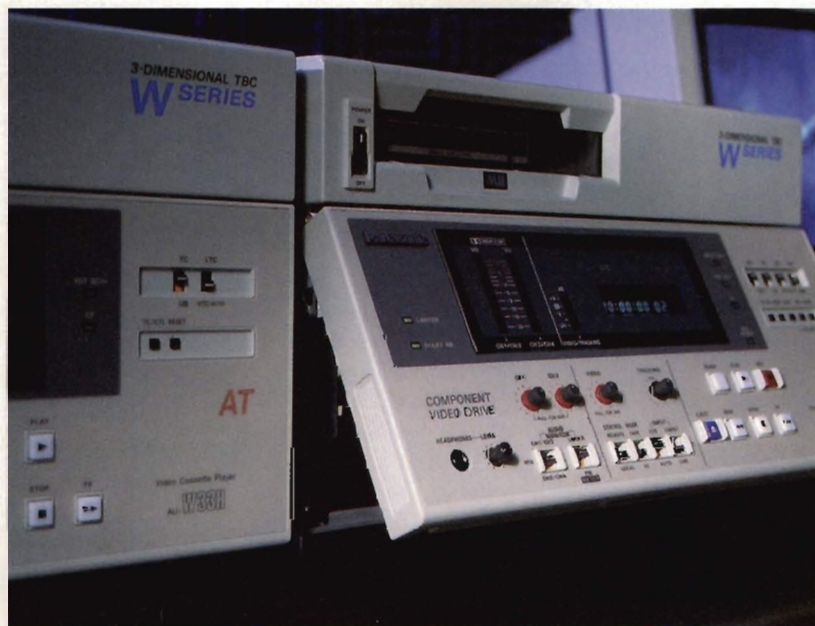
Unveiled at the National Association of Broadcasters convention in March, the "W" series offers full-bandwidth, MII-component quality, but is priced well within the reach of industrial and even prosumer budgets.

Series

Lower-Priced Recorders



Chrissy Borgatta



Chrissy Borgatta

The MII Format

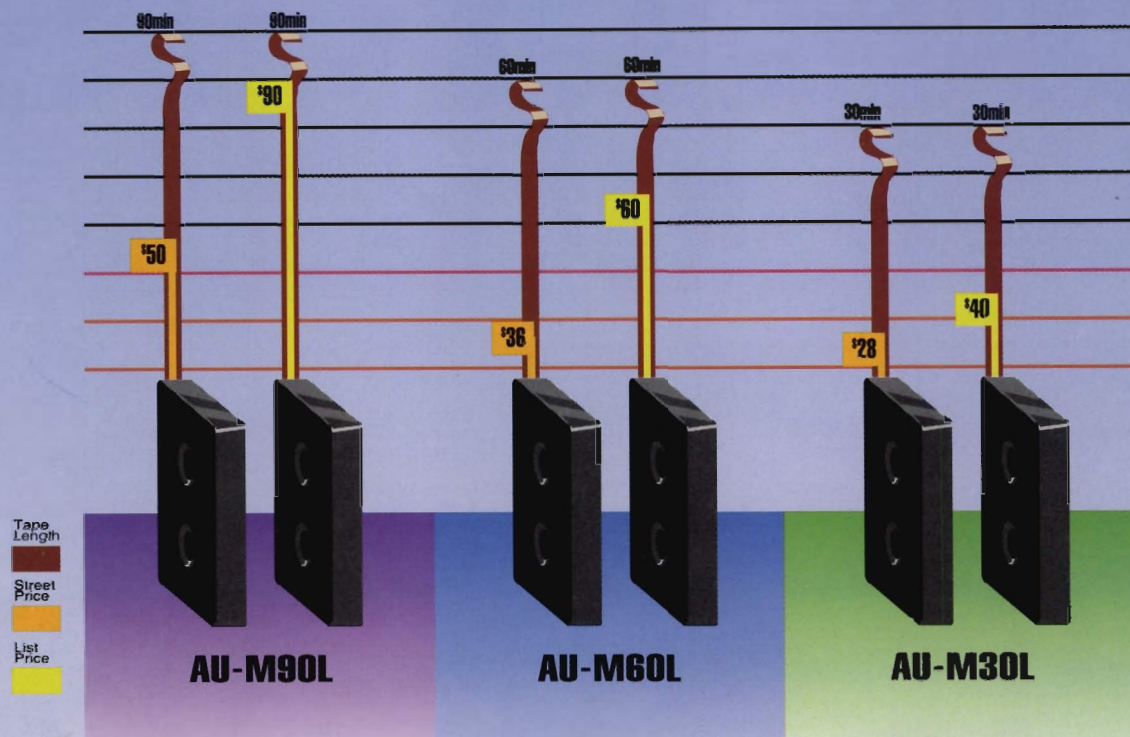
Like Sony's popular Betacam format, MII is an analog component video recording system based on a half-inch tape cassette. Separate tracks are used to record the baseband Y (luminance) and two chrominance signals, R-Y and B-Y. In this way, component analog video formats preserve signal integrity.

Unlike S-VHS tape recording systems, which record a luminance and a modulated chrominance signal with the same video heads, analog component systems such as MII, lay down the luminance signal and the two chrominance components with different heads. One set of heads is used to record Y and another set lays down the R-Y and B-Y signals.

In an S-VHS system, the Y and C signals are combined after FM modulating the Y signal and converting the C signal to a lower frequency to prevent overlapping. While this is a big improvement over composite NTSC, it still can produce cross-color bleeding at borders due to the slight inter-modulation of Y and C signals during recording and playback. The use of the same set of heads to record Y and C also can lead to narrow bandwidth and low signal-to-noise ratios, since frequencies have to be allocated at other than optimum ranges.

MIl utilizes an analog component system to record the Y and R-Y, B-Y signals onto completely separate tracks. This permits recording of a wide bandwidth for each signal and results in the ability to capture fine detail in both luminance and color. The picture quality is comparable to the 1-inch Type C format, and because the signals do not mix during

Price Comparison of MII Tapes



In addition to the tape formats shown above, 10- and 20-minute tapes in large and small cassette size are also available.

recording and playback, the quality remains high even through repeated editing and copying.

The "W" Series

The "W" Series consists of the AU-W32H basic editing player (\$8,800), the AU-W33H editing player with auto-tracking (\$10,400) and the AU-W35H editing player/recorder (\$10,400). Complementing the VTRs are several edit controllers. The AG-A350 controller has a jog-shuttle dial and allows one-to-one, single-event assemble, insert, slow motion and audio-split editing. The AG-A300 Slow Controller is lever-operated and allows up to five individual cue points to be set. These components create a total MII system at a reasonably low cost.

Panasonic furnished a complete system for evaluation, but substituted one of the more expensive players from its EnHanced series in place of the AU-W32H. This provided an opportunity to compare the quality differences between the higher-priced, EnHanced MII VTRs and the new "W" Series. They also supplied the more sophisticated AG-A800 controller, an A/B-roll device capable of storing up to 128 single-cut events.

As I unpacked and set up the VTRs, I was immediately impressed by their rugged construction. Less expensive does not always mean smaller and lighter. All of the decks are large and heavy. They look more like D3 VTRs than low-cost, industrial VTRs. In fact, I suspect that Panasonic simply reworked the D3 case slightly for its new "W" line. The size and weight

of the MIIs required me to get assistance to move them from my animation suite to one of our edit bays.

The front panels of the "W"s are uncluttered and simple. None of the "W" decks has a jog-shuttle dial, since they are intended to be operated via an edit controller. The standard controls for tape transport, audio levels and time code are neatly arranged. The blue LED time code display is small, and though I had no difficulty reading it, a larger display would make sense, especially considering how much empty room there is on the front panel. Audio and tracking meters are located to the left of the time code display.

All MII "W" decks are equipped with digital time base correctors. The entire front panel flips up, providing easy access to the TBC controls. Adjustments are provided for video and chroma levels, hue, sync phase and subcarrier.

The rear panel has component, composite, S-Video and monitor video out, along with audio and time code output. The AU-W35H recorder also has corresponding inputs. Each VTR has two remote ports: a 9-pin RS-422A serial connector and a 15-pin remote for external control of the TBCs.

Inside the case, I found that the "W"s' major components were arranged on cards. This logical installment makes it easy to service the VTRs since the technician only has to remove or replace the faulty card. I also noted a great deal of empty space under the hood of the "W" deck, which reinforced my belief that the "W" chassis is being recycled from the D3 series.

Newton's Law

Physics Module for Lightwave

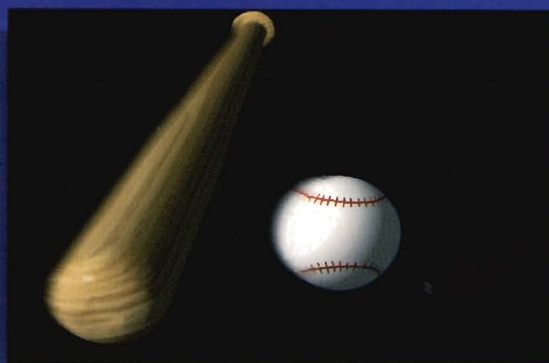
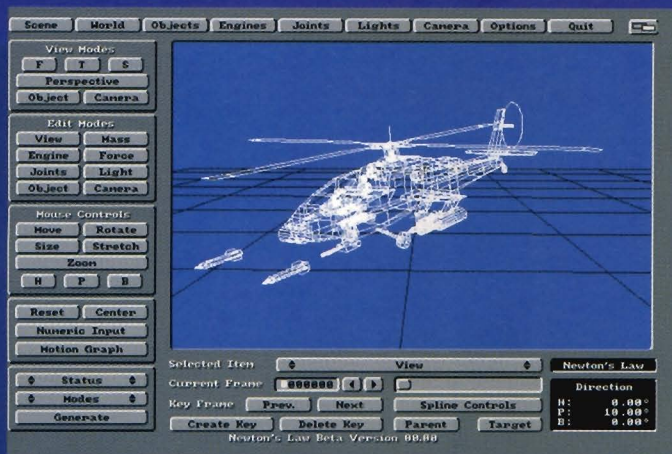
- Load in a Lightwave scene or object file, assign material attributes to objects, and let Newton's Law do the rest. All forces, attributes, and motion paths can be varied over time.

