

VIDEO TOASTER USER

an avid publications magazine

APRIL 1994 • \$3.95 US/ \$5.00 CAN

Toaster Goes Non Linear

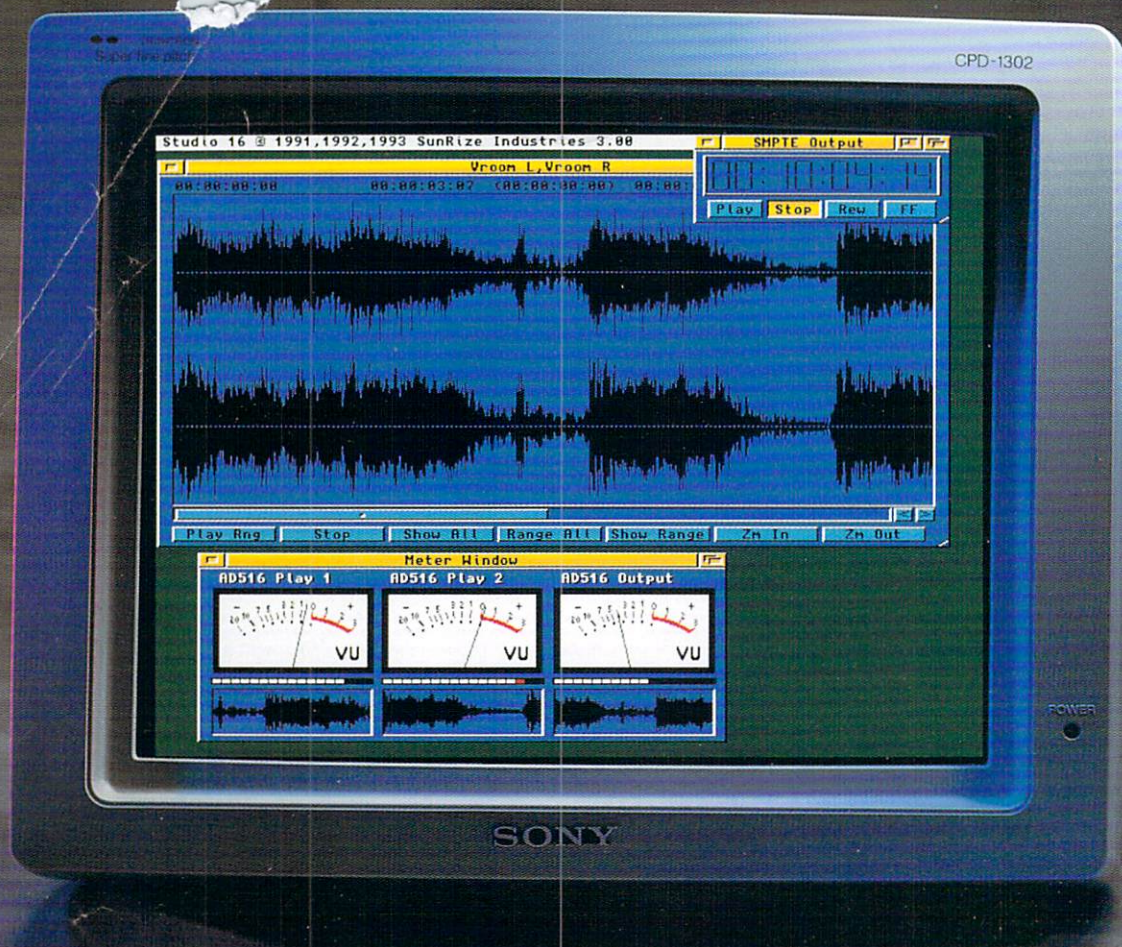
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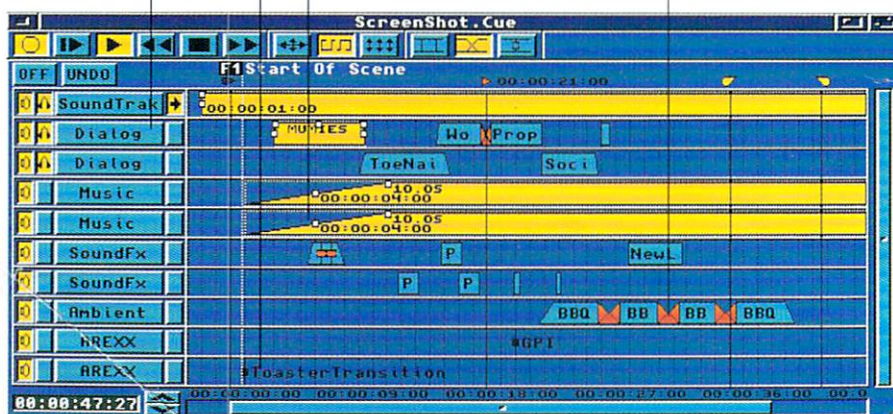
Studio 16 3.0's feature packed time-line based cue list allows you to see exactly how your production is shaping up.

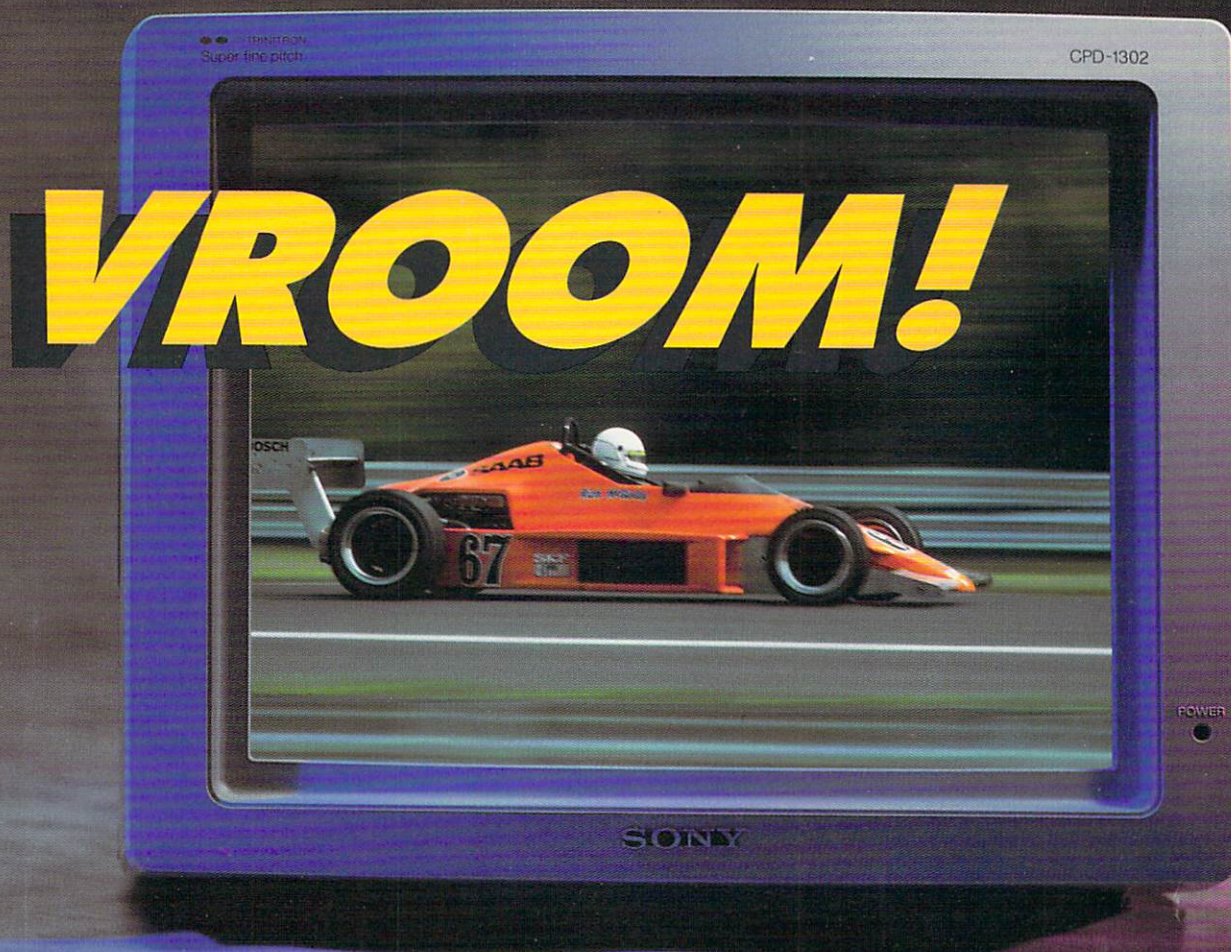
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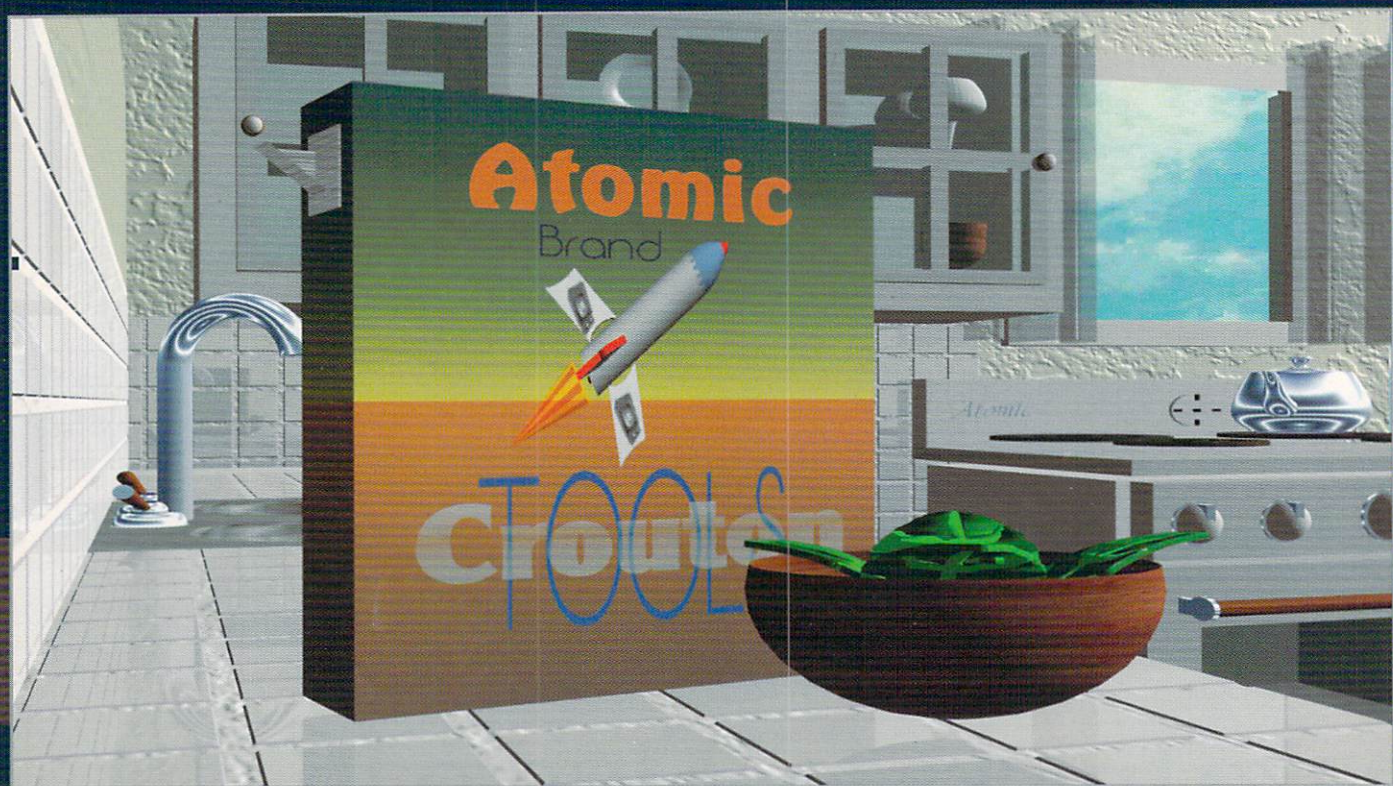
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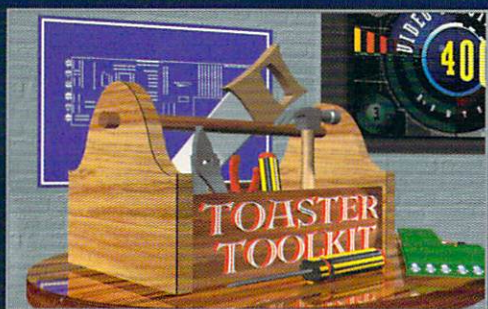
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UTG?

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(801) 466-7330

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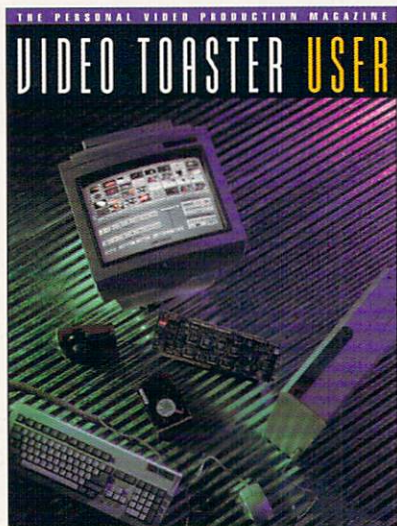
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VIDEO TOASTER USER

APRIL 1994 ISSUE NUMBER 18



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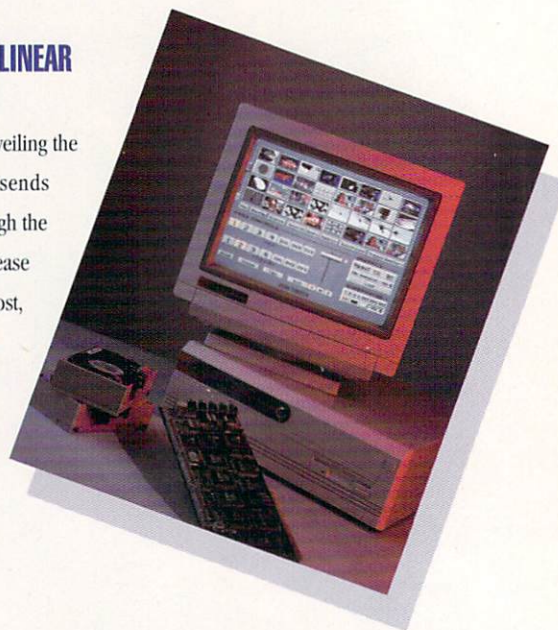
NAB

Special Report

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by Phil Kurz

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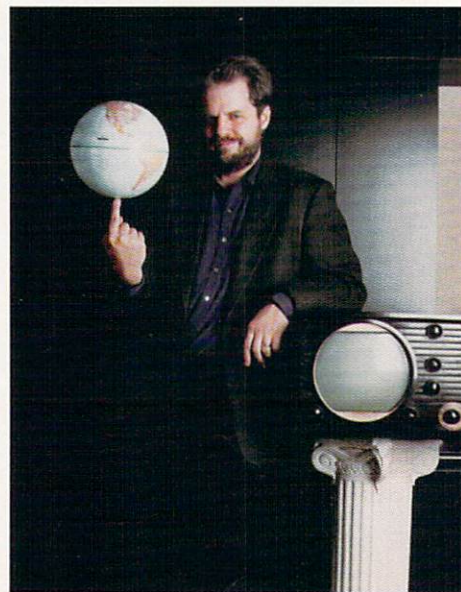
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by Allen Edmonds

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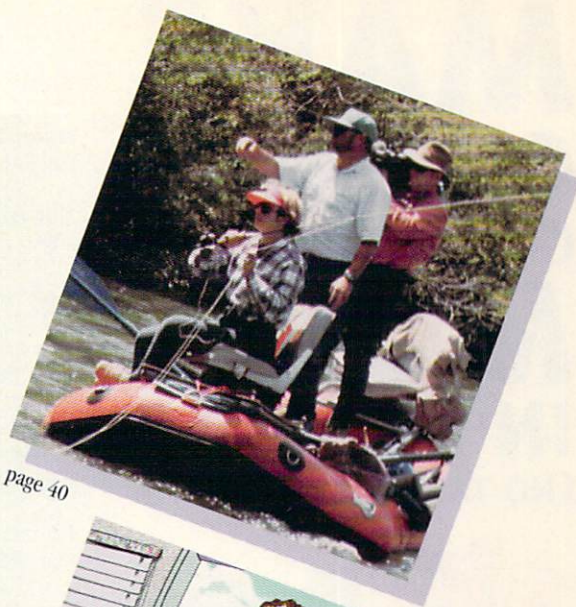
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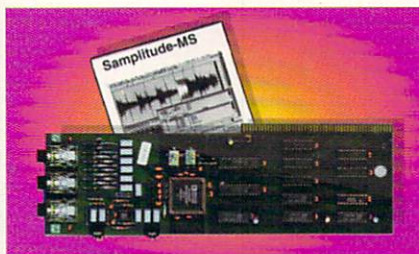
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Suggestions and comments should be sent by written correspondence to: VTU, Letters to the Editor. Be sure to include your name, address and telephone number.