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FOR INFORMATION CIRCLE 146

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Six Generations of MII Products

AU-650

Year of Introduction: 1986

Product Description: Studio VTR

Price: \$32,000



AU-500

Year of Introduction: 1986

Product Description: Field recorder

Price: \$14,000

AU-660

Year of Introduction: 1988

Product Description: Studio VTR

Price: \$38,500



AU-620

Year of Introduction: 1987

Product Description: Studio player

Price: \$20,000



AU-640

Year of Introduction: 1988

Product Description: Studio recorder

Price: \$28,500

AU-630

Year of Introduction: 1988

Product Description: Studio player

Price: \$24,000

AU-65

Year of Introduction: 1990

Product Description: Studio VTR

Price: \$14,000



AU-62H

Year of Introduction: 1992

Product Description: Studio player

Price: \$15,500



AU-63

Year of Introduction: 1990

Product Description: Studio player

Price: \$14,500

AU-62

Year of Introduction: 1990

Product Description: Studio player

Price: \$9,950

AU-65H

Year of Introduction: 1992

Product Description: Studio VTR

Price: \$15,500



"W" Power Series

Year of Introduction: 1994

Product Description: AU-W35H studio recorder

Price: \$10,400

Product Description: AU-W33H studio player

Price: \$10,400

Product Description: AU-W32H studio player with auto tracking

Price: \$8,800

Quality Performance

Editing with the machines was a pleasure, and on-screen menu items made it easy to configure the system. Because both Panasonic and Sony feature similar protocol, I had no problem integrating the decks into the edit systems and controlling them with an Ensemble Pro off-line and a CMX 3600 on-line editor. However, the A800 controller was so simple and elegant to operate that I did most tests within the MII configuration that Panasonic provided. The MII's transport mechanism is great, with high speed visual picture search 32 times normal speed in both forward and reverse. I was able to pre-roll in just three seconds. Of course, the glitch-free, variable speed playback from the AU-W33H's automatic tracking was a joy to use, allowing fine control over slow or quick-motion playback. Once you have used an auto-tracking VTR (also referred to as dynamic tracking in the Sony world), you never want to do without it. Video can be slowed or accelerated to fill any hole or spot. It is also ideal for special applications, from the slowed replay of a football touchdown to slow-motion of a fashion model's hair blowing in the wind. The "W" series' auto tracking was completely noiseless, ranging from -1 to 2 times normal speed. The variable speed play-

back was easily adjusted via the edit controller. However, a jog-shuttle dial on the AU-W33H would be an added plus.

The AU-W35H comes equipped with a time code generator/reader, while the other "W" Series VTRs have time code readers. The AU-W35H records VITC and LTC separately, and MII VTRs automatically switch between them during playback according to tape speed. User bits are recorded in either LTC or VITC or both, with the ability to make either one, or both, an internally generated time-of-day clock.

Picture quality is excellent. In order to optimize playback and deliver high output and low noise, Panasonic developed laminated amorphous video heads especially for use with MII metal tape. Luminance signal-to-noise ratio is better than 49dB, and chrominance signal-to-noise is better than 52dB.

Luminance bandwidth is 30Hz to 4.5MHz (+1.0/-4.0dB), and chrominance bandwidth is 30Hz to 1.5MHz (+0.5/-3.0 dB). Both bandwidth and signal to noise were the same for the "W" Series

Comparisons between the MII "W" Series and Sony's UVW Betacam line are unavoidable.

as for the more expensive EnHanced Series. Therefore, the lower price of the new VTRs did not come at the expense of quality. Panasonic maintains that MII can survive nine generations in component format. While I disagree, I noticed no image loss in three generations even with fine detail such as small text. Integrating my Toaster into the system—and thus switching to composite mode—resulted in a perceptible degradation of the video quality, as would be expected. Panasonic also claims that MII is good to six generations in composite mode, though again I would take issue with that.

Toaster owners using a component system may want to invest in a Y/C board to remain as close to component as possible. I transferred animations direct to MII using my Personal Animation Recorder's MII setting, and the results were dazzling.

The "W" Series VTRs are equipped with digital TBCs with a correction range of one entire video field of 262.5 horizontal lines. (By comparison, conventional TBCs typically have a maximum correction window of 32 horizontal lines.) Retaining an entire video field of information in memory provides superior dropout compensation along with better horizontal and vertical jitter correction. I found the dropout compensation to be outstanding. Additionally, all the VTRs (even those that are not auto-tracking) can digitally produce noiseless, still pictures.


Audio is also a valuable asset. MIIs each have four audio channels. Channels one and two are linear audio with Dolby Noise Reduction, and both have signal to noise of better than 74dB at 3 percent distortion. Channels three and four are FM, with a dynamic range of more than 85dB and distortion of less than 0.5 percent.

MII or not MII

Comparisons between the MII "W" Series and Sony's UVW Betacam line are unavoidable. The two systems are very similar and in direct competition. Both are analog component systems using a 1/2-inch tape format. The price for Beta and MII metal tape stock is nearly the same, and each can hold up to 90 minutes of video. The Beta UVWs and Panasonic MII "W"s have virtually identical video specs

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in Y/C or Composite
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LightWave Users - Dramatically Increase your 3D Rendering Speed and reduce your load and save times Dramatically!

Take your Rendering system to Warp Speed with the WarpEngine4040 running at 40MHz for over 30MIPS!

You do 3D Rendering for video production and each frame can take an hour or longer to render on your 4000/040. You're working on a 30 second commercial with 900 frames. It will take 38 days to render this 1 spot. 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	A4000/040-25MHz	2 minutes, 40 seconds
With LightWave:	A4000Warp40MHz	under a minute - approximately to 3 Times Faster!
	A4000Warp28MHz	1 minute, 22 seconds - 2 Times Faster!

Diskspeed using 2.1Gig Barracuda Drive: Read from file: 9 Mbytes/sec CPIO Available: 91% - up to 9 Times Faster

The 40MHz and 33MHz versions include the 040 Processors with Fan-Sink, four SIMM sockets and the NCR SCSI-2 Fast HardDrive Controller. The 40 MHz board requires 60ns Ram to work at its highest speed although you can insert wait states to use slower Ram.

The 28MHz WarpEngine™ comes without an 040 chip, four SIMM sockets and the NCR SCSI-2 Controller. This allows you to use the 040 from your A4000/040 and also the Memory from the Motherboard if you wish. This produces a 28MHz 040 Accelerator with 4 to 16MB of High Speed Local 040 Burst Memory™ and the fastest SCSI-2 HardDrive Controller available for the Amiga. This will double your Rendering Speed!

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 take up expansion slots and won't accelerate your Rendering System (Ram speed is actually slower*). The WarpEngine4028 is also upgradable to 33 or 40MHz!

The WarpEngine™ uses standard 72 Pin SIMMs and allows the use of up to four different size SIMMs at the same time. GVP uses much more expensive custom memory modules only available from GVP.

The NCR SCSI-2 Fast 32Bit DMA Bus Master Processor makes it the Fastest HardDrive Controller available with a direct connection to the 68040 chip providing up to 10MB/s Transfers with 90 to 98% of the 68040 CPU Processing Power left available for Rendering!

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Compatibility

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

WarpEngine 4040	
WarpEngine 3040	\$1799.00
WarpEngine 4033	
WarpEngine 3033	\$1499.00
WarpEngine 4028	\$899.00
WarpEngine 4028 w/CPU	\$1299.00

Features	WarpEngine	GVP-040/40	X-Calibur	FastLane	4091	DKB3128
28MHz, 33MHz, 40MHz Versions	YES	NO	NO	NO	NO	NO
28MHz Upgradable to 33 or 40MHz	YES	NO	NO	NO	NO	NO
Expandable onboard to 128Megabytes	YES	NO	YES	YES	NO	YES
Built in SCSI-2 Fast Hard Disk Controller	YES	NO	NO	YES	YES	NO
Uses Industry Standard Amiga SIMM Modules	YES	NO	YES	NO	NO	YES
Uses any Combination of SIMMs	YES	NO	NO	NO	NO	YES
Allows use of the Memory from the Amiga	YES	NO	YES	NO	NO	YES
Uses a Zorro III slot	NO	NO	NO	YES	YES	YES
Memory Speed Much Faster than Amiga Ram	YES	YES	YES	NO	NO	NO
Works in Amiga 3000	YES	YES?	NO	NO	NO	Yes
Zorro III DMA or Buster Problems	NO	NO	NO	NO?	YES	?

The speed of Ram installed on a Zorro III Memory board is about 30 to 40% slower than the Ram on the motherboard. *GVP uses custom memory modules that can cost up to 1.5 times as much as the standard memory used on WarpEngine. This memory can only be used on a GVP accel. Bd. The X-Calibur requires you to install 4 SIMMs at a time. The FastLane uses old 8Bit memory modules that must be installed 4 at a time.

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FOR INFORMATION CIRCLE 128

The Raptor

RISC-Based LightWave Accelerator

by Brent Malnack

At the 1993 SIGGRAPH convention in Anaheim, Calif., NewTek announced the Screamer, a rendering engine for LightWave 3D. Since that time, there has been a lot of talk about it, and many people have anxiously awaited its arrival.

The bad news is the Screamer will never be available as a product. The good news is a powerful rendering engine for LightWave has become available in the form of the Raptor from DeskStation Technology.

Before explaining what a Raptor is, a description of what the Screamer was supposed to be is in order. The Screamer that NewTek announced was to have four MIPS (the company) R4400 processors in one box running at 600 MIPS (millions of instructions per second). NewTek said the price would be less than \$10,000. Since that announcement, everybody has been waiting for its delivery.

Unfortunately, the Screamer has been pulled off NewTek's development list. The main problem in bringing the Screamer to market was to make it available at the advertised price. It is currently not possible to build a machine with those specs—even without RAM—and sell it for \$10,000.

The Screamer was also a product that was being driven by people who are no longer at NewTek, most notably Paul Montgomery. So, the company that was developing the hardware for NewTek has picked up the ball and released the Raptor.

Unlike the Screamer, the Raptor is based on two R4400 processors in contrast to the four in the Screamer. However, for the \$13,900 asking price, DeskStation has included more than an ample supply of RAM (128MB), two hard drives (the size varies), and plenty of room for expansion. NewTek was never clear on its intentions for the Screamer as far as RAM and disk were concerned. It was quite possible that adding the necessary RAM and disks could have pushed the price to more than \$20,000.



So, although DeskStation's Raptor may seem expensive, it is both a realistic price and a bargain when compared to traditional workstations such as those from SGI.

How It Works

The Raptor is housed in a large metal case that contains the two motherboards, the power supplies and the hard disks. Opening the case reveals that there is a fair amount of unused space, but the machine runs very cool. Typically, RISC processors run much hotter than PC chips such as those from Motorola and Intel.

The Raptor could be considered a Cluster, since its purpose is to sit and crunch numbers. At this moment, the Raptor doesn't need a keyboard or monitor, it just sits and renders LightWave frames and sends them back to the Toaster upon completion. This transfer occurs across an Ethernet network between the Amiga and the Raptor. (The Amiga needs an Ethernet card to connect to a Raptor.)

As for the rumors that the Screamer and Raptor are Windows N/T-based machines, this is partially true. The operating system in the Raptor is a partial implementation of Windows N/T. More on this later.

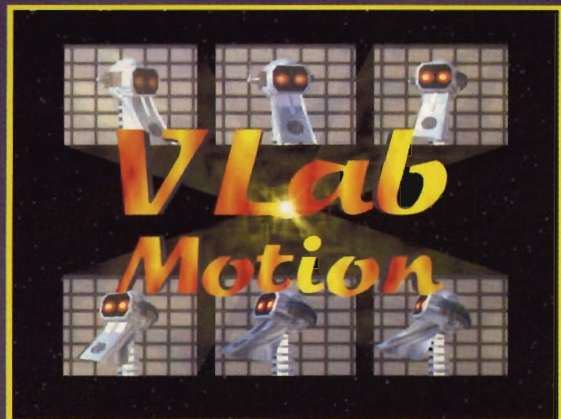
As of this writing, the procedure for installing the Raptor has changed. The version I tested came with the LightWave rendering engine already on the Raptor's hard drive. This process is now accomplished from the Amiga, which means that it is no longer necessary for DeskStation to configure the machines.

Up to 10 Raptors can be daisy chained, which means that a user can have 20 R4400 processors crunching out LightWave animations at the same time. At \$140,000, this would seem expensive, but again, there are not comparable values in the SGI market. Such an SGI configuration would run hundreds of thousands more.

In addition to needing the Raptor, NewTek is selling a special version of LightWave called ScreamerNet. This software is essentially the same LightWave software on the Amiga side, with the networking and rendering software for the Raptor

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Here's what you've been waiting for. Now you can bring the power and versatility of true on-line video and audio non-linear recording, editing, and playback to your Amiga. The VLab Motion System is built around a Zorro II card that utilizes a compression/decompression JPEG chipset and other specialized chips to provide real time digital video capture and playback at YUV 4:2:2 square pixel quality, real-time effects like chroma keying, genlocking, picture-in-picture, and video scaling. The VLab Motion is also perfect for computer animation playback from any animation package. Complete ARExx support allows special effects and digital video effects to be applied to your video frames with third party image processors like ADPro™ and Image FX™. Included in the system is the Toccata 16 to bring simultaneous 16-bit audio into the production. Full compatibility with Retina Z2 and Z3 display enhancers allows users to add a high resolution, 24 bit interface to VLab Motion System's powerful MovieShop software. No time base corrector, time code, or dedicated hard drives are required. VLab Motion includes composite and Y/C input and output with an expansion socket for digital YUV or RGB component transcoders. The VLab Motion System also provides an additional adapter for direct interfacing with the Video Toaster™. Add the VLab Motion System to your video or graphics studio and you will fly above the rest.

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- * Simultaneous non-linear audio w/Toccata 16
- * Hardware real-time scaling, chroma keying, genlock, pict-in-pict
- * Composite and Y/C input and output
- * Expansion module for direct interface to NewTek's Video Toaster
- * Optimum performance on your existing hard drives and controllers
- * Digital video effects through third party image processors
- * Works on A2000/A3000/A4000
- * Compatible with Retina ZII and ZIII Display Enhancers
- * Suggested Retail of \$1750 for card; \$2150 with the Toccata

- * Zorro II motion JPEG non-linear video edit/playback
- * YUV 4:2:2 square pixel quality
- * Compression/decompression JPEG chipset: 29.5 MHz peak frequency
- * Expansion socket for digital YUV or RGB component transcoder
- * No time base corrector, time code, or dedicated hard drives required
- * Complete hierarchical editing software
- * User defined quality: up to broadcast quality and beyond
- * Full ARExx support
- * Requires and conforms to OS2.0 and up

RETINA Z-III

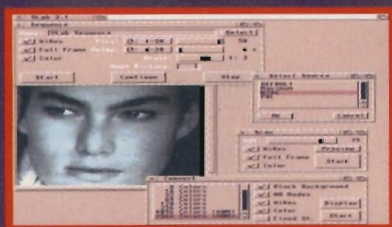
24 bit / Zorro III
Graphics Display Enhancer

The Retina Z3 is a full Zorro III card providing enhanced graphic display for your Amiga computer. Higher resolutions of up to 2400 x 1200 and 1152 x 862 in 24bit are now possible. The Retina Z3, as a pure Zorro III card, provides a data transfer rate 4-5 times higher than the Retina Z2. An embedded blitter increases the display speed up to 10x faster than the original A4000. The Z3 includes workbench emulation and retargettable graphics to allow OS compliant applications to run in the Z3 resolutions. The Retina Z3 card also includes an expansion socket for composite and Y/C output. The software features RACE, a 16/24bit animation creation and playback software, and a powerful paint program, XI Paint. Model, paint, publish, or program in resolutions far above even the AGA machines. The Retina Z2 is also available at special pricing, and current owners of the Z2 will receive a special upgrade price for the Retina Z3.

Retina Z-III Features:

- * Programmable resolutions of up to 2400 x 1200 (1152 x 862 in 24 bit)
- * Full 32 bit Zorro III card
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- * Workbench emulation and software promotion (retargettable graphics)
- * Toaster™ and Opalvision™ compatible
- * Requires OS 2.0 and up, compatible with all versions of the Buster chip
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side. Priced at \$1,995, the cost of adding a Raptor to a system is a little less than \$16,000.

The biggest question to answer is: "Is the Raptor and ScreamerNet worth it?" Absolutely. However, this answer applies directly to LightWave professionals. All a Raptor gives you is more speed, and for a lot of people, that is all they need. The Raptor is a productivity booster. Consider the following:

Most power LightWave users currently have at least two Toaster systems. While two systems are capable, creating animations of any great length can take many days or weeks. With the Raptor, I was able to render nearly two minutes of animations in the first couple of weeks that I used it. I was easily able to set up animations of more than 300 frames (10 seconds) and feel confident that it would be finished when I arrived at work the next morning. So often, I would set up a

similar project on my two networked Toaster systems only to arrive and see the machines working on frame 47.

How Fast Is It?

Describing the speed of the Raptor is somewhat difficult as it becomes faster when the scene is more complex. For example, rendering simple frames that don't have transparency, bump mapping or other rendering complexities don't render all that much faster than an 68040-based Amiga 2000. For simple rendering tasks, expect about a five to one speed increase.

The Raptor shines best when the big buttons are pushed. That's when it leaves the Amigas in the dust. Over the course of the last month, I have rendered many different animations with various settings and have found that the Raptor renders about 10 times faster than my RCS 28MHz 68040-

based 2000 on average. This takes into consideration the average types of LightWave animations.

This would not be true of someone rendering much more complex scenes, such as the *seaQuest* or *Babylon 5* production crews. They would probably enjoy an acceleration of about 15 times over the RCS-accelerated machine. As you will see in my tests, it's possible to have the Raptor outperform an Amiga 4000 by nearly 40 times if the scene is complex enough.

The Test Scene

To make this as fair as possible, I will describe each step in the creation of my test scene. Feel free to re-create the scenes and render them on your system for comparison. The scene and objects also will be uploaded to Compuserve in the Amiga Users' 3D forum. The file name will be Bunster.lzh.



The Raptor is controlled from a new control panel within LightWave.



When created as described, the Bunster benchmark object appears as that shown above.

Raptor: How It Stacks Up

Test One (as described above)

	Raptor	RCS 28MHz 040	Amiga 4000/040
Time	5 min. 15 sec. (315 sec.)	2 hrs. 38 min. (9,480 sec.)	3 hrs. 13 min. 55 sec. (11,635 sec.)
Bunster Rating	36.94	1.22	1

Test Two (turn off Trace Shadows)

	Raptor	RCS 28MHz 040	Amiga 4000/040
Time	5 min. 2 sec. (302 sec.)	1 hr. 57 min. 45 sec. (7,065 sec.)	2 hrs. 28 min. 45 sec. (8,925 sec.)
Bunster Rating	29.55	1.26	1

Test Three (turn off Trace Shadows and Trace Reflection)

	Raptor	RCS 28MHz 040	Amiga 4000/040
Time	1 min. 18 sec. (78 sec.)	17 min. 20 sec. (1,040 sec.)	27 min. 30 sec. (1,650 sec.)
Bunster Rating	21.15	1.59	1

Test Four (turn off Trace Shadows, Trace Reflection and Trace Refraction)

	Raptor	RCS 28mhz 040	Amiga 4000/040
Time	49 sec. (49 sec.)	5 min. (300 sec.)	11 min. 10 sec. (670 sec.)
Bunster Rating	13.6	2.23	1

Bunster was my nickname at NewTek, and I've really never outgrown it. So, I came up with a Bunster rating for the Raptor and Toasters in my office.

To start off, enter Modeler and select the text tool. Select the OlnovaBold font and type Bunster in all caps. Center the object in the Modeler. Next, extrude the text .25 meters in the Z axis. Select all of the side polygons and name them "Sides". Select the face polygons and name them "Faces". Go into the second layer.

Create a level 3 tessellated sphere that is three meters in all dimensions. This is accomplished through using the Ball tool with the Numeric requester. Name the sphere's polygons "Glass". Select both Layer 1 and 2 and save the object. Exit Modeler.

Load the object into LightWave. Load the Brushed Metal surface for both the Faces and Sides polygons. For the Faces, turn off Smoothing. For the Glass surface, use the following settings: Surface Color, 255 255 255; Luminosity, 0%; Diffuse Level, 100%; Specular Level, 100%; Glossiness, Maximum; Reflectivity, 20%; Transparency, 95%; Refractive Index, 1.25; Edge Transparency, Normal; Smoothing, On; and Double Sided On.

After making these surface settings, save the object. Leave the Camera where it is currently positioned. Set the backdrop to: Zenith, 0 0 60; Sky, 0 0 120; Ground, 0 0 120; Nadir, 80 0 240.