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).

WRITING FOR VTU

If you are interested in writing an article for Video Toaster User, send a written request for our writer's guidelines (include your telephone number and subjects that you are prepared to write about) and include a self-addressed stamped envelope. Direct your inquiries to Writer's Guidelines.

SUBSCRIPTION SERVICES

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To change address or make address corrections, call 408-774-6770.

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

TOASTER TALK

Changing Economies

Video Toaster Users are Poised to Deliver

by Phil Kurz



These are good times for Video Toaster users. High-profile TV shows like *seaQuest DSV*, *Babylon 5*, *Viper* and other soon-to-be-announced television series and specials prove that the Video Toaster is more than suitable for the highest levels of video production.

Additionally, NewTek—despite considerable adversity that saw company vice president Paul Montgomery ousted and five others resign (see *Toaster Times*)—seems to have shaken its longstanding lethargy and is proceeding at a breakneck pace with new product development.

Further, the video production and post-production market seems poised for unprecedented growth thanks to the launch of DBS (direct broadcast satellite) service by both GM-Hughes and Hubbard Communications, the commitment of cable television system operators and regional telephone companies to knock heads in some cases and cooperate in others to deliver video to homes via wire, and the emergence of popular on-line computer services that may soon offer video forums.

Still another much less-recognized but potentially huge market for video production and computer graphics is instructional video brought on by the emergence of affordable, color LCDs (liquid crystal diode) displays that will make most future appliances—from cars to washing machines—video capable.

However, not many of us get the chance to explore the undersea depths with LightWave or blast through outer space in Modeler-created objects. Most of us don't really care about the internal workings, politics and intrigue of NewTek, as long as the company continues to deliver cost-effective video production tools that solve our problems. Relatively few of us are producing programs for the existing cable market and nascent telco-offered video service or DBS distribution channels. And nobody is making video instruction manuals for display on LCD panels on consumer appliances. So why is this such a good time for Video Toaster users?

It's a Matter of Economics

As Video Toaster users, you hold in your hands the most affordable, professional video production device ever created—bar none. Now this isn't a sales job for NewTek; it's simply a matter of fact.

Many of you have also been forced to operate in a manner that's foreign to video production. You've had to be misers. Before those from the commercial broadcast and corporate video world take exception with that statement, consider what your capital budget for video equipment was before a low-cost alternative like the Video Toaster came along.

For those of you who slug it out every day as an independent video producer, you know exactly what I mean. A few dollars can often mean the difference between getting the gig and sitting in your personal studio and practicing with your equipment. How many LightWave animators have been beat up by clients with their requests for changes—*after pushing the render button*? How many of you swallow hard and concede to making the changes because you don't want to lose that client in the future?

However, the business particulars of working on such tight budgets aren't bad. Frankly, I know of no other group of video producers so well-positioned to produce the programming that will be required in the not-too-distant future.

Your penchant for pauper video production will be in great demand as the new distribution channels of DBS, cable and multimedia-crazed telcos offer consumers their wares. Fortunately for you, it's highly unlikely that the growth in the amount of money spent on television advertising will keep pace with the growing number of video outlets. In other words, while the advertising pie stays the same size or grows only marginally, the number of pieces cut from that pie will double or triple.

Thus, if you can demonstrate your video production skill and your ability to produce astounding results on a tight budget, you are likely to reap big rewards from the explosion in the channels of video distribution that is right around the corner.

If you sometimes wonder why you bet the farm on video production and the Video Toaster revolution, hang in there. You are positioned better than anyone to feed programming down the video highways of the future.

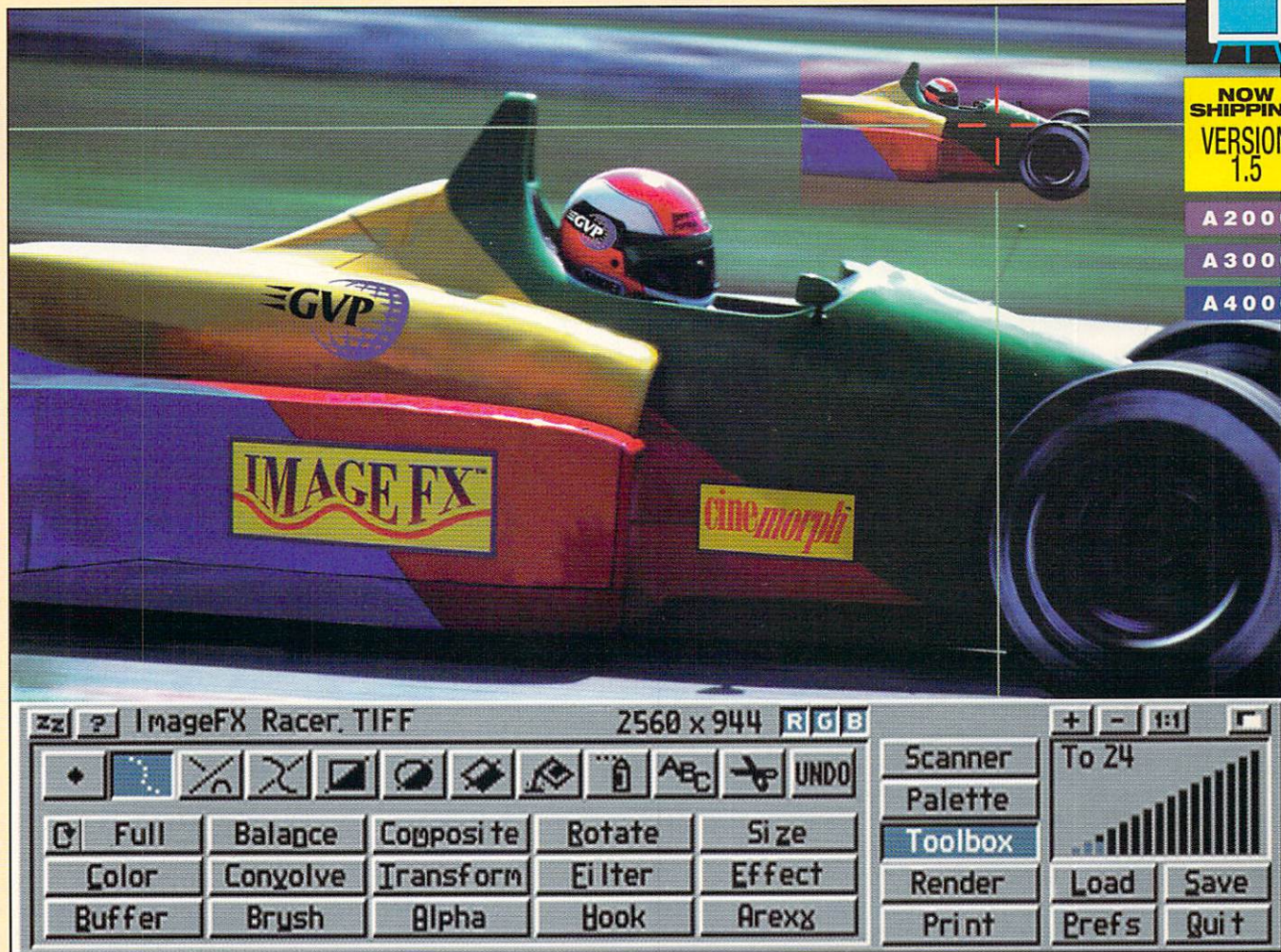
The turmoil at NewTek seems to have awakened a deep need in company president Tim Jenison to fulfill his dream of offering complete, affordable video production tools.

During an extensive interview with Jenison shortly after the company's No. 2 man, Paul Montgomery, and five others departed, NewTek's founder expressed his desire to see his quest to offer high-performance, affordable video solutions through to completion.

Although two of the six who left NewTek were programmers, Jenison was optimistic about the company's ability to finish many projects in its R&D labs.

Having been in Topeka shortly after the split and visiting with the hardware engineers and programmers who remained, I must say that NewTek seems reinvigorated and determined to deliver on Jenison's dream.

VTU



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LETTERS TO THE EDITOR

Dear VTU:

Lee Stranahan's concerns about the limitations imposed by the Amiga 4000 computer (Last Word, *VTU* February 1994) have been expressed before in other magazines (*A/V Video*, July 1993). The relationship between NewTek, Commodore and *VTU* magazine has been hard to figure out. It would seem that Commodore would build an Amiga expressly for the Video Toaster. I feel that Stranahan expresses the views of the majority of *VTU* readers. NewTek should provide more information to your writers to pass on to your readers.

I am concerned that the recent article by "the World's Smartest Toaster Guy" might adversely affect his position with your magazine and with NewTek. We would like to know what happens.

Lee Stranahan has my support and I believe the majority of your readers feel the same way. The frustration he expresses is shared by all of us.

Sherman L. Watson, M.D.
Sacramento, Calif.

Editor responds:

Thanks for the letter. Because you are puzzled by the relationship among Com-modore, NewTek and *VTU*, let me set the record straight. Avid Publications, the publisher of *VTU*, is an independent publishing company. Therefore, neither Commodore nor NewTek owns or controls the direction of the magazine. The content of Stranahan's column or that of any other *VTU* writer is ultimately controlled by me.

Dear VTU:

LightRave is not what it claims to be. The framestore quality is poor; RGB-IFF files are of a different size than what is produced with the Video Toaster. Procedural textures are incompatible. It does not work with version 3.0 and cannot be used in a "farm" because of incompatible images. Let the people know!

David Victory
via fax

Dear VTU:

My company has been setting up our Toaster and Amigas for the purpose of animation production here in Indonesia, and we've been getting all our information and equipment from Canadian firms. You can imagine how this distance and 12-hour time difference does nothing for convenience or efficiency.

I heard there might be an Amiga/Toaster dealer or distributor in Singapore or Australia, either of which should be infinitely more convenient. Unfortunately, I cannot find an address for either. Can you help?

Luc Latulippe
Red Rocket Animation
Bandung, Indonesia

Editor responds:

I put our crack investigative editorial staff on the case and although they couldn't find a Video Toaster dealer in either Singapore or Australia, they hunted down three others in Asia.

In Tokyo:
D-Storm, Inc.
Telephone: 81-03-3301-5233
In South Korea:
Ben Hur Corp.
Telephone: 82-2-566-4121
In Taiwan:
Vivid Image Center
Telephone: 886-2-832-7118

Dear VTU:

Since I can't afford the Toaster yet, *VTU* is the next best thing. I devour every article (and advertisement) so that when that joyous day arrives I can jump in with both feet.

I worked for 10 years as a broadcast video producer/director before burning out on the business. It was a delight when the Video Toaster was born because I knew I would be able to do what I loved doing, beyond what I could have dreamed.

I was disappointed to get to page 112 of the January 1994 issue and find that was the end of the magazine, right in the middle of a great article. A call to your subscription line the next day revealed that I was not alone, and many copies had been damaged in the mail. I was assured a new copy would soon be on the way.

Imagine my surprise when a copy arrived two days later via Priority Mail at a cost to *VTU* of almost the magazine itself. While NewTek and the Video Toaster revolutionize video production, Avid Publications has turned the clock back to an earlier time—a time when companies followed a simple rule: Treat the customer right.

Thank you, Avid Publications. Please extend my subscription by another year.
Robert E. Braddock
Charleston, N.C.

Editor responds:

Thanks for writing. We are more than happy to solve subscription problems. Unfortunately, not all our subscribers are as enthusiastic. Read on.

Corrections:

In New Products, *VTU* January 1994, an incorrect mailing address was printed for Digital Audio Designs, makers of the Wavetools 16-bit audio card. The correct address is:

Digital Audio Designs
P.O. Box 5068
Fullerton, CA 92635

In New Products, *VTU* February 1994, Media Works submitted an incorrect phone number for their Home Video Screenwriting Course. The correct number to call for product information and orders is (800) 789-0005.

Dear VTU:

I currently subscribe to *Video Toaster User* and was wondering why I see issues on the newsstands before I receive them in the mail?

Doug Blakely
via Portal

Editor responds:

Our subscription department informed me that this is one of the most commonly asked questions, so you are not alone.

Currently, *Video Toaster User* is mailed to subscribers at bulk rate while our newsstand copies are shipped through a wholesale magazine distributor. While bulk rate mail is slow, it served its purpose during *VTU*'s infancy. But the number of subscribers and our publishing frequency has grown to the point that time is of the essence; therefore, Avid Publications is in the application process to secure second-class postage. Once we receive approval from the United States Postal Service, you should receive your subscriber's copy much faster.



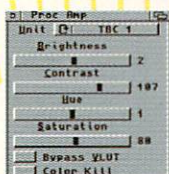
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Following GVP's philosophy of complete feature integration pioneered by our **G-Force Combo™** accelerators (used in a majority of Amiga® Video Toaster™ Workstations), we are proud to present a professional TBC with time and money saving features.

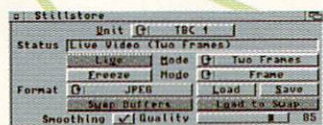
You would demand a TBC to be 100% digital, have 4:2:2 throughput, and an integrated ProcAmp. You would want it to be under \$1,000. We agree. What does the Plus get you?

Plus – Real-time 16.7 Million Color Frame-Grabber/FrameBuffer for use as a digital video stillstore or signal generator. Included ImageFX™ modules allow direct editing and manipulation in the framebuffer.



Plus – Full Transcoding between Composite and Y/C (SVHS) Input and Composite and Y/C (SVHS) Output.

Plus – Real-Time Professional Special Effects Generator featuring solarization, strobing, pseudo-color, monochrome effects, and more.



Plus – Complete Amiga Software Control and ARexx™ Interface that allows seamless integration of all TBCPlus features into an existing automated video studio installation.



Plus – NTSC/PAL/SECAM Signal Standards Conversion to NTSC/PAL for integration into worldwide video environments automatically.

Plus – Full Processing Amplifier (ProcAmp) Control for correcting or adjusting incoming video "on-the-fly" quickly and professionally.

Plus – 3 inputs (2-composite, 1-Y/C) that can be connected simultaneously and 'Hot-Switched' with **TM** software without having to play with cable connections.



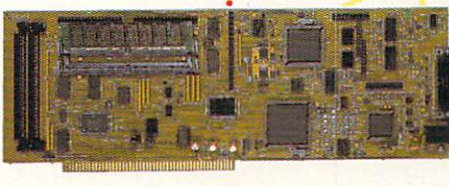
Plus – Convert the 2-composite inputs into a single Y/C input, providing two switchable Y/C inputs.

Plus – Full SMPTE/EBU encoding/decoding/stripping available as an option.



Plus – much, much more!

"This is simply the most powerful and flexible video stabilization device for the Amiga computer. The TBCPlus makes an excellent complement to any GVP IV24™, NewTek Video Toaster™, or Centaur OpalVision™ Graphics System. The Plus means it also offers more!"



Gary Gehman, President
Magic Bullet Communications, Inc.



GREAT VALLEY PRODUCTS, INC.
657 CLARK AVENUE • KING OF PRUSSIA, PA 19406 • USA
VOICE 215-354-9495 • FAX 215-337-9922

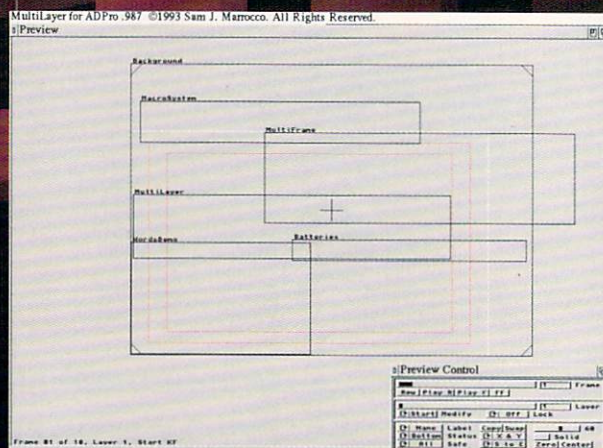
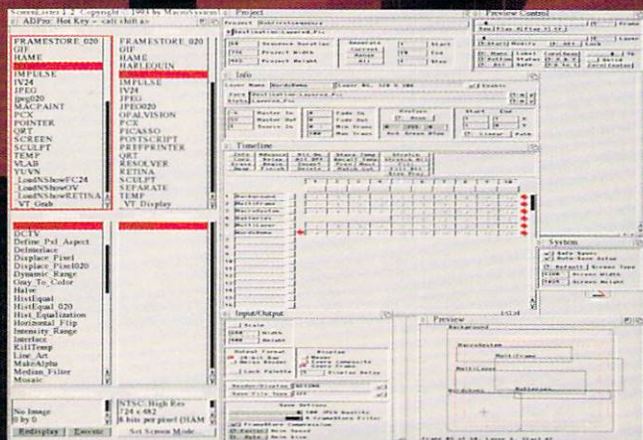
Circle Reader Service No. 125

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©1993 Great Valley Products, Inc.

The Next Wave of Video Tools for your Toaster System

MultiLayer – Digital Layering



MultiLayer for ADPro is a compositing/layering tool for video professionals & artists using ASDG's ADPro program as a compositing engine. MultiLayer will also be available for ImageFX with the same abilities listed here. MultiLayer improves upon ADPro's already impressive array of compositing functions by providing an extremely powerful interface for layering, compositing and editing anything from simple images to complex sequences of moving images. MultiLayer gives you the ability to perform digital compositing with an unlimited number of layers.

Features include:

A Timeline interface that provides user-friendly control of all aspects of compositing and editing. A Preview interface that provides a real-time representation of all layers/images with positioning information and size. The preview can be animated and modified with a VCR-style interface. Image

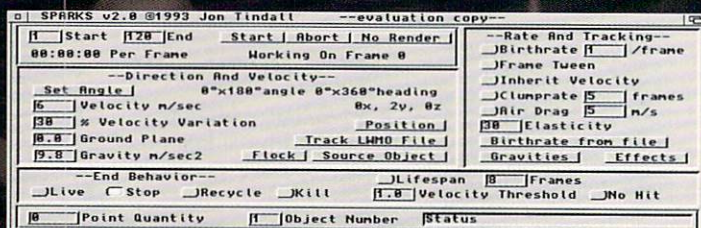
representations can be dragged and positioned quickly and easily. Several types of Compositing/Digital Keying are supported including Zero-Black keys, Luminance keys, Chroma keys and Alpha keys. All compositing is performed in the digital domain using a full 32Bits of data for D1 quality. No lossy image compression techniques are used, so images with any number of layers are as crisp and clear as they were in the original images. Layers can be faded in and out to variable transparencies at variable rates of speed. Layers can appear and disappear and move around anywhere. All Layers are completely adjustable. Movement of images/layers can be anything from linear to smooth with adjustable acceleration and deceleration. Dissolves on any layer for any duration.

Multi-layer-ADPro requires ADPro 2.5 and Workbench 2.1
Recommended: Amiga with 030/040, 16Meg of Fast Ram, 500MB HD, Retina
Multi-layer-IMFX requires ImageFX 1.5 and Workbench 2.1



The tool
LightWave
users have
been waiting
for!

Particle
Animation



Standard Particle and Real World
Kinematic Animation System.

The first Particle Animation system for LightWave3D 3.0

Now Animators can include "High-End" procedural animation effects to their work. Do in minutes what would take days to set up! Particles can bounce with real world behavior with gravity simulation. Multiple point gravity wells allow bending and directing the stream, flock or swarm of particles. Complete with Wind, Gusting, Flaking and Swirling controls adjustable per axis. User-Definable path allow particles to fall off a moving target, allowing for sparklers, fuses, wands, multi-hit explosions etc. Particles can be replaced by multiple objects allowing for flocking, swarming, arrays, etc. Source position allows you to setup initial state from the vertices of any model! Apply a rotation on any axis procedurally with a powerful expression evaluation feature. Air Drag control allows particles to fall like snow or rocks. Flocking allows a source object to define initial position of objects and a motion file to follow. Objects are held to their positions with adjustable "springs" allowing for support will give motion to all your objects at once.

You have complete control over:

- Origin - at each frame
- Gravity - Bouncing on ground plane
- Wind, Gusting, Flaking, Swirling behavior
- Multiple Local Gravities

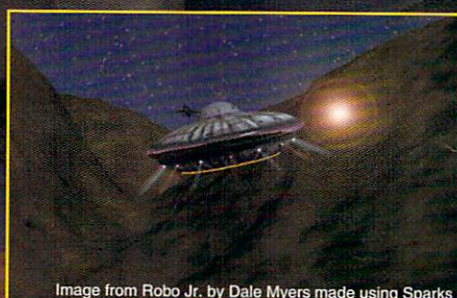
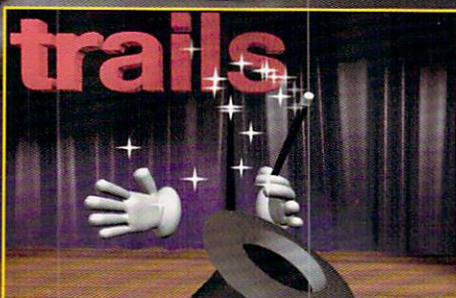


Image from Robo Jr. by Dale Myers made using Sparks

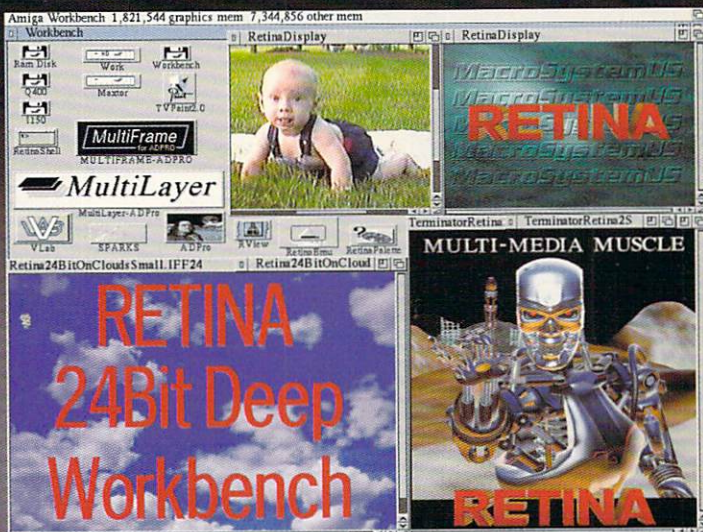
- Rotations - evaluate user-defined expressions!
- Spacing - user-defined birthrate
- Quantity - particle/models
- Multiple Replacement Objects
- Elasticity and Mass
- End Behavior - stop, recycle, kill.

- Direction - Interactive GUI
- Source and Target positions - set start positions by a models vertices
- Sprays, Streams, Fountains
- Sparklers, Flocks, Magic Wands
- Waterfalls, Explosions

RETINA

Beyond AGA Graphics to True 24 bit Workstation Graphics on your Amiga/Toaster

The Retina display adapter from MacroSystemUS is the high-resolution and 24 bit answer for all Professional Amiga/Video Toaster applications. Now with the Retina, not only can you render high resolution 24 bit images, paint real-time in 24 bits with TVPaint 2.0 Pro or XIPaint at up to 1024x768 screen size, but you can interactively model, draw and design while seeing entire objects and pages on single or multiple screens. The Retina has the ability to display any AmigaOS compliant program in resolutions up to 1280x1024 Non-Interlaced and 2400x1200 Interlaced. Professional users will be astonished at the variety of 24 bit resolutions, up to 800x600 Non-Interlaced, or greater than 1024x768 Interlaced. Applications may be launched on their own Custom Amiga screen or on the Workbench screen allowing the user full choice in configuring their working environment! The Retina is a full featured real time AGA chipset emulator using Workbench 2.1. That's not all, the Retina can also run the Workbench in 24 bit depth so that you can display 24 bit Images and 24 bit Animations directly on the Workbench screen! You can run Real 3D at 1280x1024! The Retina with TVPaint 2.0 Pro is recommended for use with the Video Toaster System.



RETINA Z-III™

Upgrade available for current Retina owners!

The Best has just gotten better!

Full 32bit Zorro III, Higher Resolutions, The Fastest Yet!

In an A3000 or A4000 the Retina Z-III is unbeatable for use with TVPaint and Rendering software. Built-in Video Encoder with Composite and S-Video Outputs. 1280x1024 24bit Res.

TVPaint 2.0 Professional

The State of the Art in 32 bit Painting for the Amiga. TVPaint is the fastest 32 bit Paint Package available for the Amiga.

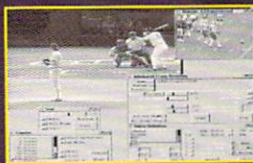
Some of TVPaints features: Automatic Antialiasing on drawing tools, Powerful Airbrush tools, Density control on tools, Full Undo/Redo, Spare/Swap screens, Convolution Effects, Definable Magnification Window, Custom Masks, Pressure Sensitive Tablet support, Full CLT.

TVPaint 2.0 - Suggested List \$349.95



VLab Y/C™

Digitize 30fps Video from Video Tape or Laser Disk



For the first time building lengthy digital video segments no longer requires expensive and slow frame by frame digitizing. Using a revolutionary new concept, MacroSystem has provided a new Interleaved Frame Recording feature (VLab and VLab Y/C). Interleaved Frame Recording or IFR basically allows the VLab to digitize full 30fps digital video sequences to HardDisk by making multiple passes of the recorded video. The VLab digitizes the frames directly to HardDisk as sequentially numbered frames.

Hardware Features:

- Frame grab in 1/30th sec. or Field grab in 1/60th sec.
- Digitize 30fps Video using IFR
- Digitizes full frame full color - NTSC or PAL signals.
- Save frames as YUV, IFF24, AGA
- VLab Y/C - 1 Y/C & 2 Composite inputs.
- VLab & VLab 1200 - 2 Composite inputs.
- Time Base Corrector not required.
- Compatible with the Video Toaster, OpalVision.
- VLab control windows allow you to keep multiple critical controls open at the same time. And the monitor window display lets you see exactly what you are digitizing.
- Real time Color, Contrast, Luminance and Gamma, Luminance, Chrominance controls.
- Includes ADPro and ImageFX Loader modules.
- Supported by the Nucleus Personal SFC.

Features:

- 15 - 80KHz Hor. Freq. and 50 - 110Hz Vert. Freq.
- 800x600 24 bit Displays in either Non-Interlaced or Interlaced resolutions. 640x480, 768x482, 800x600, 1024x768
- Programmable Resolutions up to 2400x1200 - 1152x862 in 24 bit
- Uses 2 to 4 Megabytes, user-upgradable.
- 4MB allows large 24 bit screens for complex Graphics.
- Includes free 8, 16 and 24 bit animation creation and playback software with Double Buffering.
- High Speed 32Bit Bus to Video Memory running at 60MHz with 100MB/sec Data Transfer Rate.
- Hardware drawing assist functions to accelerate GUI Operations - 64Bit data latch and BLT structure.
- RetinaEMU Workbench and Custom Screen Display Emulation.
- Display 24 bit Images or Animations on a 24 bit depth Workbench Screen.
- Programmable Retina display modes.
- Independent program resolution assignments!
- Compatible with the Video Toaster, OpalVision and the VLab™ Real-Time Video Digitizer.
- Requires AmigaDOS 2.0 or greater.
- Full One Year warranty.
- Optional External Video Encoder with Composite and S-Video outputs available for the Retina.
- 1084/Composite Sync Adaptor available for the Retina.

Toccata 16™ 16bit/48KHz Audio Digitizer - 3 Stereo Inputs with Mixer

The Toccata is a full 16bit audio digitizer with 3 Stereo inputs, 1 Mic input and 1 Stereo output. The Toccata will work in any ZorroII or ZorroIII slot. The Toccata can digitize at up to 48KHz in 16bit direct to hard disk. Special features are an onboard mixer and optional ADPCM compression. The ADPCM compression allows digitizing at 32KHz directly to a floppy disk and playback from floppy. Playback from HardDisk can be up to 16 channels in 16bit. The Toccata can also be used with the VLab IFR to digitize the audio for a video sequence. Simultaneous Record and Playback from HardDrive. The Toccata comes with a special version of SEKD's award-winning audio editing software package, Samplitude.