Set the Camera Menu to: Rendering Type, Realistic; Trace Shadow, On; Trace Reflection, On; Trace Refraction, On;

Basic Resolution, Medium Resolution; (Video) Overscan, On; Antialiasing, Low; Adaptive Sampling, On (8).

Render the image.

This test is described in the accompanying chart. With each subsequent rendering, I turned off the ray-tracing options one by one. The Bunster Rating describes how much faster the Raptor and RCS-based 2000 are than a stock Amiga 4000 68040.

These particular scenes are well-suited for the Raptor's power. Some simpler scenes don't show the Raptor's value because a lot of time is spent sending the rendered image to the Toaster. With a simple scene, the Raptor may render it faster than it can be sent to the Toaster. This bottleneck can be improved through software (NewTek's side).

As of this writing, there are still some bugs in the ScreamerNet software that are quite frustrating. One bug prevents

the Raptor from rendering an animation with a series of images as a texture map. It is likely that by the time you read this, NewTek will have fixed this.

As I mentioned earlier, the Raptor comes with no keyboard or mouse. However, the power of the machine screams for further development. If DeskStation implements a full Windows N/T operating system, this could become a viable platform. Many developers of high-end animation software packages are considering the Raptor as a platform. This should be comforting to those users who are afraid of investing a large chunk of cash for a one application box.

Serious LightWave animators should consider the Raptor/ScreamerNet combination. With the combination, most commercial animations can then be turned around in a single day. A handful of rendering jobs can easily pay for a Raptor.

VU

EDITORIAL EVALUATION

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Very Useful
Circle 038Useful
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Smart Shopping

Buying Used Equipment

by Cecil Smith

Used television equipment is available everywhere. The unstoppable march of technology and the technocrat philosophy that newer is better have flooded the market with used broadcast-quality equipment, often at consumer prices. Equipment that is no longer profitable to operate as high-usage, professional gear is often perfectly acceptable for consumer or prosumer applications.

While there are many real bargains out there, there are also many conniving thieves. I have paid as little as two cents on the dollar for used video equipment that continues to fulfill my needs.

The problem with purchasing used equipment is that it is always caveat emptor—let the buyer beware. You are probably not going to get any kind of warranty or guarantee once the equipment leaves the seller's premises. If you know the operating and maintenance history of a particular piece of equipment, that information goes a long way in establishing the product's usefulness. If the equipment hasn't been hampered from abuse or overuse, it probably can provide useful service for you.

Documentation

Try to get a copy of any available documentation (operation manual, service manual, maintenance history). If the equipment is obsolete, this information may be crucial in continuing to maintain the equipment. Purchase a copy of the service manual, which is not the thin operator's manual that usually comes with the equipment, but rather the publication with all the fold-out schematics and maintenance procedures.

Even though you may not be a technician, the service manual can come in handy when the equipment must be serviced. If your shop doesn't have a manual—particularly if the unit is obsolete and the manufacturer defunct—a copy of the manual can be the only available help. There



are also some manuals that contain adjustment and interconnect procedures that allow you to get the most use from equipment.

The service manual will have details about what parts and equipment are needed to make repairs. Some of this special equipment should be purchased, if they are not provided as a standard accessory. Be on the lookout for special printed-circuit-card extenders, special jigs and test signals and charts. Even if you have no intention of personally attempting to repair the equipment, the availability of the special repair parts often makes life considerably easier in a pinch.

Back to the Boxes

Before buying any used equipment, open it and look inside. Look for an excessive amount of dust and dirt, frayed wires, and wires with brittle or broken insulation. Look for cracked circuit cards,

charred or discolored components or areas of circuit cards or any evidence of excessive heat. Pay attention for any components that may be dangling and look as though they have been added to the equipment as an afterthought. Dangling parts indicate that the unit has been modified either by a user or by the manufacturer.

If the equipment is no longer manufactured, open the equipment or look in the service manual to try to determine the number of generic and manufacturer's proprietary parts used in the design. (You may need an experienced technician to figure out which parts are generic and which are not.) Equipment has a longer life when there are a greater number of generic parts. Beware of equipment from a manufacturer that has floated to the surface belly-up. You probably can't get any support in finding proprietary spare parts.

There are several factors that affect the price of the equipment and your decision to purchase it. Many of these factors will vary with the type of used equipment being considered.

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Cameras

Examine the quality of the lens and viewfinder. Are they securely attached? If possible, remove the lens and gently shake it to feel if any of the glass-lens elements have broken loose. Look for scratches in the front and rear-glass lens elements. Turn the focus ring, iris and zoom ring to feel how smooth their operation is; if the motion of any of them bind or feel gritty, the lens may need expensive service. Look for any dents in the case and operate all the switches.

Are the connectors on the camera damaged or worn? Plug in cables on the various connectors to make sure that they still work acceptably. Wiggle the connected cables to see if the connectors maintain contact. Watch for bent pins on multi-conductor cable. (Don't be too concerned about missing pins if the connector appears otherwise undamaged—some pins on many connectors are not used nor installed in the connector assembly.)

Set up a color-picture monitor with the color bars that may be generated by the camera. (If no color bars are available, make sure that the monitor is properly set up.) Look at the live picture (instead of color bars) produced by the camera. Zoom in and out to check for back focus. If the image goes badly out of focus during a zoom, the problem may be misadjustment of the macro adjustment of the lens or a back focus adjustment inside the camera. If the image goes only slightly out of back focus and a tube-type camera is being used, an expensive back-focus adjustment and registration procedure may be required.

Is there an excessive amount of noise (snow) in the picture? Are there any spots or dots (black, white or color) present in the picture? For rapidly changing scene illumination or for moving objects in a scene, is there an excessive amount of lag or smear in camera response? Any of these problems may indicate that expensive tubes or chips need to be replaced.

If there is enough time, leave the camera on with color bars for about a day and watch for excessive drift in hue. Look at all the color bars, but pay particular attention to the far-left gray color bar. Any displayed problem may be caused by old capacitors that are moderately expensive to replace; a slow drift in hue frequently indicates a design problem in the encoder circuitry and may be virtually impossible to correct.

While viewing a black grid on a white background, check the registration of overlay of the red-, green- and blue-imaging devices. If available, use the minus green (-G) display in the viewfinder. Check the operation of the auto-centering or auto-shift circuitry in a tube-type camera. Keep in mind that there are internal adjustments to correct some problems that may be observed. If there is any color fringing on the grid when using a chip-type camera, don't buy the camera; the expensive chip(s) and prism assembly probably need to be replaced. If there is any color fringing on the grid when using a tube-type camera (particularly in the corners), a moderately expensive adjustment of registration probably needs to be made.

Check the operation of manual and automatic white-and-black balance circuits, if available. Watch for any residual color tint near the black-, gray- or white-picture areas after the automatic circuits have been activated. Check colorimetry both with and without gain boost (0, +6, +9, +12, +18, etc.) If there is a residual tint, the pedestal, gamma and gain circuits of the individual red-, green- and blue-imaging devices in each of the gain-boost modes need to be adjusted (a cheap-to-moderately expensive process).

If possible, have a technician check for proper operation of the sync generator circuit as described later.

Picture Monitors

Turn the brightness and contrast all the way clockwise while viewing a real scene. Watch for excessive blooming of the bright picture details, frequently an indication of a weak high-voltage power supply or a weak picture tube, both of which can be expensive to replace. If it's a color monitor, watch for color fringes between adjacent scene details with large differences in brightness.

If available, display a dot pattern or a crosshatch pattern and examine the quality of convergence (red, green or blue edges on one or more sides of the dots) across the screen, particularly in the corners. If convergence is far out of adjustment, a moderately expensive adjustment of the monitor may be in order, or there may be a failure in the circuitry.

If possible, display color bars for about a week and watch for excessive drift in hue. Excessive drift in hue usually indicates either aging components

or a design problem, and both are expensive and time-consuming problems to fix.

Waveform Monitors and Vectorscopes

Check the last time the waveform monitor was calibrated. There should be a sticker attached to the front. If there is no sticker or evidence of such a test, assume that the unit needs a full calibration before it is useful (this can be costly).

If the trace is too dim to be usable, particularly in the 1 microsecond-per-division display of a waveform monitor, the problem may either be an aged display tube, which is expensive to replace, or a misadjustment of an intensity-limit control, which is easy and inexpensive to correct.

If the trace changes size or focus as the intensity is adjusted, either the display tube needs to be replaced, or there is a failure somewhere in the circuitry.

Videotape Recorders

Exercise extreme caution on this one. Videotape recorders can become quite unstable with prolonged use, and stable operation may be virtually impossible to attain.

Play back a tape that's in pristine condition and remove it to look for any damage to the edge of the tape or any scratches along the tape caused by the recorder. If the edge is damaged, the machine needs an expensive realignment. Fast forward and rewind a tape from beginning to end. Make sure that the end-of-tape detection circuits stop the tape at the head and tail of the tape.

If available, play back an alignment tape and watch for any tracking problems or excessive noise (snow) in the picture. Tracking problems and excessive picture noise may be indicators of expensive video heads that need to be replaced, the need for an expensive alignment procedure or an inexpensive cleaning. (Alignment tapes can only be purchased new from recorder manufacturers; you can't roll your own.)

Listen to the playback audio for any noise or changes in pitch. Excessive noise may indicate a need for degaussing or a poorly performing head. Changes in pitch may indicate a dirty or hard pinch roller or a moderately expensive problem with the capstan or capstan-servo circuit.

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Open the cover of the recorder and look for an excessive amount of dirt or oxide near the tape path. Feel the rubber pinch roller to see if it is hard or has flat spots or is out-of-round. Examine the video head drum assembly for any scoring or etching caused by tape. (There are some parallel horizontal etchings on the spinning half of the drum that are normal; they're "air bearings" that reduce the drag between tape and drum assembly.) Examine plastic parts for excessive wear.

Turn the VTR upside down and look at the underside of the transport. If the VTR is driven with rubber belts, examine their condition. You'll probably have to replace them before first use. Expect to replace the belts at regular intervals to keep the machine in proper operating condition and reduce time-base error.

If the VTR is capable of editing, perform several edits using several different source tapes. If the VTR has a framing servo, observe the length of time it takes for the light to illuminate after the machine is placed in the play or record mode—the longer the time to light, the less stable the VTR. Play back the edited tapes on another machine and watch for problems in the picture at the edit point. Even though a particular recorder may have been specified as being frame accurate during editing, an aging machine can lose that accuracy.

Time Base Correctors (TBCs)

Connect the time base corrector to the VTR creating the signal you want to correct and play back a tape. (Connecting the two ensures that the TBC being considered interconnects properly with your VTR. Not all TBCs work with all VTRs.)