Technical Specifications:

- 3 Stereo (6 Channels) Inputs
- 1 MicroPhone Input
- 1 Stereo (2 Channels) Output
- On board mixer
- Record and Playback Simultaneously
- Reads Audio SMPTE Time Code
- 64 Times Oversampling
- 16 different sampling rates
- Frequency Response 10Hz to 20KHz
- 90db Signal to noise ratio
- Dual 16bit delta-sigma A/D converters
- Dual 16bit delta-sigma D/A converters

Suggested List Price ..\$599.95

MacroSystemUS™

24282 Lynnwood, Suite 101 Novi, MI 48374 (313) 347-6256 Phone (313) 347-6643 Fax

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NEW PRODUCTS

Compiled by Douglas Carey

United Media has unveiled two *MultiVision System* desktop editing products, the MVS Linear Editor and the Digital



Picture Based Editor. Both offer linear and digital non-linear/random access editing systems. The MVS products, which run under Windows 3.1 on an IBM-compatible computer, allow the user to interface their PC directly to videotape machines, video effects generators and character generators for creating professional video presentations, training videos, commercials and more.

Mazeltov!

Product: Music Collection
Description: Two new music library volumes
Price: \$59.95 (CD); \$49.95 (Cass.)
Energetic Music
 P.O. Box 84583
 645 S. Massachusetts
 Seattle, WA 98124
 (800) 323-2972
 Fax (206) 467-6931
 Circle Reader Service No. 5
 Energetic Music has added to its music collection with two new releases, *Easy Listening Vol. 1*, and *Jewish Party, Vol. 1 and 2*. With the royalty free music library, Energetic Music clients are licensed for unlimited use of the music.

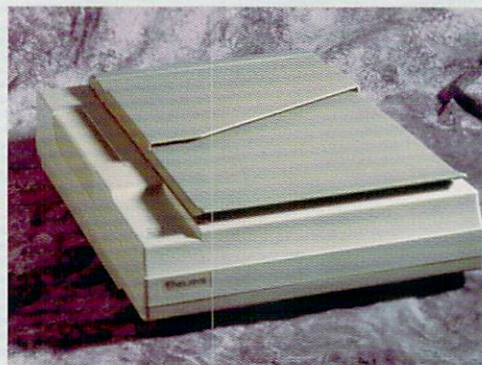
A4000 Graphics Board

Product: IV24-A4000
Description: Video graphics board
Price: Not available
Great Valley Products
 657 Clark Ave.
 King of Prussia, PA 19406
 (610) 337-8770

Flatbed Scanners

24-bit Color Amiga Scanning

Product: MS1200, MS2400
Description: 24-bit color flatbed scanners for Amiga systems
Price: MS1200/\$1,099; MS2400/\$1,499
Migraph, Inc.
 32700 Pacific Highway S., Ste. 14
 Federal Way, WA 98003
 (206) 838-4677
 Fax (206) 838-4702
 Circle Reader Service No. 1
 Migraph has introduced the *MS1200* and *2400*, two Amiga 24-bit color flatbed scanners designed to produce crisp, clear, color images for any video project, publication or presentation. The MS series uses 24-bit technology to provide more than 16.7 mil-



lion colors for precise, detailed images. Using software interpolation, up to 1,200 or 2,400 dots per inch resolution is possible based on scanner model. The scanners' versatility is also improved with options such as the automatic document feeder, a transparency device and Migraph OCR text-reading software. In addition, the ColorKit Pro software allows the user to save an image in a variety of formats for direct export to the Toaster.

Scaling the Heights

Product: Montage PostScript Module
Description: Scales PostScript Fonts in real time with an effective resolution of one nanosecond
Price: \$299.95
InnoVision Technology
 1933 Davis St., Ste. 238
 San Leandro, CA 94577
 (510) 638-0800
 Fax (510) 638-6453
 Circle Reader Service No. 2



InnoVision Technology has released the *Montage PostScript Module*, which lets the user scale PostScript Fonts in real time with an effective resolution of one nanosec-

ond. Ultra high-level antialiasing is retained at all sizes for dazzling network caliber output. In addition, Montage users can add any character attribute from the program to the PostScript fonts, including embossing, color fills, translucency and multidirectional gradient spreads. The Montage PostScript Module also features 10 special PostScript fonts chosen especially for video applications.

Clear Video

Product: AG-EP80
Description: Video printer
Price: \$2,100
Panasonic
 One Panasonic Way
 Secaucus, NJ 07094
 (800) 524-0864
 Circle Reader Service No. 3
 Panasonic has introduced the *AG-EP80*, a video printer that uses advanced digital Y/C discriminator circuitry and fuzzy logic circuitry to achieve a new level of still-video picture quality. The

printer offers a wide range of print formats, including multi-picture, card-size and zoom.



The AG-EP80 is compatible with the AG-810W still video recorder, which can record and store mugshots on a 2-inch floppy disk, providing automatic backup electronic negatives.

From Linear to Digital

Product: MultiVision System
Description: Desktop editor
Price: Starts at \$1,595
United Media
 4771 E. Hunter
 Anaheim, CA 92807
 (714) 777-4510
 Fax (714) 777-2434
 Circle Reader Service No. 4

NEW PRODUCTS

Fax (610) 337-9922

Circle Reader Service No. 7
GVP has announced the IV24-A4000, a new version of the IV24 video graphics board designed to take advantage of the Amiga 4000's increased video bus speed. A PAL-only product, the IV24-A4000 software set has been reworked to provide a complete, consistent user-interface for all application aspects of the IV24. The previous software offerings have been replaced with a bundled version of ImageFX1.5 that fully supports the IV24 for framegrabbing, video processing, painting and rendering to tape.

Microscopic

Product: Hamlet Pico Scope
Description: Portable waveform device
Price: \$1,195
Feral Industries
5925 Beverly
Mission, KS 66202
(913) 831-1791
Fax (913) 831-3427
Circle Reader Service No. 8
The *Pico Scope*, a battery-operated, portable waveform device is ideal for all ENG/EPF applications. Weighing only 16 ounces and measuring approximately 6x1x3.5 inches, the Pico Scope is even smaller than its counterpart, the Hamlet Micro Scope. Available in NTSC or PAL versions, the Pico Scope displays digitally generated waveform signals on field monitors or viewfinders.

Shop at Home

Product: 1994 Winsted catalog
Description: Catalog of Winsted's video, security and computer graphics products
Price: Free
The Winsted Corp.
10901 Hampshire Ave. So.
Minneapolis, MN 55438
(612) 944-9050
Circle Reader Service No. 9
The Winsted Corp. has combined its video, security and computer graphics catalogs



into a single expanded 1994 catalog. The new publication includes 32 full-color pages of furniture products and accessories for the video and security industries, as well as products for computer graphics and multimedia use. An expanded series of multimedia workstations is also featured.

Touch and Go

Product: TruePoint CA-42 Touch Monitor
Description: Touch monitor for the Amiga
Price: \$1,495
MicroTouch Systems, Inc.
300 Griffin Park
Methuen, MA 01844
(508) 659-9000
Fax (508) 659-9100
Circle Reader Service No. 10
MicroTouch announces the *TruePoint CA-42 Touch Monitor*, a touch-screen monitor for Amiga-based multimedia,



kiosk, training and business applications. The package includes the Commodore 1942 14-inch display, an integrated capacitive touch-screen

NEW UPDATES

Chairman of the Board

Product: ImageFX V1.5
Description: Customized version designed to run on EGS-28/24 Spectrum
Price: \$19.95
Green Valley Products
657 Clark Avenue
King of Prussia, PA 19406
(610) 337-8770
Fax (610) 337-9922
Circle Reader Service No. 12
The *EGS-28/24 Spectrum and ImageFX Package* offers a solution for users searching for the ideal 24-bit graphics board for their Amiga. The ImageFX support for the EGS-Spectrum board brings the power of professional image processing to the high-resolution, 24-bit environment.

Across the Spectrum

Product: EGS-SpectraPaint V1.2
Description: Paint package upgrade
Price: Free
Great Valley Products
657 Clark Ave.
King of Prussia, PA 19408
(610) 354-9495
Fax (610) 337-9922
Circle Reader Service No. 13

GVP has announced that a free paint package upgrade is available to all owners of the EGS-28/24 Spectrum graphics board. The new version, called *EGS-SpectraPaint V1.2*, is available as an upgrade electronically from GVP's BBS or GVP's CompuServe file section or may be found freely circulating on area BBSs and Internet file sites.

Additional Improvements

Product: ADPro 2.5
Description: ADPro upgrade
Price: \$45 for existing owners
ASDG Inc.
925 Stewart Street
Madison, WI 53713
(608) 273-6585
Circle Reader Service No. 14
ASDG Inc. has released *Art Department Professional (ADPro) version 2.5*, which offers a choice of several completely style-guide compliant user interfaces. With the upgrade, ADPro is capable of providing more than 100 prewritten ARExx programs and unmatched display board support. Direct support for the FARGO Primera dye sublimation printer is also offered.

controller and the Amiga-Touch Driver. As a result, all Amiga applications can use a touch screen. Also, the AmigaTouch Driver's control panel allows 2-button mouse emulation, multitasking from Workbench or CLI and simultaneous mouse and touch-screen usage, and is compatible with both PAL and NTSC Amiga computers.

PRODUCT ANNOUNCEMENTS

Send your new product announcements to:
Video Toaster User
Attn: New Products
273 N. Mathilda Ave.
Sunnyvale, CA 94086
(408) 774-6770
Fax (408) 774-6783

TOASTER TIMES

NewTek, Montgomery Part; Five Other Employees Resign

Phil Kurz

NewTek vice president Paul Montgomery was dismissed from the company in early February following three weeks of intensive discussion about his future role with the maker of the Video Toaster.

Five other NewTek employees resigned. They include Mark Randall, a former director of marketing and advisor to Montgomery; Kiki Stockhammer, who was NewTek's primary spokeswoman; Daniel Kaye, who developed NewTek's ties with Hollywood; Ken Turcotte, the pro-

grammer responsible for the ToasterPaint upgrade; and Steve Hartford, the programmer who upgraded ToasterCG.

During those three weeks of meetings, Montgomery expressed his desire to become more involved in controlling the company or alternately starting a new venture in partnership with NewTek.

Company president Tim Jenison dismissed Montgomery during a retreat the six made to Albuquerque to discuss their options with

Montgomery's longtime friend and one of the designers of the Video Toaster, Brad Carvey.

Although the departure of the six came at a crucial time in the development of the Video Flyer, a non-linear editor, Jenison was able to reorganize the company so that the editor was completed in time for its debut in March at the National Association of Broadcasters convention in Las Vegas.

"Their absence is being felt here," said Jenison. "They are good friends, and it is like

losing a couple members of the family. But it will not affect our ability to bring out new products.

"Our relationship with those people was long and pleasant, and it's sad to see that end. But change is good. They're going on with their lives, and we are getting on with ours, and that frustration is gone on both sides."

For his part, Montgomery expressed fondness for his accomplishments at NewTek. "I will follow with pride my great adventure and wish the best for Tim and my other friends at NewTek," said Montgomery.

What the future holds for the six is uncertain, said Montgomery. However, most of the group have moved to the San Francisco area. "There's a good chance that this team will work together on other projects," said Montgomery. "At this point, I'm not sure what that is."

VTU

Tiger Town Tries Toaster Training

Josh Moscov

Columbia, Mo.-based Heifner Communications has become the official off-site training center for computer graphics for the University of Missouri-Columbia. As part of the arrangement, Greg Heifner has been made a faculty member of the Environmental Design Department.

The partnership began a year ago when Heifner, a former director of the university media services, and Dr. Richard Helmick of the Environmental Design Department proposed that the university provide training and facilities for students who wanted to learn about computer graphics. Heifner said that Helmick became interested in helping in the negotiations after seeing some of his Toaster-created images. Helmick was also motivated by his own frustration with the lack of instruction on campus and traveled to

Texas A&M to complete an internship in computer graphics.

Heifner—who has been actively involved in Toaster/Amiga training for professionals at many major companies such as Rockwell and AT&T—said that while the university has a top-10 journalism school at the undergraduate and graduate levels, it has never been strong in the graphic arts.

"The University of Missouri is a land-grant college. The engineering and journalism schools here are excellent, but nobody on campus has the slightest idea what's going on in the field of computer graphics," said Heifner.

Available for the past three semesters, Heifner's program is designed to give students with some experience in 2D graphics a solid introduction to the Toaster. Their first assignment is to run the NewTek 3.0 tutorial. Then Heifner



Standing room only in Heifner's Toaster class.

and his staff meet regularly with the students so they can develop a major project to be completed for course credit. At the same time, students receive a fair amount of LightWave training.

"Students do it all in this class. It's completely hands-on. They generate the models, lay the scenes and scan the texture maps. We don't tell them what to do at all. Their final project can be *Jurassic Park* or a ball bouncing around on a table," said Heifner.

PAL Toaster Becomes a Reality

NewTek and Prime Image Join Forces

Josh Moscov

Independent video producers worldwide will now be able to use the Video Toaster in any video standard as a result of an agreement between Topeka, Kan.-based NewTek and Saratoga, Calif.-based Prime Image, according to Prime Image president Bill Hendershot.

Finalized on Feb. 11 by Hendershot and NewTek president Tim Jenison, the agreement unites the Video Toaster with Prime Image's Passport 4000, a transcoding device that features the ability to transcode from PAL to NTSC and then pass the signal through the Toaster and back to PAL without a reduction in signal quality. The unit also offers conversion to standards such as SECAM, PAL-M, PAL-N and NTSC 4.43.

This business relationship between NewTek and Prime Image may indicate a new policy from the desktop video leader toward supporting third-party vendors. Jenison, who is the founder and owner of NewTek, said he was confident that the combination would have a definite impact on the desktop industry.

"I was very impressed with how well the Passport 4000 immediately complemented the Toaster. The Toaster equipped with the Passport 4000 is going to bring desktop television production to vast new markets," he stated in a press release.

Hendershot characterized the companies' attitudes toward each other during the negotiations as cooperative.

"We will be working together directly throughout. It's a situation where both companies must act together. The products can't be sold separately in Europe or anywhere else around the world," he said. "We're really joined at the hip on this one."

Prior to meeting with NewTek in January, Prime Image had spent nearly five months attempting to perfect a new "pass through" interpolation technique that allows a video signal to be converted without any degradation from motion judder. This was put to the test when the companies met during the NewTek dealer meeting in January to determine how compatible the machines were. The results indicated that some alterations in the Toaster's software were required.

continued on page 18

International Watch

Christina Knighton

LONDON

Video Toaster Used to Portray Victorian Factory

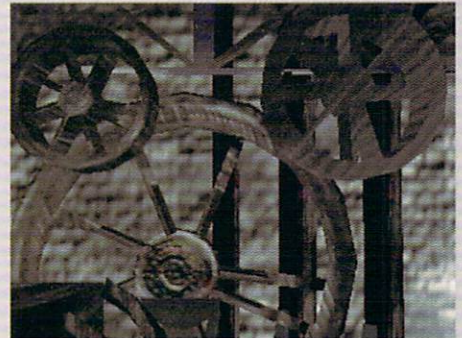
The key shots of Victorian factory life in the BBC-PBS co-produced drama *Hard Times* (based on Charles Dickens' novel) were created by the Video Toaster. According to Christie Horn of Technofilm Industries, the Toaster was a clutch performer during production.

"The filmmakers realized too late that they had not shot any factory scenes to which the characters constantly refer," Horn said. "Library photos or matte paintings are usually held no longer than two seconds because such obvious fakery shatters the illusion."

The working factory was such a hit with the BBC and film producers that the two seconds of footage were extended to two minutes with credits.

Due to the success of the show, Horn said that one Hollywood producer has already requested that her company re-create some Egyptian ruins.

The show is directed by Oscar-nominee Peter Barnes (*Enchanted April*) and stars Alan Bates and Bob Peck (*Jurassic Park*).



MIAMI

Spanish Version of Toaster Manual Now Available

NewTek's South American distributor Centennial Video recently completed a full Spanish translation of the Video Toaster manual.

"The Latin-American market is definitely reacting to the lowering cost of video production coupled with the growing cable market," said Centennial president Jorge Necuze. "Offering the Video Toaster manual in our customers' native language will open the Toaster up to a much larger market."

Anyone who has purchased a Video Toaster from Centennial can simply trade the English version for the Spanish. Otherwise, the manuals can be purchased for \$100 directly from Centennial. To complete the package, Centennial will include PostScript Spanish fonts in addition to the regular font set that comes with the Toaster.



TOASTER TIMES

Video Toaster continued from page 17

"The biggest problem occurred when we did a wipe between input 1 and 2 of the Toaster. The wipe worked fine, but there was still some jerking in the bar as it came across. That's when it was decided that Tim would let his software people make some changes," said Hendershot.

The companies' emphasis on mutual reliance may extend beyond just sharing wares. A joint marketing campaign in which expenses would be shared as well as the companies' appearing together in advertisements has been discussed, according to Hendershot.

How far will the NewTek-Prime Image agreement reach? A NewTek spokesperson said that the details have not been worked out, but that the companies would be coordinating their efforts to showcase the units at European trade shows. The Video Toaster and Passport 4000 were exhibited in March at both companies' booths during the National Association of Broadcasters convention in Las Vegas.

While the European markets may be the first targeted by promotional efforts, Hendershot said that an emphasis will be put on marketing the dual setup in Asia as a result of a trip he made to Thailand, where the Passport 4000 was well-received.

VTU

Tiger Town continued from page 16

Students from all academic backgrounds have expressed an interest in receiving Toaster training. This semester, eight students were allowed to enroll in Heifner's class and begin exploring his six Toaster workstations. By keeping a small class size, students can receive more individualized attention, said Heifner.

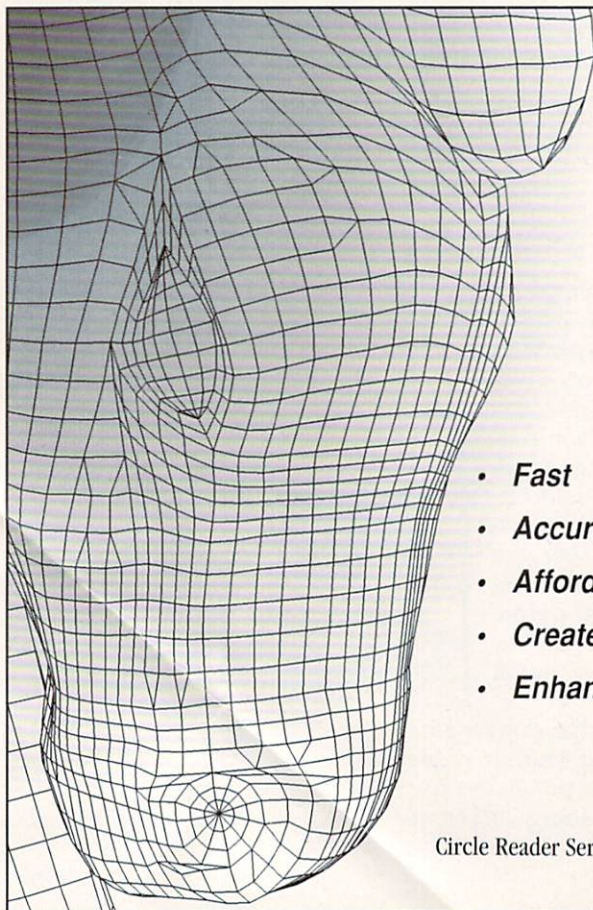
Like any college course, students decide how much time they can allot for their Toaster homework. "Several of them are very dedicated—they come in two to three hours a day. I have one student who actually graduated but re-entered the university to receive this instruction," said Heifner, who plans to add an advanced LightWave course in the fall semester for students who wish to continue their education.

While Heifner has brought the university's graphics program into the '90s, it remains to be seen if he will be contracted to render an animation of the Missouri Tiger (Mizzou's athletic mascot seen all over town) for the 1994 homecoming weekend. Regardless, Heifner reaps other potentially lucrative benefits by fostering young animators. Since Columbia does not have a strong professional graphics community, Heifner is developing a talent pool for the future.

"Right now, Heifner Communications is working on some cable projects where I need animators—and I have them all right there in my room. My belief is that the machines aren't nearly as important as the talent," said Heifner.

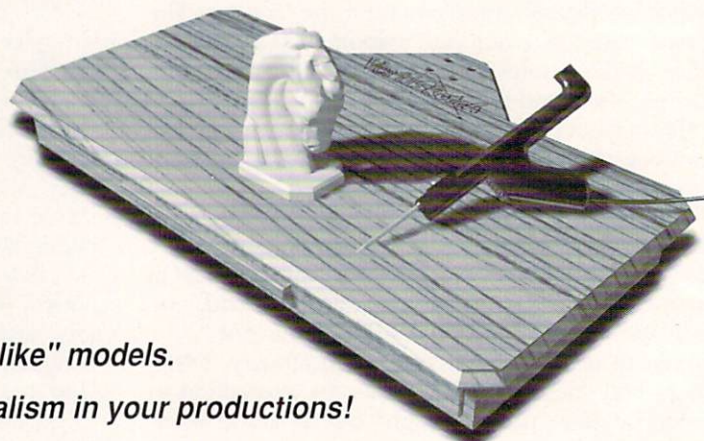
In addition to providing Toaster instruction, Heifner is a graphic artist and runs Heifner Communications, a full-service Toaster/Amiga dealership, and a private cable TV distributor. He can be reached at (800) 445-6164.

VTU



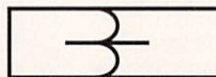
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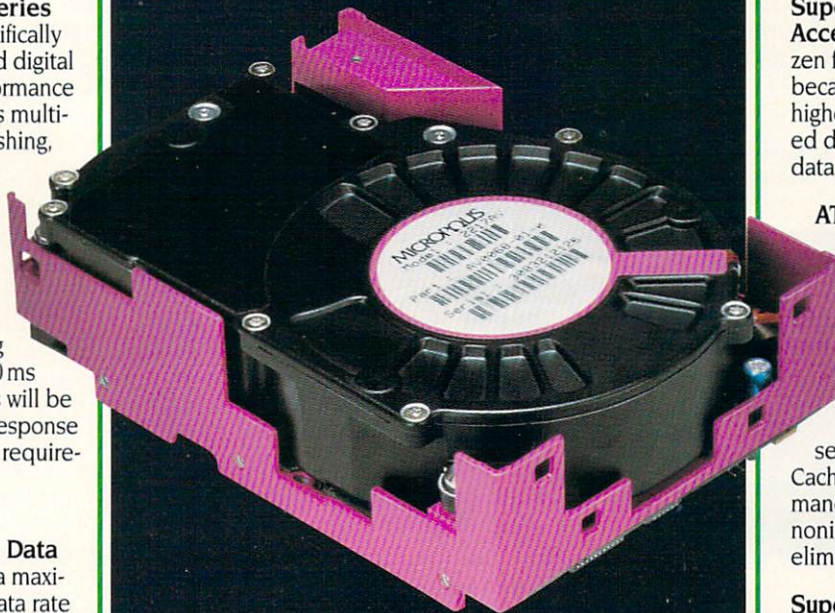
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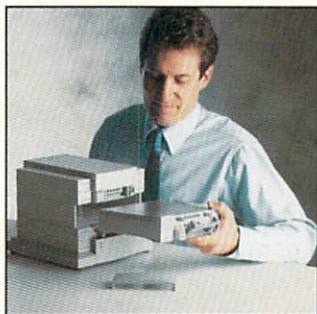
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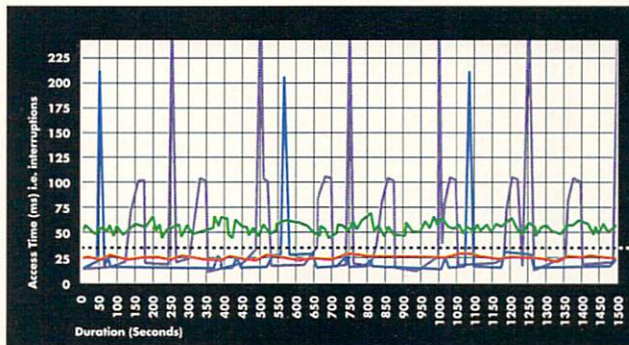
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DEAR JOHN

Jagged Realities

There Is No Magic Box

by John Gross



It seems more and more people are using LightWave these days, judging from the number of questions I receive.

Q: I recently decided to try to understand how both diffusion and texture mapping work in LightWave but with little success (I'm still using the old version). I looked at the texture map (Fightermap), which accompanies the Space-fighter model supplied with LightWave, and found that I couldn't make heads nor tails of it. My understanding

was that the fighter body was given a solid color then a diffusion map was applied to simulate the dark and light panels. Those comprised the surface by modifying the diffusion of each square according to the gray-scale value of each square in the mapped image. However, when I checked the mapped image in ToasterPaint, it didn't look like grayscale squares, but rather a conglomeration of lines and dots of different colors. Is there a simple explanation, or do I need some serious help from a tutorial video?

Jim McCabe
via CompuServe

A: Your understanding is absolutely correct and for more information about the way it works, see "All About Maps," page 112, in the January 1994 issue of VTU. The problem is that the image you are trying to load is an 8-bit (256-color) image. ToasterPaint has problems (meaning it can't) when

need to load the image into an image processor such as ImageFX and convert it to a 24-bit color image (Figure 2). Then it can be loaded and viewed (and modified if you wish) in ToasterPaint. If you are just interested in viewing the image, try loading it as a background image in LightWave and just rendering it. By the way, if you don't own an image processor, you can also render it as the background image and then import it into ToasterPaint.

Q: I recently started doing 3D work for a company called Filmclips. I've been studying *seaQuest* animations and am trying to re-create the glowing, running lights attached to the whiskers, shuttles and sea crabs. I have tried hooking point lights to vehicles using the parent command and this seems to work, but the real problems arise when I try and get the intense glow seen on the show. Lens flare works well for still images but when animating, the flare stays the same size no matter how far away the vehicle is from the camera. Although this can be solved for underwater scenarios by having the flare fade into the background fog, I can't seem to get it to work for normal, everyday scenes or space scenes where fog is not used. The only solution I can see would be to decrease the flare intensity over time to give the impression that it is moving away from the camera. But this is time-consuming, especially if complex motion paths are involved. I also tried making a luminescent sphere with transparent edges to simulate a light, but I don't get the effect I'm looking for. Is lens flare used on *seaQuest*?

Colin Cunningham
Toronto

A: Yes, lens flares are used on *seaQuest*. We wouldn't be able to do the show without them. You should refer to "*seaQuest* Secrets" in the January 1994 issue of VTU, page 60, to get a feel for how we use them. As you have found out, you can run into problems when using flares, especially when they are in the distance. An object with a lot of tiny flares up close can appear as a hot, glowing ball when seen from a distance. Fortunately, we get to use the Fade in Fog option in the Lens Flare panel to get them to fade into the distance (as we need the fog to simulate water). Without using fog, you are not as fortunate. The solution you suggest of decreasing the intensity over time is exactly what must be done. Even with Fade in Fog, we often find ourselves having to create intensity envelopes for the flares to get them to fade

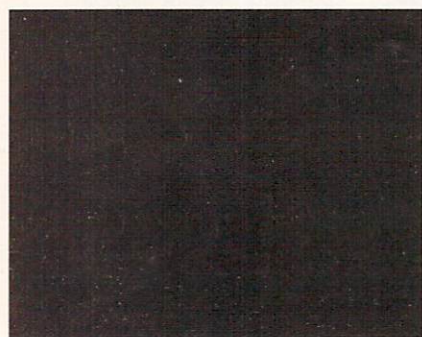


Figure 1: This is how an 8-bit image can appear in ToasterPaint—plain black or visual garbage.

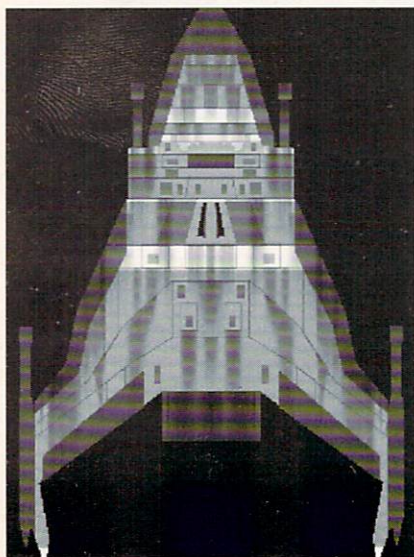


Figure 2: A 24-bit image as viewed in ToasterPaint.

loading 8-bit images (Figure 1). It may load an 8-bit image as light or dark garbage or just plain black. You

down or ramp up at the correct times—and try doing that for more than 300 lights. Luckily, if all of the flares are on one object, you can create a Flare Intensity envelope for one flare, save it and load it onto the remaining flares for that object. Of course, you may need some adjustments if some are brighter to begin with. Also, if these flares also illuminate other objects, make sure to use Light Intensity envelopes and/or Falloff, so the lights are not illuminating objects close to the camera as they recede into the distance.

If this sounds time-consuming, just remember that when lens flares were first introduced, you needed to use an envelope to bring the intensity down to zero whenever the flare went behind an object, as there was no Fade Behind Objects capability. Perhaps in the future, LightWave programmer Allen Hastings will add some type of global lens flare intensity ramping.

Q: My current setup consists of a Digital Processing Systems' (DPS) PAR, Toaster 3.0 running in a GVP-accelerated Amiga 2000 with 12MB of RAM and the latest version of the PAR software (v1.41). I have tried many combinations of antialiasing settings and render resolutions and am able to get very good-looking, smooth objects when displayed direct from the Toaster. The problem is that when these objects are compressed and displayed with the PAR, jaggy lines are visible.

I spoke with tech support at DPS and was told that the problem is as follows: The framestores displayed directly from the Toaster are composed of four fields. The NTSC standard limitation, because of its bandwidth, only allows the recording of two fields per frame. Therefore, two of the four fields containing the averaged, antialiasing information are not recorded. This problem would, apparently, be exhibited by any NTSC recording device and is therefore not limited to the PAR. When I asked how special effects professionals in Hollywood remedy this problem, I was told by DPS that they have a 50K black box that does nothing but correct the aliasing problems before being recorded to a digital recorder.

I spoke with NewTek several times

and received various suggestions for the problem, none of which worked. The best results I have attained so far have been at medium resolution, medium antialiasing with the Soft Filter feature turned on. The Soft Filter seemed to make the biggest improvement in the final PAR image.

At present, I feel that I am not able to attain full professional-quality renderings and would like to know if there is anything that can be done to correct this.