Play back a good tape on the VTR and watch for excessive noise in the picture and for any residual instability in the picture from the time base-corrected signal. If possible, watch the playback on a waveform monitor triggering on external sync and look for an excessive amount of instability. (Some instability will always be there.)

Feel the top of the TBC for any excessive heat; the unit should be warm-to-hot, but not so hot that it burns. Excessive heat may indicate an excessive component density, leading to premature failures; however, if the gear has worked for years, somebody figured out how to alleviate that problem.

Character Generators

Check each mode of each key on the keyboard. Examine the various fonts, font colors and sizes. When confirming operation, be sure to use a standard composite, color video-picture monitor, not an RGB or computer-type monitor. Watch for flashes of color or brightness in either the background screen or in any inserted letters. If possible, record and play back the signal from the character generator to make sure you can get a good recordable signal out of the character generator.

Confirm the operation of any storage devices, such as a floppy or hard disk. Confirm the operation of any special input device. Watch for unstable operation of a digitizer tablet, light pen or mouse. Confirm the operation of any built-in key circuit.

Video Production Switchers

Confirm the operation of each button or switch in each operational mode. Check the mechanical integrity of each push-button switch cap. They frequently break in ordinary use. Check the operation of any built-in, color background generators or color-bar generators. Drift of color hue or saturation in some designs has been a major problem (usually induced by a bad design) on some units. If the particular unit has an internal sync generator, evaluate that circuit as described in the next section. Confirm the operation of the blanking processor circuit if the unit has one.

Sync Generators

You'll need test equipment, time and a trained mind to evaluate sync generators. Check the frequency of the internal master oscillator with a calibrated frequency counter—excessive drift or misadjustment of this circuit can induce massive problems, which frequently are expensive, in the entire video system. Monitor the unit for at least 24 hours to determine long-term drift. Confirm the operation of the genlock circuit if available. Using a waveform monitor or an oscilloscope, confirm that the generated pulses meet broadcast standards. If they're a little bit out, look for adjustments within the generator. There's no need to accept less than broadcast standards here, considering the widespread availability and low cost of units that can perform acceptably.

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- Extreme wide-angle multi-use halogen source
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- Can mount on stand, clamps, boom, wall, window or door-top.

i-light

The tiny, battery powered i-light provides essential fill light, eye-light, high-lights, and contrast control in news and documentary shooting without overwhelming available light.

- Multi-use halogen source
- 55 or 100 watt DC powered light
- DC power can be 12 or 14 volts.
- Includes cigarette lighter connector or optional 4-pin and 5-pin XLR connectors
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Pro-light

The tiny-versatile Pro-light can be used as a low-level key or accent light, fill light (with diffusion), backlight or background light.

- Multi-use halogen focusing source
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- Optional light controls include expandable barndoors, scrims, diffuser, dichroic filter, snoot and umbrella, gel-frame and flags.
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CREATIVE FREEDOM.**



- 1/2" CCD with 410,000 pixels delivers over 450 lines of horizontal resolution. VL Mount System allows use of a full range of interchangeable lenses from extrawide angle to super telephoto plus optional EDS-5L adapter allows mounting of over 65 Canon EOS 35mm Autofocus lenses.
- Records RC Time Code while shooting and can also "stripe" RC Time Code to tapes already recorded on other equipment. With RC Time Code the L2 can be connected to an edit controller with RC Time Code capability for frame accurate editing.
- Advanced encoding functions make the L2 will mark tapes for speedy identification, and even find recordings by their rate.
- Includes wide range 15:1 zoom lens with special coating to cut flare and ghosts while providing high contrast and natural color gradation. Also has 8-blade iris for precision exposure control.
- Provides stunning AFM stereo with the choice of auto or manual level control. To match the audio with video the L2 has a high performance stereo microphone which lets you select the stereo angle and recording sensitivity.
- High speed Phase Autofocus allows focusing through glass or water. Also provides focus lock and manual focusing.
- Provides two different grips with independent start/stop and zoom controls. Built-in sports finder lets you view the viewfinder from arm's length away.
- 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.
- Variable high-speed shutter from 1/160 to 1/10,000 of a sec.
- 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 forwards and reverse playback speeds for swift, precise scene location.
- Automatic exposure manual control lets you lock the aperture at any setting from fully stopped down to fully open.
- Variety of special effects. Add an extra dimension to your productions with digital image manipulation and striking transitions. **Close-up** - instantly doubles the magnification of the lens, giving you a 30:1 zoom.
- **Slow shutter** - four slow shutter speeds allow recording in light levels as low as 0.5 lux or adds artistic after-images to selected scenes.
- **Overlap** - (delishable) Wipe - this effect slides the picture off the screen while simultaneously replacing it with a new scene.
- **Freeze** - freezes picture leaving sound recording uninterrupted.
- **Art Freeze** - records your scenes as colorful paint-like images.
- **Stroke and Art playback modes** - six-speed stroke playback can be combined with three levels of saturation effects.

CAMPAK Power Packs

If you are tired of short camcorder run times and stacks of batteries try NRG's powerful solution - the Campak. The lightweight Campak attaches easily to your waistband, pocket, powerbelt or optional Campak belt and uses ultra-high capacity nicad cells to deliver 3-5 hours of continuous camcorder run time.



CAMPAK 12-Volt

- 12 VDC (cigarette lighter) output, adapts to any camcorder.
- Ultra-light weight (only 38 oz.) and compact palm size.
- Highest-density Nicad cells provide 4 amps of power.
- 2500 charge/discharge cycles for years of service.
- Spring steel clip securely fastens Campak on waistband, pocket or belt.
- Includes soft case and charger.

CAMPAK PRO 12-Volt

- Has all the features of the CAMPAK 12-volt, except uses 4-pin XLR output connector for more reliable connection to camera or accessory.

CAMPAK PRO 13.2-Volt

- Has all of the features of CAMPAK 12-Volt Pro except it uses 13.2 volt pack which offers 15-20% longer runtimes.

PERPETUAL POWER BELT SERIES



NRG power belts are the ultimate power solution. They provide the power to run lights, camcorders and decks without the fear of shutdown. Advanced high-density nicad power packs provide the lightest weight and longest service life of any power products made. Innovative features such as dual power outputs, power indicator, removable packs, plus accessories like high-speed chargers, solar panels and high-current cables combine to form the complete power solutions for any kind of users.

880 Power-Pro +

- High capacity quick-charge capable 12-volt 10-amp sintered nicad power pack (removable)
- Power chassis with dual 3-pin XLR inputs allows for pack interchange without shutdown.
- 2500-cycle cell life provides lowest cost per cycle.
- Microprocessor-controlled 5-step multi-color power indicator display.
- Belt with cellpack weighs only 4.9 lbs for all day comfort.
- Dual outputs allows simultaneous powering of two devices (e.g. camera and light). Output configurations include cigarette lighter and 4-pin XLR in any combination.
- Charge is under 2 hours with the optional 650-III charger.
- Includes Power-Pro belt and power chassis, 12-volt 10-amp cell pack, model 600 overnight charger and comprehensive owner's manual. Fits waist size 30"-40". (Available in large size 40"-52" if needed).

970 Power-MAX

- Same features as 880 Power-Pro + Belt Plus:
- Highest capacity quick-charge capable 12-volt 14-AMP sintered nicad power pack (removable)
- Rugged high-grade, black leather belt case; chassis assembly with dual 3-pin XLR inputs for pack interchange without shutdown.
- Belt with cellpack weighs a comfortable 7.5 lbs.
- Includes Power-MAX belt and power chassis, 14-amp cell pack in 12V or 13.2 volt configuration, model 600 overnight charger, comprehensive owner's manual. Fits waist size 28"-44".
- Also available in 13.2-Volt 14-amp version. The 13.2-Volt version offers 15-20% longer runtimes because industrial VCRs shut off at higher voltage levels. By not shutting off the Power-MAX is allowed to fully discharge, thus the longer running time.

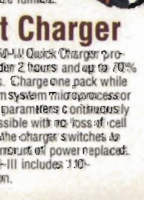
Power (Cell) Packs

Extra power packs provide peace of mind and ample power for long trips or day-long shoots. Modular design allows any pack to be attached to any belt, so any power requirement you may have can be fulfilled.



650-III Fast Charger

When power can't wait! The 650-III Quick Charger provides a safe, full recharge in under 2 hours and up to 70% charge in as little as 45 minutes. Charge one pack while working with another. A custom system microprocessor chip samples hundreds of pack parameters continuously to assure the fastest charge possible with no loss of cell life. When charge is complete, the charger switches to condition mode and indicates amount of power replaced. And for world travelers, the 650-III includes 3 10-120V/220-240V voltage selection.



VERSALITE PRO Professional AC/DC On-Camera Light

The Versalite is a high efficiency AC/DC light at an affordable price. Proportioned for mid- to full-size camcorders, the Versalite Pro integrates many features into a package well-suited to the serious videographer.



- AC/DC capability in unmatched bulb wattage ranges (20W, 35W, 50W, 75W, 100W DC, and 150W, 250W, 300W AC) and patterns (flood, medium flood, spot).
- Front housing snaps open for instant bulb exchange.
- All-metal construction for years of use.
- Unique dispersion grid eliminates hot spots.
- Dichroic-coated bulbs assure accurate color.
- Includes 150W 120V AC lamp, 50W 12V DC lamp, clear dispersion grid, AC power cord, and DC cigarette lighter converter.

VARI-LITE PRO Professional DC On-Camera Light

The revolutionary new NRG Vari-Lite Pro combines the ruggedness, light efficiency and versatility of NRG's best selling Versalight Pro (DC only) though with a sophisticated electronic light management system. Thanks to on-board control IC's using NRG's Light-Gate technology, light intensity can be infinitely adjusted by the user within a range of 10% to 100% of the lamp's rated power. Now instantly adjust light output to exactly meet changing light requirements. Best of all, the Vari-Lite Pro virtually eliminates color shift and dramatically conserves precious battery power by using only the power required for the selected light level.

- 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.
- Rugged milled aluminum light head disperses heat and provides years of service under adverse conditions.

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 8 amps of precisely regulated DC power eliminating the need for battery power in stationary applications where an AC source is available. The Power Stations exceeds 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 12910 features dual outputs in any combination of cigarette or 4-pin and 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 174 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 lavaler 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 **\$119.95**
- ST-2(L) AT 831 Transmitter with Audio Technica unidirectional mic & MR-1 Receiver **\$119.95**

Hand-Held Systems

- SH-2/99A Audio Technica Dynamic mic element & MR-1 Receiver **\$367.50**
- SH-2/55 Shure SM58 Dynamic mic element & MR-1 Receiver **\$324.95**
- SH-2/85 Shure SM-85 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 **\$44.50**
- 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 +20V phantom power, 4 balanced stereo inputs, 4 stereo outputs, 2 AUX sends per channel, 2 stereo effects returns, 4 channel access inserts, tape input, 2 Band EQ, high/low pass filter, wireless 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 1600, 4x4, 8x4 and rack mount with jack pot rotated 90° to back. Rack mount brackets included.

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TAO

EDITIZER 2.0 PC-Based Edit Controller

The TAO Editizer 2.0 is a hardware/software combination video edit controller that runs on Windows 3.1 and supports both Prosumer 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 L, Panasonic 5-pin, RS-232 parallel and serial. It has 3-VCR control, an auxiliary serial port and multiple GPI triggers. It has switcher control for the WJ-MX-50, WJ-MX-50, 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.
- MIDI 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-232 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. • Sort events by real-timecode or by alphanumerics.
- Events can be reordered with automatic renumbering by simply dragging and dropping.
- Move or delete single, contiguous or multiple 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-232 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 3-D software programs.
- Dynamic Motion Control of DMC capsule programs.
- Time Code Math functions: add and subtract time code values from IN, OUT, or DURATION.
- Screen monitoring of VTC, LTC, or Control Track for status (drop/non-drop and interpolated).
- Edit math, backlog, 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-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 keys 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.

NEWTEK

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

- Integrated software and hardware solution for the precise A/B Roll editing of videotape on your Amiga/Toaster system. The advanced multi-tasking, multiple event A/B Roll editing 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 prosumer 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 VISCAs, RS-232 and RS-422 serial control protocols. VCRs such as Sony CVD-1000 (VISCAs), Panasonic AG-5700, Sony EVO-9720 and JVC BR-S650S (RS-232), Panasonic AG-7750H, Sanyo 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.



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-232 interface for connection to computer-based editors. For use with more sophisticated edit controllers such as the JVC-RM-G870U, there is the SA-K26U RS-422 Serial Interface Card. For configuration into older JVC Parallel edit systems, the SA-K28 UA 45-pin Parallel Remote Card provides compatibility with JVC's 45-pin Parallel Edit Controllers like the RM-G810U. 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. Separate input and output (output only on BR-S500U) terminals are also provided for all 4 channels. The Channel 2 audio meter also doubles as a video tracking meter. On the BR-S800U, all channels have individual audio recording level controls.

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. (As opposed to conventional control track code that uses 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 ripple" 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.

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 (0 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/Syncro 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) 6-60mm 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 VTC (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.



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 of the magnetizing 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 stereo sound 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, headphone monitor terminal and mic input terminal.
- Does assemble edit, video insert and audio dub. Flying erase head for smooth, 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 protection, and remarkable 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/VTC (Longitudinal/Vertical Interval) time code reader/generators for accurate 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 (9-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: 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.



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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 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
- #410 tripod spreader with foot pads \$1549.00

System 20 ENG Cat. #339

- Miller 20 II fluid head • #420 2-stage tripod
- #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 axes.
- Click on, click off 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 6.6 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 durable tubular alloy (Model #3513) or the stronger and lighter, axially and spirally wound carbon fibre 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 #3364-3 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 #3364-3 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 EFP 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 you shoot 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 2,000 lux, high S/N of 60 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 LULLUX 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 EEL 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 x 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
- 26-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

Broadcast & Television Systems

NEW!

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:
 - Consistently reliable up-to-10sec performance.
 - Fine adjustment of a wide range of parameters.
 - Memory storage and instant recall of specific settings.
 - More flexible and higher quality image processing, as well as easier maintenance.
- Some of the DSP circuits and their functions:
 - CHROMA DETAIL** - Determines optimum degree of colour 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 1/6 sec. to 1/60 sec.
- Built-in internal time code generator lets you record with SMPTE LTC/VITC (Longitudinal/Vertical Internal) time code
- 26-pin connector for direct signal output, from camera section for easy backups 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



ST-30.....	H471S S-VHS Double Coated	8.49
ST-120.....	7.69	ST-60..... 8.99
M221 Hi 8 Double Coated		
Metal Particles		
P630HMP.....	4.99	E630HME..... 8.79
P680HMP.....	7.19	E680HME..... 11.29
P6120HMP.....	9.69	E6120HME..... 15.79

AMPEX

187 KCA 3/4" U-matic Broadcast (In Box)		
KCA05.....	6.49	KCA10..... 6.89
KCA20.....	7.69	KCA30..... 8.49
197 BSA 3/4" U-matic Master Broadcast (In Box)		
BSC10 (mini).....	8.49	BCA10..... 8.54
BSC20 (mini).....	9.59	BCA30..... 10.20
287 SPA 3/4" U-matic SP Master Broadcast (In Box)		
SPS10 (mini).....	10.21	SPA10..... 10.20
SPA20.....	10.85	SPS20 (mini)..... 10.85
SPA30.....	12.40	SPA60..... 16.20

208 Betacam Master Broadcast (In Box)		
BC-SA (small).....	4.89	BC-10A (small)..... 5.89
BC-20A (small).....	7.59	BC-30A (small)..... 9.69
BC-30LA.....	12.69	BC-60LA..... 23.49
398 Betacam SP Master Broadcast (In Box)		
BC-5A (small).....	15.99	BC-10A (small)..... 18.49
BC-20A (small).....	20.49	BC-30A (small)..... 22.39
BC-5LA.....	15.99	BC-10LA..... 18.49
BC-20LA.....	20.49	BC-30LA..... 22.39
BC-60LA.....	29.85	BC-90LA..... 46.95

maxell.

BQ Certified 8mm High-Grade		
P6-60 HG BQ.....	4.99	P6-120 HG BQ..... 6.49
BQ Certified Hi-8 Metal Cassettes		
P6-60 HM BQ.....	6.49	P6-120 HM BQ..... 8.49
PA PLUS Exlitaxial VHS		
T-30 Plus.....	2.29	T-60 Plus..... 2.59
T-90 Plus.....	2.69	T-120 Plus..... 2.79
HDG-PLUS Exlitaxial VHS (Box)		
HGXT-60 Plus.....	3.49	HGXT-120 Plus..... 3.79
BQ Broadcast Quality Exlitaxial VHS (Box)		
T-30 BQ.....	5.49	T-60 BQ..... 5.99
T-120 BQ.....		6.39

BQ Certified Professional S-VHS (In Box)		
ST-31 BQ.....	6.49	ST-62 BQ..... 6.99
ST-126 BQ.....	7.69	ST-182 BQ..... 14.99
KCA 3/4" High Grade w/Album & Sleeve		
KCS-10 HG (mini).....	6.99	KCS-20 HG (mini)..... 7.69
KCA-5 HG.....	7.29	KCA-10 HG..... 8.29
KCA-20 HG.....	8.99	KCA-30 HG..... 9.49

KCA 3/4" Broadcast w/Album & Sleeve		
KCS-10 BQ (mini).....	7.49	KCS-20 BQ (mini)..... 8.49
KCA-5 BQ.....	7.69	KCA-10 BQ..... 8.29
KCA-20 BQ.....	8.99	KCA-30 BQ..... 9.99

SONY

Hi-8 Professional Metal Video Cassettes		
P6-30 HMPX.....	5.99	P6-30 HMEK..... 8.49
P6-60 HMPX.....	8.59	P6-60 HMEK..... 11.99
P6-120HMPX.....	11.69	P6-120HMEK..... 15.99

PH Series Professional Grade VHS		
T-30PR.....	2.49	T-60PR..... 2.79
T-120PR.....		3.29

PM Series Premier Grade Professional VHS		
T-30PM.....	3.49	T-60PM..... 4.09
T-120PM.....		4.99

BA Series Premier Hi-Grade Broadcast VHS (In Box)		
T-30BA.....	3.79	T-60BA..... 4.29
T-120BA.....		5.29

MQ Master Quality S-VHS (In Box)		
MOST-60.....	8.19	MOST-120..... 8.59

BHS 3/4" U-matic Broadcast Standard (In Box)		
KCS-10 BHS (mini).....	7.99	KCS-20 BHS (mini)..... 8.69
KCA-10 BHS.....	7.89	KCA-20 BHS..... 8.39
KCA-30 BHS.....	9.29	KCA-60 BHS..... 12.99

KBR 3/4" U-matic Broadcast Master (In Box)		
KCS-10 XBR (mini).....	8.49	KCS-20 XBR (mini)..... 9.79
KCA-10 XBR.....	8.99	KCA-20 XBR..... 10.29
KCA-30 XBR.....	11.49	KCA-60 XBR..... 14.99

KSP 31/4" U-matic SP Broadcast (In Box)		
KSP-510 (mini).....	9.19	KSP-520 (mini)..... 10.69
KSP-10.....	9.69	KSP-20..... 10.99
KSP-30.....	12.49	KSP-60..... 16.39

BCT G Betacam Broadcast Standard (In Box)		
BCT-5G (small).....	4.99	BCT-10G (small)..... 5.89
BCT-20G (small).....	7.39	BCT-30G (small)..... 9.39
BCT-5G.....	9.29	BCT-10G..... 10.39
BCT-20G.....	11.69	BCT-30G..... 12.89
BCT-60G.....	23.99	BCT-90G..... 30.90

BCT Metal Betacam SP Broadcast Master (Box)		
BCT-5M (small).....	16.99	BCT-10M (small)..... 19.29
BCT-20M (small).....	21.29	BCT-30M (small)..... 23.29
BCT-5M.....	16.99	BCT-10M..... 18.29
BCT-20M.....	21.39	BCT-30M..... 23.49
BCT-60M.....	31.99	BCT-90M..... 49.95

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SONY

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.
- Automatic repeat and automatic rewind can be accomplished with programmed operation.
- There is a TIMER switch for either REC or PLAY (SVP-9000 PLAY only) when selected automatically executes the selected mode when the power is turned on. This is very useful for unattended operation such as satellite recording.
- Auto head cleaner - each time a cassette is loaded or ejected, a cleaning roller automatically passes over the video/FM audio heads removing tape residue and providing preventive care of the tape heads.
- The SVP-9600 features sensor recording. When video signals are input, it automatically starts recording.
- 19" EIA rack mountable plus adjustable front controls.