Fred Herrmann
EasyScript!
Huntsville, Ala.

A: There is no black box that I know of. Most high-end users of LightWave save their RGB images and then transfer them as is to an Abekas digital disk recorder. The PAR is not quite in the same league as an Abekas for this type of recording, but remember: You and I can't afford an Abekas. Depending on the types of images you are sending to the PAR, you may often see jaggies. Are you sending still

images or animations to the PAR? If they are animations, you can hide a lot by using Field Rendering and Motion Blur. Do you have highly contrasting colors in your images? If so, jaggies will stand out more. Finally, you can try using a lower Adaptive Sampling Threshold in LightWave to antialias more (try a setting of 8 or less, but keep in mind, it will take longer to render).

While the PAR is a great piece of equipment, I must remind you that it has to compress the images in order to play them back in real time; depending on the images you are sending to it, you may get some jaggies as a result.

VTU

John Gross is an animator for Amblin Imaging and Editor of LightWavePRO—The Newsletter for Serious LightWave 3D Animators.

Questions can be sent in care of this magazine or 8615 Chalmers Drive, Los Angeles, CA 90035, or E-mail to 71740,2357 on CompuServe or Bubastis on America Online.

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TIPS & TECHNIQUES

Using the Toaster's Genlock

How to Keep Your Colors Accurate

by Brent Malnack



The following tip for using the Video Toaster's genlock was submitted by Mars Booth of Omaha, Neb.

When preparing logos for video or broadcast, I do most of the cleanup in DeluxePaint IV (DPaint). However, the RGB colors I've chosen can change dramatically when viewed in the Toaster's composite mode. To make my color choices more accurate, I use the Toaster's overlay genlock to view the logo I'm working with in DPaint IV while in composite mode.

To access the genlock, first boot DPaint. Click on the send-to-back gadget at the top right side of the screen to toggle DPaint to the back window and return to the Workbench. Boot the Toaster and set both Preview and Program to Input No. 1. Use the Ctrl-Ctrl-

Remember that the Toaster's genlock utility allows you to fade graphics in and out. This can be used to fade a DPaint-created graphic in and out over a Toaster framestore. Hold the Ctrl key and drag the mouse with the right button depressed. Whichever channel was last active in the Toaster Switcher will be visible when the fade is performed.

If the DPaint graphic has a background filled with color zero in the palette, that part of the image disappears when using the key mode. This is accomplished by holding the Ctrl key and pressing F8.

Scannerama

One of the best ways to import artwork into a Toaster system is by using a scanner. This is particularly true when the art is used to create a 3D logo.

Unlike the headaches associated with trying to properly light and position a logo in front of a camera, using a scanner is easy. With larger, flatbed models, precise positioning is as simple as resting the edge of a page against the borders of the scanning area (assuming you've attached the artwork to a sheet of paper). Lighting isn't a problem because the scanner has a built-in light bar that scrolls down the scanning area, which evenly illuminates the entire bed.

Both handheld and flatbed scanners are helpful. Software such as ImageFX from Great Valley Products and ASDG's Art Department Professional (ADPro) can support scanners with the proper drivers. The user has complete control over the contrast, the number of colors and resolution of the scan.

For logo creation, you don't need a color scanner, either. Color can be added later via colorization in ToasterPaint or surface settings in LightWave.

When working with a scanner, there are a few rules of thumb.

1. Do not use too much resolution. The display on your monitor is roughly 72 dots per inch (DPI). If you scan an image at 600 DPI, it is likely to be much larger than a high-resolution (752x480) video image. If your paint program supports page sizes much larger than a screen, this isn't a big problem.
2. Experiment with the different scan modes. In most scanners, there is the ability to scan the image as a black-and-white drawing. This is not the best choice. For one, some programs (such as ADPro) have trouble loading a 1-bit plane image. Also, scanning an image with only two colors often adds to the amount of cleanup work involved. The other scan mode choices on non-color scanners are black-and-white photo and halftone. Black-and-white photo is the best choice, as

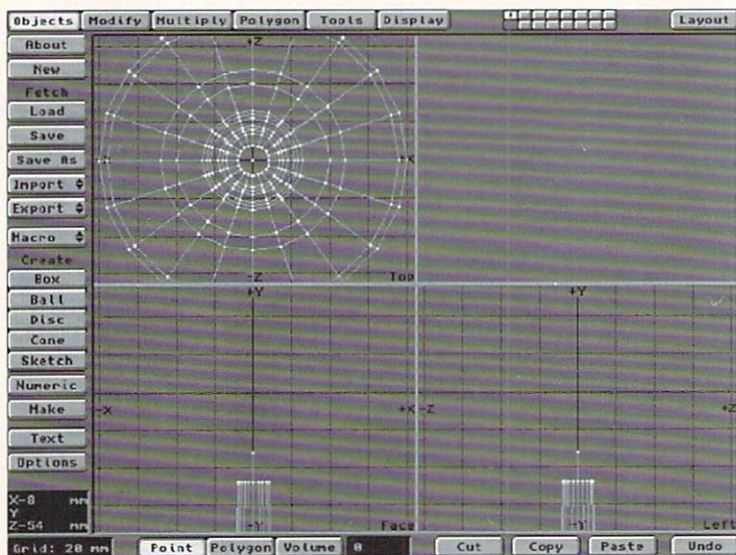


Figure 1: The Toaster's 3D candle object can be tweaked to get a realistic flame.

Alt-Alt key sequence to move back to the Workbench screen. Double click on the Toaster's Utilities drawer and click on Genlock. While holding down the Ctrl key, hit F7. You should now have the Workbench screen on your Preview monitor.

Move to DPaint by holding down the left Amiga key (located to the left of the space bar) and hitting the m key. Now that you're in DPaint, hit the p key and adjust your colors on the Preview monitor.

Here's another tip: While you're adjusting colors in DPaint's palette menu, click on the RGB button so it toggles to HSV (hue, saturation, value). To ensure that your colors don't vibrate in composite mode, keep the saturation level below 75.

STRETCH



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TIPS & TECHNIQUES

- halftone will comprise the image of black or white dots, which adds immensely to your cleanup work.
3. Scan multiple versions of the image. Until they're loaded into the Toaster, it's hard to know which is best. For instance, on a color scanner there is usually a color-photo mode and a millions-of-colors mode. Depending on the source image, the millions-of-colors mode is not necessarily better.
 4. Always request camera-ready art. There is nothing worse than trying to grab or scan an image when it comes from non-camera-ready art such as a business card. The extra time spent in cleanup can be enormous. I always add fees for jobs that don't include camera-ready art.

Flames in LightWave

Many people have asked me how to create flames in LightWave. There is a fairly easy way to do it, and with a little tweaking, you should be able to create realistic flames.

Load the candle located in the Toaster's 3D/Objects/Household directory into Modeler (Figure 1). Create a flame object similar to Figure 2. I added a spline and then lathed it.

Set the Surface Color to 255,164,0. Set Diffuse to 100 percent, Transparency to 100 percent and click on the Texture (T) button. Set the Texture Type to Fractal Noise and enter a Texture Size of X=.005, Y=.01, Z=.005. Set the Texture Value to 75 percent. Leave Frequencies at 3 and Contrast at 1.0.

To make the flame move, set the Texture Velocity to X=.002, Y=.004, Z=.001. This moves the flame up and to the right and back. These settings can be altered to create more or less of an active flame.

Back at the main Surfaces Control Panel, turn on Smoothing and set the Edge Transparency to Transparent. For a thicker flame, turn Double Sided on.

The results of these settings aren't noticeable until multiple frames are rendered. Adjust the Texture Velocity until the flame meets your needs.

Creating flames is not much different than making clouds. Set up a smooth object roughly in the shape of the maxi-

mum flame or cloud size. Set the surface attributes similar to those described in the first example and pay particularly close attention to the Texture Velocity settings. These determine how far and what direction the texture travels in relation to the object with each frame.

To test the settings, render in low resolution; it's a good indicator of speed.

Maximize Hard Drive Space

I am a little reluctant to reveal this tip because it can be dangerous. But if used properly, it can give you some extra hard drive space without causing

accelerated machines). If you have an accelerator board in your machine, or own an Amiga 4000, then the LightWave and Modeler files may be deleted (keep the .FP versions).

Tons of Fonts

The latest Toaster software contains more than 17MB of fonts. If there are fonts you know you won't use, they may be deleted without harm, with one exception. The CG needs the Common-Thin font in the OldFonts directory. Also, the CG book of demonstration pages may also be deleted.

Phonebook

If you do not use the 3D objects that ship with the Toaster, delete these, too. Again, if they've been backed up, you can always restore them later.

It is a good idea to leave all of the effects intact, as certain projects require them. But, if you only use certain effects, you could create your own projects with T-Rexx Professional or Toaster Toolkit and delete the ones you don't use.

Use extreme caution when deleting files. If an important file from the Toaster is removed by mistake and you don't have a

backup, then you must go through the lengthy installation procedure again.

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Send your Toaster tip or technique to Brent Malnack. If we publish it, we will renew your subscription to *Video Toaster User* for one year. Also, one lucky person per issue who submits the hint that Brent Malnack determines to be the most useful will receive a free copy of *Mastering Toaster Technology*, a \$54.95 value. Send your Toaster tip or technique (no more than 200 words) along with a 24-bit IFF file or color slide to illustrate your hint to:

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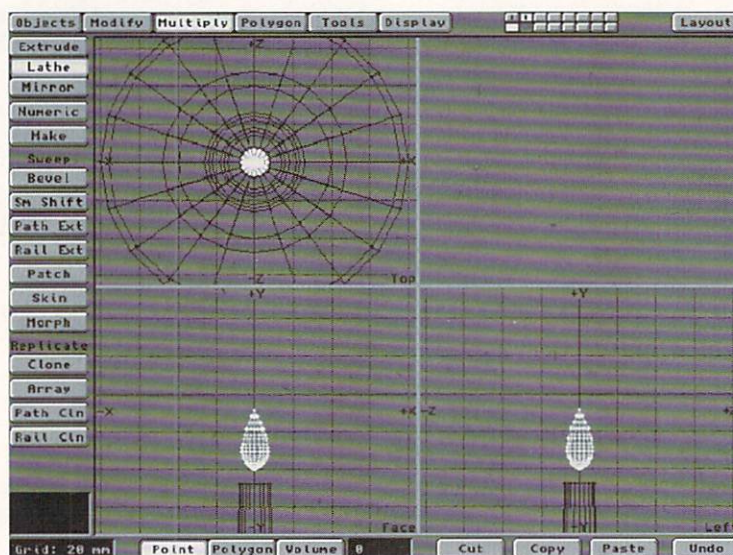


Figure 2: By adding color, texture and other values, the flame comes to life.

a loss in functionality. If you are unfamiliar with AmigaDOS, then I recommend purchasing a program such as Directory Opus.

Considering the huge storage space required for the Toaster software, can any files be deleted? Yes. But before we begin, I should mention that it is vital to back up your system whenever possible. On my system, I use an Apache QIC (1/4-inch streaming tape drive) with Ami-Back software. If for any reason a file is deleted, I can quickly restore it. Another popular backup program is Quarterback. The only downside is that it backs up to floppies, which means it can take a long time and requires a lot of disks.

Assuming you have backed up your system, there are some files that may be instantly deleted without much thought. Take a look inside your Toaster directory. There are two versions of LightWave and Modeler, a floating point (.FP) version and an integer version (for non-

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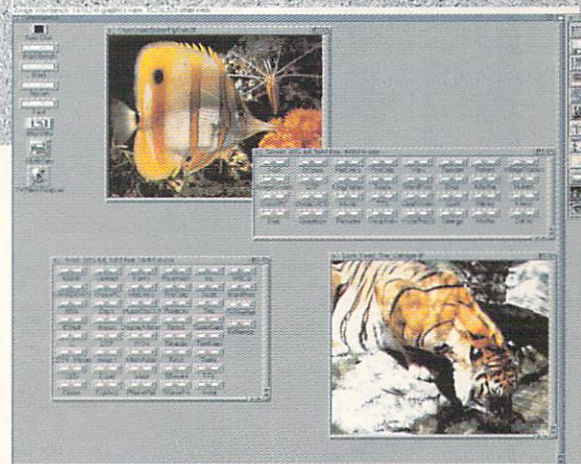
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Picasso II RTG means *Maximum Compatibility.*

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

Picasso II AutoSwitch means *One Monitor.*

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

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

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



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DR. VIDEO

Slippery When Wet

Shocking Rules around the Pool



by Rick Lehtinen

W

elcome back to Dr. Video's Q and A session. Each month the doctor answers general questions on all topics related to video production. Whether it's lighting, equipment, electronics or what-have-you, Dr. Video's mission is to find solutions to any problems confounding you or mysteries befuddling you. Don't worry if your question seems too simple or advanced—Dr. Video takes on all comers.

Q: What is meant by the term "pool feed?"
D.P.
Issaquah, Wash.

the opposite of a pool feed, and is called a unilateral feed.

All this talk about pools reminds me of another topic. Since warmer weather is on the horizon, many of you are undoubtedly looking ahead to shooting outdoors. As you make your plans, please add this to your to-do list: If you shoot near swimming pools or other bodies of water, please use battery-operated equipment. Never handle electrically powered equipment that is plugged in if you are wet or wearing wet clothes or shoes—you'll get quite a jolt! On the other hand, if you drop a battery-powered appliance in the drink, it gets wet but (excuse the pun) that isn't shocking.

Q: What is meant by EBU audio?
S.P.
Parma, Ohio

Rx: You are referring to AES/EBU audio. The AES/EBU standard is a digital audio signal format that was jointly developed by the Audio Engineering Society (AES) and the European Broadcasting Union (EBU). Standard AES/EBU protocol supports three sampling rates: 32kHz, 44.1kHz (used in CD players) and 48kHz (professional audio).

AES differs from CD audio in that it sends the Least Significant Bit (LSB) first. Equipment following the AES/EBU standard is available from many manufacturers. A simpler, consumer version of this protocol, the Sony/Philips Digital Interface Format (SPDIF), is similar to AES/EBU but does not have the AES/EBU standard's status and user bits.

Q: What does digital video mean?
W.P.
Salem, Mass.

Rx: Digital video is a digital representation of a video signal and has several forms. Parallel digital video is a rather cumbersome signal in which a multi-conductor cable is run from device to device. It is rarely used on cables more than a few yards long, because minute differences in the lengths of the conductors within the cable can lead to the bits being out of phase at the receiver. Serial digital, on the other hand, avoids this problem by packing all the data onto one set of conductors. Serial digital can be NTSC or PAL composite or serialized component video.

Digital video is typically the highest quality video signal available. When they are standardized, these systems are given format names. D-1 and D-5 are digital compo-

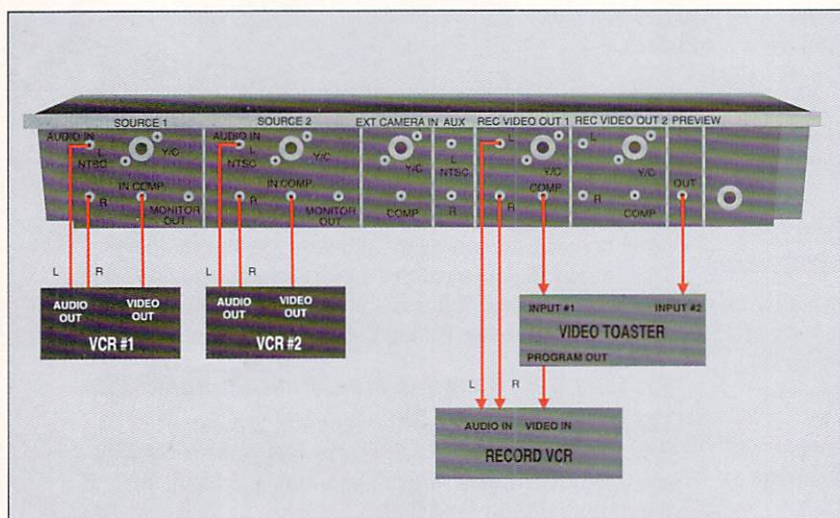


Figure 1: How to connect a Panasonic digital video mixer to your Toaster as a TBC shortcut.

Rx: A pool feed is a jointly produced audio or video pickup. It is usually a clean feed, that is, devoid of any identifying microphone collars or network logos. Several users band together, contributing equipment or personnel for the pool feed, and then share common rights. Costs are thus split, as are profits, should a user outside of the group wish to buy the material.

There are two main uses for a pool feed. First, the subject may not wish to face cameras and mics from a dozen different agencies (or security precautions may not allow it). This is often the case with presidential and military press conferences. Second, a station or network may subscribe to a pool feed to protect itself against failure of its own equipment. It can subscribe to the pool feed as a backup, although fully intending to cover the event with its own personnel and equipment. Such a private feed is

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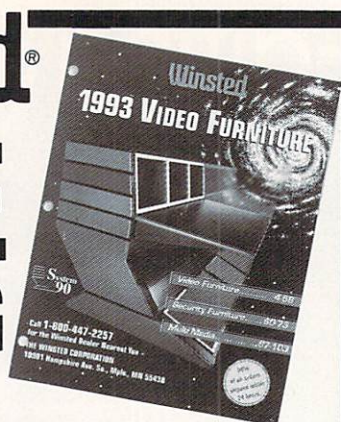
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DR. VIDEO

nent video signals. D-2 and D-3 are digital composite video signals. The Video Toaster uses some signals akin to D-2 in its digital modes. It has a size of 320x240 and features pixel digitization.

This format is being offered by some companies as a non-Toaster, computer solution. Where an Amiga is used to control the processing of the Toaster's built-in switcher, many other computer/digital video systems simply bend the video to fit the computer. It's often not a pretty sight. And yet, they have the gall to call it digital video.

Q: What is meant by ISDN?
M.M.
Vancouver, B.C.

Rx: The Integrated Services Digital Network (ISDN) is an advanced telephone service that the telephone companies seem to talk about more than they deliver. ISDN features two 64 kilobit (kbs) message lines and a 16kbs signaling channel per telephone line.

Telephone signals between central offices, major companies and long distance carriers such as AT&T, Sprint and MCI are usually in digital form. ISDN is supposed to be the homeowner's end of such a digital network.

In terms of its power, ISDN fits between Switched-56 service, which is a 56kbs digital service that is available now, and Asynchronous Transfer Mode (ATM), an extremely high-bandwidth digital service to be available soon. (ATM may leapfrog ISDN).

I was told that ISDN was available in my area, but when I asked two US West employees about it, they knew nothing. I took that to mean that residential ISDN installation is not moving along at any rapid pace.

Q: Can I use my Panasonic digital video mixer instead of a TBC for my Toaster? How do I do this?
P.N.
Aberdeen, Wash.

Rx: A technique for this was described in *Bread Box* Issue number 2, pages 14-15. (*Bread Box* was the precursor to *Video Toaster User*.) The diagram for that article is reproduced here as Figure 1. I alluded to this last month in the concluding installment of the "ABCs Of Video" series. Basically, the VTRs feed the Panasonic digital switcher (models WJ-AVE5, WJ-MX 10, WJ-MX12 and WJ-MX-50 or equivalent), and the record video output of the switcher feeds Toaster input one. The switcher preview output feeds Toaster input two. In theory, if you punch one VTR to program and another to preview, the digital mixer synchronizes the VTRs to each other. This is asking a lot, and trouble can arise because the line-lock system of stabilization used by the switcher often leaves something to be desired. On the plus side, you can set the VTR on the program mode for strobe or freeze frame or set up a wipe between both VTRs; you can then wipe from that source to a different Toaster input.

Do not expect this shortcut to replace a TBC, but it can give you a way to use both an existing prosumer switcher and the Toaster in concert. This option is likely to become less important as more VCRs offer built-in TBCs.

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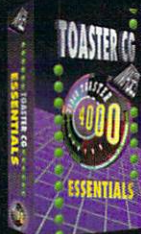
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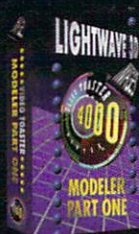
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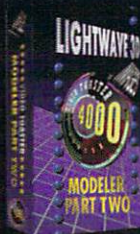
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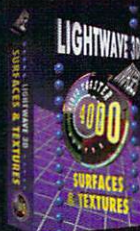
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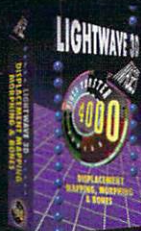
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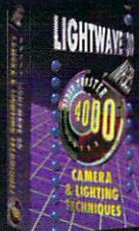
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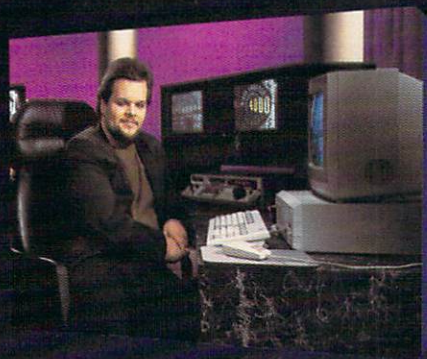
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SOUND REASONING

Sound Effects & Production Music

CD-ROM Rings in New Audio Era

by Cliff Roth



M

usic and sound effects are essential audio ingredients for sophisticated video production. Although most are commonly used for drama and commercials, they're increasingly finding their way into documentaries and news.

There are two general sources for music and sound effects—original recordings you make yourself and prerecorded production music and effects tracks available from CDs and tapes.

Sound Effects

Sound effects are so pervasive in big-budget TV and film production that it's easy to take them for granted.



From the sounds of footsteps, doors opening and closing, cars starting and racing, and bullets firing in dramatic productions, to the sounds of glasses clinking and coffee pouring in java commercials, sound effects are everywhere.

Those new to video production may be amazed at how tedious and minutely detailed the world of audio-for-video sound effects can get. After all, if you're shooting someone walking across the room, won't a camcorder's microphone naturally pick up the sound of the footsteps? If an actor closes a door, doesn't the camcorder pick that up?

To understand why Hollywood prefers to record these sounds separately and why you may want to, consider the most fundamental rule of sound recording: Get the microphone as close to the source as possible. Placing the microphone up close to the mouth of

someone speaking, for example, eliminates most of the unwanted acoustical room reverberations that can muffle the sound. What's true for recording voice is also true for recording footsteps. If you want to hear crisp, clear footsteps, you need to get the microphone close to the feet—ideally within a foot or two.

But if you're framing a wide shot of an actor walking across a room, you can't get the microphone close to his feet without having it show up in the shot. Thus, it's recorded afterward. Even if you could get a close recording, you wouldn't want it mixed onto the same track as the actor's dialogue, because the footsteps might overpower the voice recording and render some words unintelligible. Perhaps the second fundamental rule of good sound recording is to put off all mixing decisions until postproduction.

In Hollywood, audio specialists (called Foley artists) are assigned the postproduction job of creating footsteps, door sounds and other mundane effects in perfect synchronization with actor movements. These sounds are usually created in a specially equipped recording studio, which is loaded with different types of floor surfaces, glassware and hammers.

Beyond creating increased audio realism, sound effects provide a particularly economical way to imply meaning or action. Let's say the audience sees an actor leave the living room of a suburban home while the camera lingers on the closed door. Then a car is heard starting, driving off and loudly crashing. We've managed to convey the idea of the accident at minimum expense.

CDs provide the ideal source for these types of sound effects. From the scratches and grunts of wild animals to all kinds of crashes, planes taking off, city streets, factory clanking, thunderstorms, gun shots, toilet flushings and much, much more, a vast world of sound effects are readily available on prerecorded CDs and tapes. Among the sound effects libraries are Super Sounds and Effects Library from Markertek (two CDs, about \$150), the 24-disc Valentino Sound Effects Library (about \$1,200, also available from Markertek) and the Max-EFX dual CD set from Creative Support Services (about \$200). Non-realistic electronic sound effects, such as beeps and boings, which are useful for animations and comedic effects, are available on the E-EFX CD from Creative Support Services.

Perhaps the newest form of sound effects recording is CD-ROM—storing audio clips in standard multimedia file format. One good example is "1,000 of the World's Greatest Sound Effects," from Interactive Publishing Corp. It's an MPC (Windows) format disc. The advantages of using CD-ROM rather than a straight audio CD

continued on page 32



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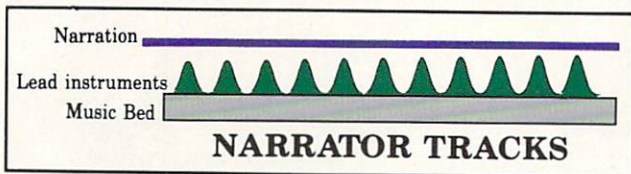
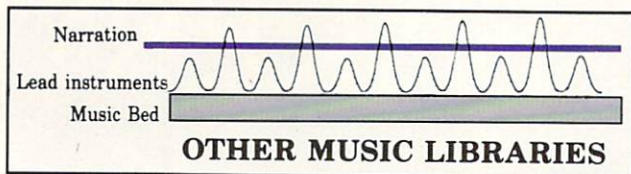
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is that it's easier to index and access the effects, and they can be quickly custom edited using standard Wave editor software, which is supplied with the disc.

Music

Background music is an essential ingredient in the emotional content of dramatic video and film. The use of music to convey mood actually predates the ability to record synchronized sound. Although erroneously given the name today, movies of the early 1900s were not *silent* films; they were accompanied by elaborate original scores that were played live by an organist in each theater.

The creation of an original musical soundtrack score is standard practice for all high-quality video and film productions. While the use of a helicopter sound effect off a tape or CD is common in big-budget productions, the use of prerecorded general purpose *production music* is not. Sure, Hollywood

will pay tens of thousands of dollars for the use of a prerecorded popular song or other readily recognizable tunes, but when it comes to non-recognizable, mood-setting instrumental background music, original production is usually involved.

The scoring is generally one of the final acts of postproduction, taking place after the vast majority of the editing is completed when the picture is

"...for video producers on a tight budget, it's often easier to use the quick and dirty, prerecorded production approach."

said to be *locked*, which means that the precise timing of edited sequences will not change anymore—all the fine trimming has been done. The music may be recorded by a single synthesizer artist or by an entire symphony orchestra. The picture is viewed as the recording is made, allowing for precise synchronizing of musical events with the picture.

However, for video producers on a tight budget, it's often easier to use

the quick and dirty, prerecorded production approach. Similar in concept to sound effects CDs, collections of production music on CDs and tape are often organized in categories by the emotions they are intended to invoke. These include inspirational, somber, suspenseful, romantic, patriotic, meditative, competitive, intriguing and childlike.

In general, there are two drawbacks to the use of production music. Artistically, the music is generic. The musicians never have a chance to respond to the specific needs of your video. Technically, the timing can't possibly match the precise needs of your particular scenes. You may have to fade down the music at the end of a scene, rather than have its ending create a sense of closure.

Production music is available from a number of companies, including Killer Tracks Network Music, Music Library, Creative Support Services, The Music Bakery, Markertek and many others.



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Legally speaking, production music comes in two forms—buy-out and needle drop. Buyout music tends to cost more up front, but becomes cheaper to use as time goes by, especially if you can reuse the same music again and again in different productions, such as promotional spots. The buyout deal gives the purchaser unlimited rights to the music in video productions without any further obligation. Buyout music is often sold as a pig in the poke. If you're on enough video production mailing lists, you'll get solicitations for buyout music CDs. Prices range from about \$30 for a single CD to thousands of dollars for elaborate sets of a dozen or more discs.

of vinyl records; each time the phonograph needle dropped on a record, a fee had to be paid. Sometimes the fee is the same in all situations. More commonly, it depends on what the music is used for (film, video, TV, radio or multimedia) and how big of an audience will hear it.

Theoretically, the needle-drop arrangement could be advantageous for video producers on a budget because it can put a variety of music at your fin-

"Theoretically, the needle-drop arrangement could be advantageous for video producers on a budget..."

gertips, and you only have to pay for what you use. However, in practice you must often pay to get the discs and then pay again to record them. For example, there's one library that charges an annual fee of about \$500 that you get back as credit towards drop fees, which run from about \$60 for non-broadcast video and \$100 for local TV to about \$200 for a home video that's sold to the general public.

Of course, for personal video projects that won't be seen by audiences other than friends and family, most legal considerations go out the window. Wedding videographers, for example, often cut together a picture sequence to the beat of the newlyweds' favorite song. Although the legality of this practice may be questionable (and may to some extent hinge on whether the commercially

recorded music is provided by the client, so that use of it can be interpreted as private re-recording of music

already purchased by the end user), there's little chance that the Rolling Stones, Nirvana or 10,000 Maniacs will come after you for a private work-for-hire project.

However, producers of works intended for wider audiences should always be on the alert for musical copyright infringements. If you're making a video that you intend to enter into video/film festivals, for example, note that entry

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forms almost always require that you have legally cleared the rights for public performances of all the recorded music. The purpose of these declarations is to prevent the festival sponsor from getting in any trouble.

As a practical matter, many producers on a budget simply sign these forms, even though they have not really cleared the rights. Especially with smaller, more obscure festivals, it's rather unlikely that the video (or film) producer will ever get in any trouble for the copyright infringement. But bigger festivals and TV networks may take the matter more seriously before showing your video and ask to see your clearances.

Perhaps the most celebrated low-budget intellectual property infringement case is *The Karen Carpenter Story*, an experimental film that featured Barbie doll puppets as the main actors. The film initially got a favorable reception in some festivals. Then the Mattel corporation, which enjoys trademark production for the Barbie doll line, sued the film's producer and got a restraining order which to this day prohibits public exhibition of the film.

The legality of audio sampling—a process in which little snippets of music from previously recorded albums are used to create new music—is questionable. Courts have generally ruled that as long as the sample is recognizable from the original recording, it cannot be legally distributed (on another album or video) without the permission of the original copyright owner. As with video producers on a tight budget, low-budget rap music producers commonly violate this principle and don't get in much trouble unless a song becomes very successful.

Cutting prerecorded music into such short snippets that they're rendered unrecognizable can be a clever way to avoid copyright problems. To create The Beatles' "For The Benefit of Mr. Kite" in the 1960s, producer George Martin took open reel tape recordings of calliope music, cut them into short pieces a few inches long, threw them in the air and spliced them back together. The *Sergeant Pepper* album was a huge hit, of course, and no lawsuits were ever filed.