Optional Interface Cards:

- **SVBK-100** 33-pin interface board allows remote control of basic VTR functions.
- **SVBK-120** RS-232 interface board allows for machine control from a computer.
- **SVBK-140** RS-422 interface board allows for 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 assembling 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 outpoint 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 picture 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.
- 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 Modulation) stereo recording** for superb sound quality. PCM audio can be inserted or re-recorded on audio only edits in the Audio Insert mode.

COLOR MONITORS

PVM-1350

13" Presentation Monitor

- Employs a P-22 phosphor fine 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 bars as a reference, 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 fine 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-1351Q 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-1351Q. 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 multi-system 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 timer, 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 15.734KHz 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-65 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.
- **An RS-422 9-pin 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 in/out 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 DCC (Drop-out compensator)

AP41-SF

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

AP41-SB

- 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

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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 Kitchen Sync 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 Kitchen Sync is completely microprocessor controlled
- Advanced sync output - useful with any VCR capable of taking an Advanced Sync in

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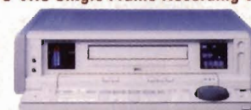
SUNRISE INDUSTRIES AD 516 and Studio 16 The Complete Digital Audio Solution



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 in sound, flanges, and choruses
- Optional Video Toaster Handler expansion module lets you play audio during many of the Toaster's digital video effects.

SANYO GVR-950 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.
- SMPTC Time Code Generator and Reader with Built-in Drop and Non-Drop Frame Read/Write is fully programmable from an external computer and readable 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 line 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-950 the ability to perform break-away edits.
- Auto-Sensing Single RS422/RS232 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/R 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 V-T-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 tail 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
- All of the information you need to recreate your production
- All of the Video Toaster post-production functions are easily accessed from the Amilink/V-T interface screen. Toaster Digital Effects, Character Generator pages and the Digital Video Frame Stores, as well as standard video and dissolves, can all be called up automatically during edits, and are stored in the edit list for later auto-assembly.

Toaster Control

- Amilink/V-T gives you total control over the Video Toaster as a fully integrated post-production switcher.
- Amilink/V-T remembers all of the Frame Stores, CG Titles, and DVEs used for your production in the Amilink/V-T 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/V-T interface screen. Toaster Digital Effects, Character Generator pages and the Digital Video Frame Stores, as well as standard video and dissolves, can all be called up automatically during edits, and are stored in the edit list for later auto-assembly.

NEOTEK VIDEO TOASTER 4000



Production Switcher

The Video 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 images 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 1000 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, Chroma, 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 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
- Controls industry standard audio mixers
- Reads VITC and LTC time code, plus fully supports SMPTE 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 tail 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 formats of Match-Frames
- Cut and Paste EDL management
- Multiple time-code and edit clip-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 affair messages, etc. There are even sound effects. Among the effects which are included with the Video Toaster are:

- | | | | |
|-----------|---------|--------------|----------------|
| Page Peel | Turnble | Zoom | Cube Mapping |
| Smoke | Smoke | Position | Smoke Mapping |
| Slide | Push On | Slats | Trajectories |
| Dissolve | Shatter | Puzzle | Analog Trails |
| | Mirrors | Mosaic Tiles | Digital Trails |

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 200 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 between 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 VCR, VCR or laser disc 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 computer. Includes Amiga and MS-DOS software.
- Exclusive feature of the TBC IV is the 50-pin CVE (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 I/Os 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 IFF and Video Toaster frame store files and is fully compatible with all popular animation packages including Morph Plus, Lightwave 3-D, Fractal Pro, Imagine, Vesta Pro, and Cinemascope.
- Real-time video capture for rotoscoping 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.

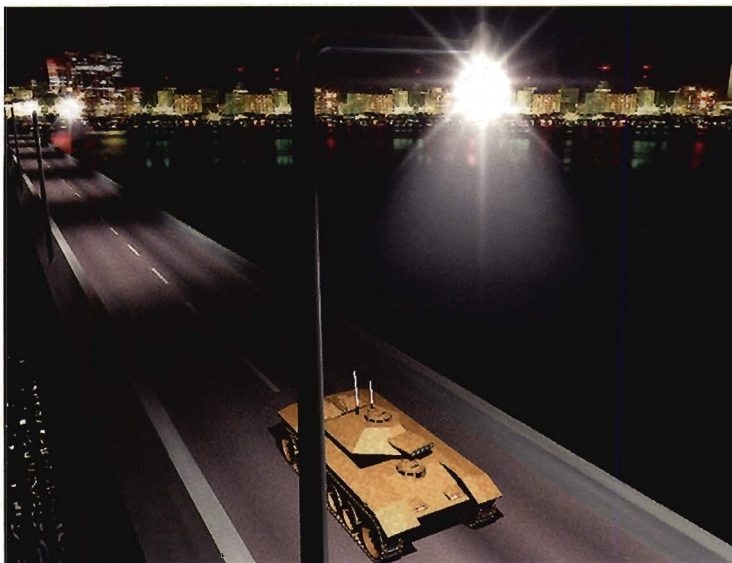


NOVAMATE TBC/Frame Synchronizer

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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TOASTER GALLERY



▲ James G. Jones

The *Tank* was created with the Amiga 2000, an '040 and a Personal Animation Recorder. Jones, who created the scene as part of a 20-second animation, reduced his rendering time by converting from ray-traced shadows to shadow-mapping.

Jones runs his own computer graphics and animation business, Nibbles & Bits, based in Colorado Springs, Colo. He can be contacted at (719) 576-3941.



▲ William Capozzi ►

A LightWave scene of the moon setting beyond the horizon, *Watermoon* (above) was created with an Amiga 4000, an '040 and 18MB of RAM. The same equipment was used to create *Millennium Falcon* (right), which was rendered in two passes and includes 20,034 polygons and 22 images.

Capozzi operates Dedicated Digital Imagery from his office in Atlanta. He can be contacted at (404) 785-2512.

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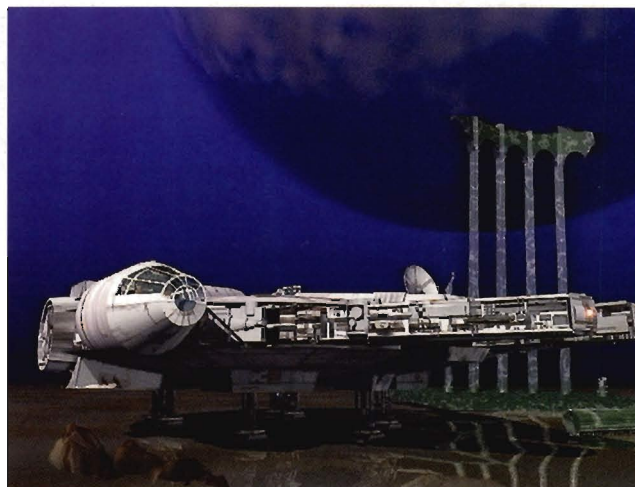
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Sunnyvale, CA 94086



▲ John Livingston

The LightWave rendering of *The Break-In* was completed in about one hour with an Amiga 4000 and an '030. There are 34 objects containing more than 19,250 polygons in the image.

Livingston is chief of the Test Computer Systems Section, located in Fort Hunter Liggett, Calif. He can be reached at (408) 385-4892.



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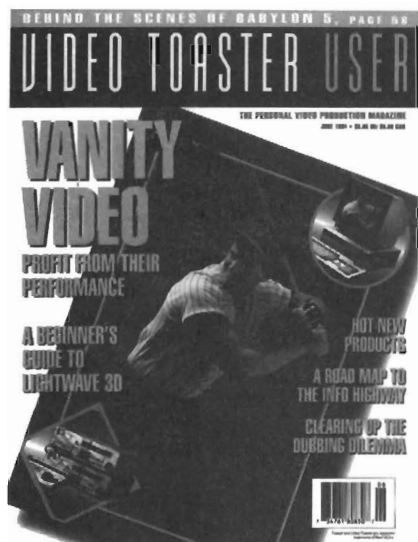
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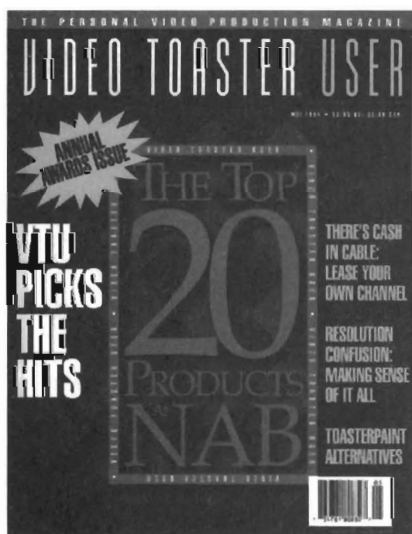
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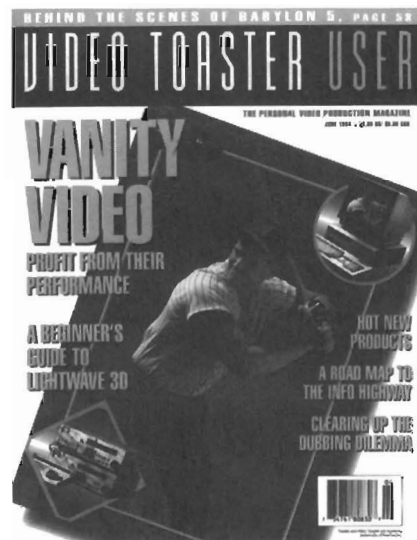
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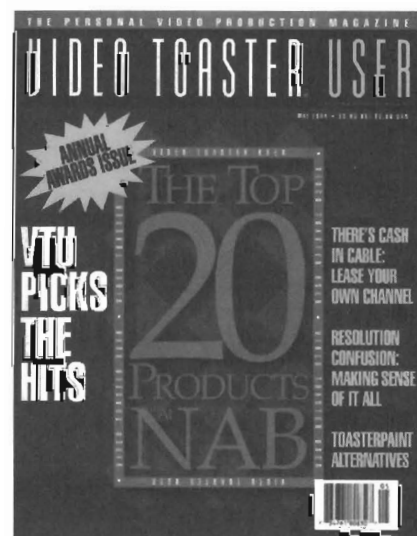
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allows telcos to get back into the business of manufacturing equipment, something they were pushed out of by the breakup of the AT&T. And, if the telcos were hurting, do you think they could afford to invest so heavily in cable TV companies?

Additionally, some insiders at U.S. Sprint have reported that the company is changing complexion and beginning the move from a construction company into a utility. Managers with a construction orientation are not of the right mentality to make the switch and may be looking for new positions soon. Why would a major long distance carrier shut down its growth motor if a big project such as the information highway was in front of it, *unless they did not intend to pay for it?*

History Repeats Itself

In many ways, the activity we are seeing now involving the information highway resembles the government's land grab of the radio frequency spectrum after the turn of the century. In the early days, radio was unregulated. Receivers, crystal sets, actually, were homemade. There was little interest either in the manufacture of radio receivers as an industry or in the commercial exploitation of the medium. Outside of a precarious ability to communicate with ships at sea, wireless transmission was not good for much.

As commercial interest increased, the government kowtowed to developing public interests and enacted a doctrine of scarcity and conservation, by which it could justify chasing amateurs off the air or corralling them into "frequency reservations." Once confined in narrow slices of bandwidth, amateurs were restricted in the power they could radiate and forbidden from transmitting music. With the commercial potential stripped from their activities, amateur radio became a hobby for armchair engineers who loved to tinker and chat.

Once they were made powerless, the amateurs meekly accepted what the government gave them. A case in point is that all frequencies above a certain point were once considered

useless and left to the amateurs. As the hams have developed technology to use those frequencies, the government has gradually stripped them away.

There may be a message here for anyone who uses the Internet. Anytime a coalition of government and industry seem to be happily working together—watch out.

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Here Today...

The information highway is at once a distant dream and a tap-you-on-the-shoulder reality. It has the potential to be an empowering tool whereby indi-

viduals can access more information than ever before in the history of the world. However, remember that television pioneers such as Philo Farnsworth had high hopes for all of the good that TV could do in the world. That out of these pristine beginnings tumbled the commercialized, lowest common-denominator video programming that fouls the air today is testimony to what can go wrong. It will be interesting to see what happens next. Will there be a tool to give power to the pilgrims on the electronic highway, in much the same way as the Video Toaster has enabled common folk to make TV that matters? Stay logged-on, and see.

VTU

Based in Phoenix, Rick Lehtinen is a market analyst and author covering communications, broadcasting, multimedia, desktop video and computer graphics.

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Smart Shopping continued from page 90

Finding Used Television Equipment

There are lots of places where you can find used professional television equipment. The obvious places are broadcast stations, production studios and corporate communications facilities. Some of these folks have warehouses of equipment gathering dust although the bean counters are trying to move that stuff off the books as soon as possible.

Other obvious sources of used equipment are, of course, local equipment dealers, who are frequently forced to warehouse or even purchase slow-moving equipment to maintain a particular manufacturer's exclusive dealership. The bargains from dealers are frequently not as good as you could get from individuals, production facilities or similar sources.

The next step down in finding used equipment are used equipment dealers. There are several in operation. *[Editor's note: See list of used equipment dealers in the accompanying sidebar.]* They frequently buy complete production facilities as a packaged bargain, and equipment is sold piecemeal to customers.

The best place to find real bargains are auctions and garage sales. Look in the classifieds of the weekend paper for an auction guide; you'll be surprised what can be occasionally found. You'll also be surprised what you can find in the garage sale section.

Used equipment can be a bargain-priced entry into professional video equipment. There are many potential pitfalls, but a little knowledge (and cash) goes a long way.

VTU

Cecil Smith is a consulting engineer and writer who specializes in television technology. He has designed television systems around the world, and his articles regularly appear in several trade magazines. He is the author of Mastering Television Technology: A Cure for the Common Video and Answers to Television Technology: An Encore.

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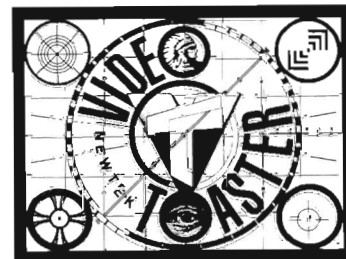
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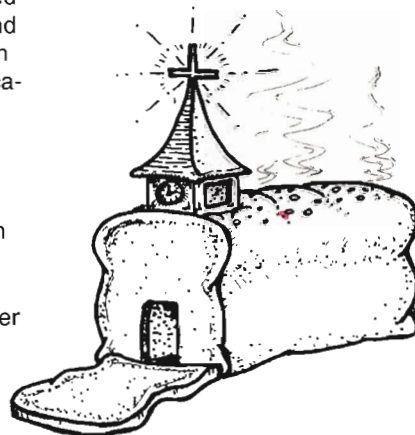
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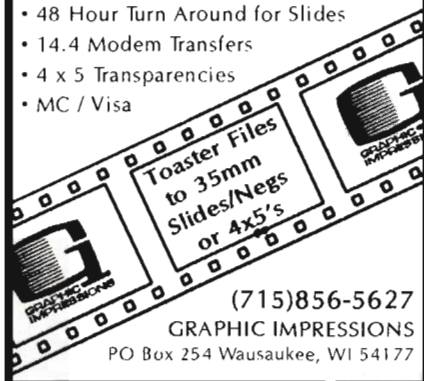
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REVIEW

continued from page 80

(bandwidth and signal-to-noise ratio), and both feature excellent audio quality, though the MII FM track has a clear edge. The Betacams are less expensive, but if you add optional TBCs (as most editors would), their price is very close to the MIIs. And with similar price tags, the "W" Series has a quality edge over the Betacams: better audio, superior TBCs, more durable construction and a faster tape transport mechanism. If you factor these points in with the ability to add an automatic-tracking VTR for just over \$10,000, the MII comes out the winner.

However, there is one other major consideration for video companies trying to decide between the formats: compatibility. Amiga owners know all too well the problems and hazards of having a machine that, though technically superior, is not part of the mainstream. While the MII is in its sixth generation and there are more than 30,000 MII VTRs in use worldwide, Betacam is clearly the dominant force in the video industry.

When I received the MII VTRs for evaluation, I had no MII source material to use with the machines; I had to bump to and from Betacam during my tests. Indeed, many of my coworkers at KOCE-TV had never seen an MII tape before. Ultimately, your video masters will probably be given to your clients or sent to a duplication house. Will they be able to accept MII? Maybe. But they definitely accept Betacam. This point was underscored by an editor I know who used to work at JPL where they had MII. Though the MII VTRs were given high praise for quality and durability, Beta masters were overwhelmingly requested by customers. Ultimately they had to purchase a Betacam VTR to dub their sub-masters to.

MII or not MII, that is the question. The "W" Series deserves a serious look by anyone prepared to invest in a professional-quality editing system. Though the "W" VTRs are reasonably priced, Panasonic has not compromised quality. Certainly, this is the best price on a broadcast-quality, automatic-tracking VTR. But the ability to provide MII masters or bump onto Betacam or 1-inch must be considered. If those issues have workable

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LAST WORD

Farewell, for Now

The World's Smartest Toaster Guy Bids Adieu

by Lee Stranahan



All things come to an end, and this is my final monthly column for the foreseeable future. (Last month's column was part one of a dream studio gear-o-rama spectacular. I plan on giving you the rest of the details in a regular article within a couple of months.) This doesn't mean I'm dropping out of the Toaster market, however. I'm just getting a real job for a little while.

I'm planning on working at NewTek until at least the end of this year. I'm going back to Topeka to work for Donetta Colbach in the marketing department. There are a number of reasons for this, but the big two are: There's some work for me to do there, and I'm really tired.

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I've been going pretty much full speed for more than a year now, and although I enjoy training, I don't like checking in and out of hotels every three days. Being on the road for so long has also meant that I've been unable to get some of the things done that I really want to get done (like that TV show I swore I'd do this year). It's not that I'm really burned out; it's more that I can't do the stuff I need to do when I'm living out of a van.

But don't think my days on the road are over. As part of my marketing responsibilities, I will be conducting Toaster training. I will be in Chicago the week of July 11; Cincinnati the week of July 18; Washington D.C., the week of August 1; New York the week of August

8; Detroit the week of August 15; and Minneapolis the week of August 22.

When I knew I was returning to NewTek, I also knew I couldn't continue writing this column. I have tried to be, above all else, honest with you in this column. This invariably means ruffling some people's feathers. I can't really do that and work for NewTek. Here are a couple of updates on items I've written about in past columns, though.

The state of Toaster-produced television: Hey, it's much better. There are a lot of talented Toaster users out there, and they have produced some great stuff. I hardly ever want to shoot my TV anymore. Well, sometimes when I watch *seaQuest*...

The Amiga: Well, I'll stand by anything I've said. I *like* the Amiga, don't forget. That's one of the reasons why Commodore not being in charge of the Amiga makes me pretty happy. Boy, that was a dumb company.

Former NewTek vice-president Paul Montgomery: Everyone who read my column on Montgomery's exit thought it was a very kind farewell, except for one of Montgomery's employees, who didn't want it printed in this magazine. After finding out some of the things Montgomery is reported to have said about me while he was still at NewTek, I think I was very kind.

NewTek: OK, this is the risky one. I'm going to be working there, after all. So what do I really think of NewTek? Well, you could say I'm voting with my feet. I am moving to Topeka because I'm confident about the Toaster's future and not just for Topeka's happening nightlife. Seriously, things are much better since certain people left the company.

Things aren't perfect, though. I wish the dealers were handled a little differently, and there are still too many committee meetings. (In fairness, NewTek is much better than many companies in this regard, but read Ayn Rand's *The Fountainhead* for my general opinion of committees.)

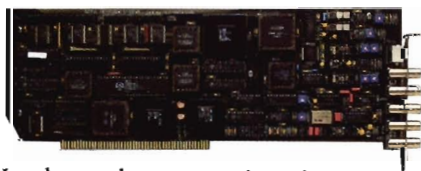
There have been some big improvements in some areas and small improvements all over the place. People who actually know the Toaster and understand the market have more influence than ever at NewTek. I also think that the over-hyped, under-delivering marketing is a thing of the past. And if it isn't, I'll be partially to blame for a while, won't I?

Parting Words

We've been on the road for about a year. In the past 12 months, my wife Kathy, my son Shane and I have logged about 45,000 driving miles and 20,000 air miles. This could not have happened if not for people like our tour assistant and roadie Dave Hibsher, plus the good folks at AVID Publications, especially Ann Pulley and, of course, my friend Jim Plant. We've really enjoyed meeting all of the great Toaster users out there. And I appreciate the kind words and constructive criticism about this column. We learned a lot from you, and hopefully you learned a bit from us, too. We will see you again, soon.



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