Most video producers on a budget would probably be best advised to not worry so much about copyright issues in experimental videos intended for no form of public distribution. Experiment with your favorite music and learn the basics of editing first.

Once armed with the knowledge of proper audio for video editing, it's time to move on to public distribution. When that time comes, be certain that you have cleared the rights to use copyrighted material.

After all, you are in the business of creating intellectual property for a profit. You should respect the rights of others to profit from their intellectual properties and pay the fees to use the music you desire legally. You would expect the same consideration from anyone wishing to use a portion of your video in their for-profit ventures.



Cliff Roth's new book, The Low Budget Video Bible, is available from Publishers Distribution by calling (800) 345-0096.

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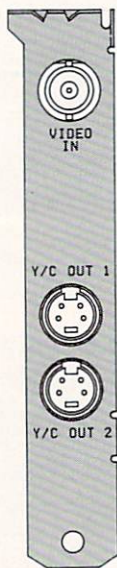
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The 4000 Series:

The 28MHz Warp Engine comes with an 040 socket, four SIMM sockets and the NCR SCSI-2 Controller. This is a very cost effective entry because the A4000 already has an 040 chip installed and 4 to 16MB of FastRam on the Motherboard. You simply remove the CBM CPU card and then remove the 040 chip and install this onto the Warp Engine. You can also remove the Memory from the Motherboard and install it onto the Warp Engine. This produces a 28MHz 040 Accelerator with 4 to 16MB of High Speed Local 040 32Bit Burst Ram and the fastest SCSI-2 Hard Disk Controller available for the Amiga. You do not need to purchase more FastRam immediately. The Warp Engine provides all of this expansion without using a single Zorro Slot! The 33MHz and 40MHz versions include the 040 Processors. The 33MHz board requires 70ns Ram to work at its highest speed and the 40MHz board requires 60ns Ram although you can insert wait states to use slower Ram.

The 3000 Series:

There are three versions available for the A3000 which in all aspects are the same as the 4000 except that the Ram expansion is 64 Megabytes.

All Warp Engines are fully upgradable to 40MHz by just changing the CPU and the Clock Oscillator! The Warp Engine uses standard 72 Pin SIMMs and allows the use of up to four different size SIMMs at the same time (for example you can have a 4, 8, 16 and 32MB SIMM installed together). Unlike other companies that require the use of custom SIMMs that are only available from them, and/or they only allow the same size SIMMs to be installed making it necessary to remove your old SIMMs before you can add larger SIMMs. The NCR53C710-1 SCSI-II Fast 32Bit DMA Bus Master Processor makes it the Fastest available with its' direct connection to the 040 chip - this provides up to 10MB/s Transfers and allows the 040 to retain 90 to 98% of its' Processing Power! Zorro III Memory boards cannot even reach 70% of the speed of the Motherboard Memory while Warp Engines Local 040 Burst Memory is many times faster than the Motherboard Memory!

Hardware Features

- Very High Speed Local 040 Memory Bus with full 040 burst access.
- NCR 53C710 40MHz SCSI-2 Fast Controller connected directly to the 040.
- 32Bit SCSI host bus DMA interface supporting burst to and from the RAM
- Supports 10MB/s SCSI Transfers.
- Full DMA allows the CPU to still have 90% Processing Power while doing Transfers.
- No Zorro III DMA Problems.
- Fully Autoconfigurable with optional Autoboot capability for SCSI.
- 32Bit Ram Expansion Up To 128MB.
- Uses Standard 72Pin SIMM Modules.
- Allows Mixing of Ram Module Sizes.
- Supports 4, 8, 16, 32 MB SIMM Modules.
- Uses the Memory that is installed on the Amiga 4000 MotherBoard.
- Supports DMA access from Zorro III Devices to onboard Memory.
- A3000 Version Supports up to 64MB of 32Bit Memory.
- A3000 Engine will clock 16MHz MotherBoards at 25MHz.

Compatibility

- Compatible with the Video Toaster, Retina Z-III and OpalVision.
- Works in all 3000, and 4000 series Amigas.
- Requires AmigaDos 2.1 or greater.
- Full Two Year warranty on Accelerator card.

- **Warp Engine 28** \$899.95 suggested list.
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Features	WarpEngine	GVP-040/40	Excalibur	FastLane	4091	DKB3128
28MHz, 33MHz, 40MHz Versions	YES	NO	NO	NO	NO	NO
28MHz Upgradable to 33 and 40MHz	YES	NO	NO	NO	NO	NO
Expandable onboard to 128Megabytes	YES	NO	YES	YES	NO	YES
Built in SCSI-2 Hard Disk Controller	YES	NO	NO	YES	YES	NO
Uses industry Standard SIMM Modules	YES	NO	YES	NO	NO	NO
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	Maybe	NO
Zorro III DMA or Buster Problems	NO	NO	NO	YES	YES	?

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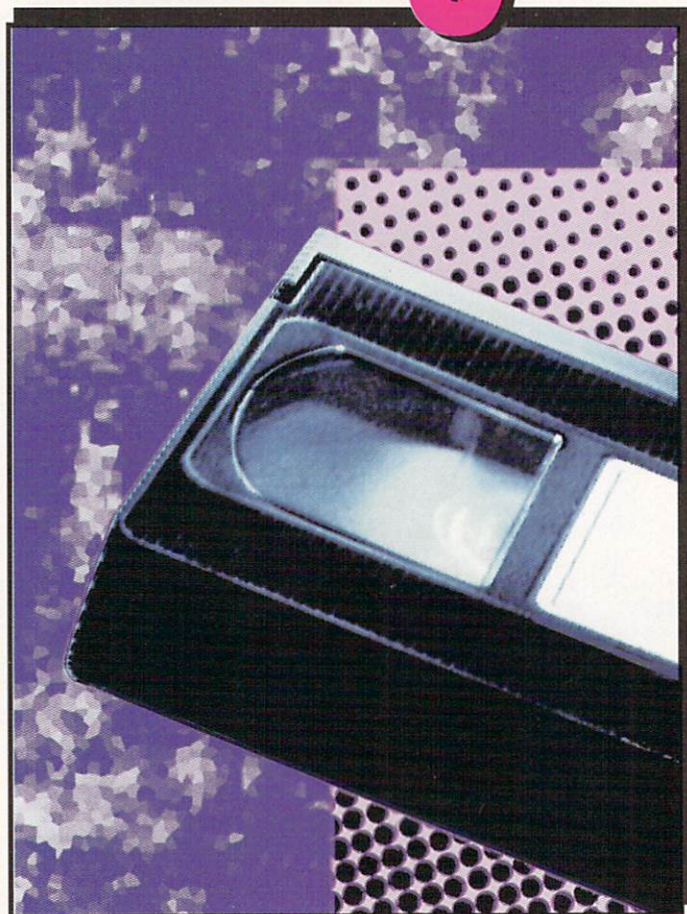
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How to Capture the Best Image and Sound:

The Recording Process

by Cecil Smith



Recording on magnetic media is a tenuous process at best. Rearranging the magnetic orientation of particles coated on a piece of plastic can only go so far. Then the information stored by the orientation of those particles must be recovered to reproduce undistorted pictures and sound.

The tolerances in which equipment must operate are narrow. The marriage of electronic signal processing with machinery in motion is anything but bliss. Everything must operate to peak efficiency to derive the pleasure of good pictures and sound.

Formats

There is no subject that has been more maligned than videotape formats. There's a bunch of pure unsubstantiated bunk out there. For whatever reason, each marketer, user and abuser of videotape equipment has a favorite format and sometimes represents fiction as truth.

If you want to get considerable attention when amidst a group of *videots*, simply say, "Eight millimeter U-VHS D-43 is the best videotape format." When someone asks me what is the best commercially available videotape format, I answer component digital (until something better comes along). How much is it? If you have to ask, you can't afford it. (It costs more than \$50,000 to \$110,000 per deck, plus support equipment and more tons of air conditioning.) It's about this time that the glazed eyes show that what's really needed is the best format under \$56. In reality, there is no best format.

A videotape format is the specification of video signal processing applied to the recorded signal; audio signal processing applied to the recorded signal; the number of channels required to interconnect videotape equipment with other equipment; tracking method; paths of recorded tracks; width of the tape; speed of the tape; speed of the head past the tape; and cassette or reel size.

The paths of recorded tracks on VHS and S-VHS formatted tape are shown in Figure 1. This helical scan format creates diagonal tracks of recorded video signal information and

places audio and control tracks longitudinally along the tape. Although there are several major variations on the theme, the type and general placement of recorded tracks shown in Figure 1 is typical of almost all formats currently available. The diagonal tracks are recorded by a video drum assembly similar to that shown in Figure 2.

The other major difference among the various videotape formats is the type of processing applied to the video signal as it is recorded and played back. Video signal processing, listed in order of increasing picture quality, include heterodyne, component analog, direct, composite digital and component digital. With improvements in tape technology that came out in mid-'80s equipment, manufacturers were able to develop enhanced modes of operation for most of these video signal processing methods. These modifications are often called *Hi* or *Super* or *SP* and improve the video signal playback quality. Figure 3 details the commercially available videotape formats.

In general, the enhanced formats are upwardly compatible, which means that 8mm tapes can be played on Hi8 equipment; VHS tapes can be played on S-VHS equipment; Betacam tapes can be played on Betacam SP equipment; and D3 tapes can be played on D-5 equipment but not vice versa.

Video Tape Formats

The third column in Figure 3 lists the number of channels that must be used to achieve the highest possible quality from a given format. In general, better picture quality results in a greater number of channels. When the picture quality is higher, a greater number of generations can be used effectively during production, post-production and distribution. And when the number of generations is greater, the cost is higher for required equipment and systems.

One of the other keys to analyzing format quality is whether it operates in the analog signal or digital signal domain. Very high picture quality can be achieved in both domains; however, switching from one to the other can introduce distortions in the picture. Several conversions from analog-to-digital or from digital-to-analog can significantly degrade picture quality.

Not all formats are applicable to all television operations. Because of difficulties with editing procedures, Hi8 is frequently considered an acquisition format. Size, weight and cost of equipment usually limits D1 application to high-end graphics houses. MII, Betacam, D-3 and Digital Betacam are small, lightweight solutions to high-quality field production.

Videotape

There is no tape that is consistently the best. There are major batch-to-batch variations in quality from each manufacturer. Handling and storage is far more important than the type of tape or manufacturer of tape. Tape life can be extended by: storing the tape at a constant temperature and humidity; using the tape in an environment free of dust, dirt, smoke or other particulate matter; avoiding exposure of the tape to chemical

fumes; storing it alternately tail-in and tail-out; keeping VTRs in good mechanical shape; avoiding magnetic fields (loudspeakers, picture monitor deflection coils, mechanical telephone ringers and motors); and passing tapes through the X-ray machine, not the metal detector, at airport security checkpoints

VTR Maintenance

The cleaning of a VTR is the most important maintenance procedure in assuring reliable operation. Dirty heads may clog and not record or play back anything.



Figure 1

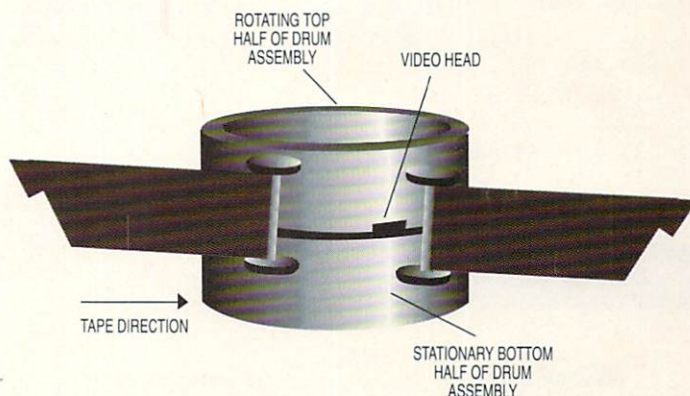


Figure 2

Dirty guides, drums and rollers may scratch or fold tape. A dirty transport can wear out quicker.

Here are some guidelines for VTR cleanliness: Clean as soon as noise (snow) becomes visible in the picture. The frequency of cleaning can depend on many factors, including tape stock, environment and VTR adjustment. The consistent presence of excessive picture noise or frequent clogging of heads is usually an indication of excessive head wear.

Some VTRs have built-in cleaning mechanisms, while others require use of a cleaning cassette or manual cleaning. Do not use a cleaning cassette unless it is equipped

The Recording Process

with a liquid cleaner that is specifically stated to be non-abrasive.

To manually clean a VTR, remove the top cover and use a non-fibrous applicator (foam-tipped swabs or chamois) and an approved cleaner. Caution: Many clean-

Format	Tape	Channels
HETERODYNE		
VHS		
VHS-HO	1/2-inch Oxide	1
VHS Hi-fi		
8mm	8mm Metal Particle	1
S-VHS	1/2-inch Oxide	2 (Y/C)
Hi-8	8mm Metal Particle	2 (Y/C)
U-Matic	3/4-inch Oxide	1 (2 - Y/688 "Dub")
3/4-inch-SP		
COMPONENT ANALOG		
Betacam SP	1/2-inch Metal Particle	3 (Y/R-Y/B-Y, Analog)
M-II	1/2-inch Metal Particle	3 (Y/R-Y/B-Y, Analog)
DIRECT		
1-inch TypeC	1-inch Oxide	1
COMPONENT DIGITAL (4:2:2)		
Dig. Betacam	1/2-inch Metal Particle	3 (Y/R-Y/B-Y, Digital)
D-1	19mm Oxide	3 (Y/R-Y/B-Y, Digital)
D-5	1/2-inch Metal Particle	3 (Y/R-Y/B-Y, Digital)
COMPOSITE DIGITAL		
D-2	19mm Oxide	1
D-3	1/2-inch Metal Particle	1

Figure 3

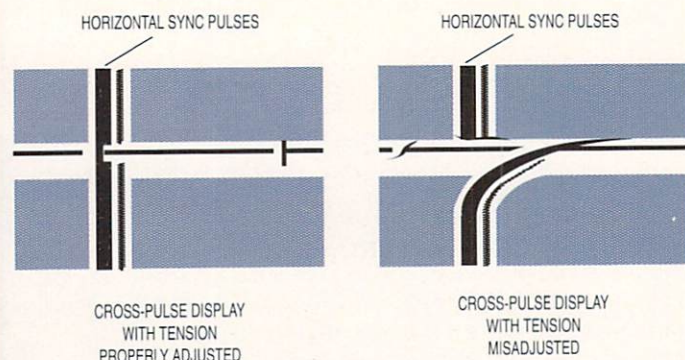


Figure 4

ers melt plastic or soften rubber parts. Always scrub in the direction of tape travel.

Tracking

The path of the video heads during playback needs to be exactly the same as that of the heads when the video was recorded. (In many VTRs, the same heads are used for both record and playback.) There are numerous ways in which the play path can be distorted and prohibit the interchange of the tape with other VTRs.

The tracking control adjusts the overlay of the record and playback paths to allow the interchange of tape from machine-to-machine and from one environmental, physical condition to another. If the tracking is good, there will be no visible distortion in the picture and the signal transferred from the tape to the head can be maximized.

When recording, the tracking control is disconnected. Operator adjustment of tracking is available only during playback. (There is adjustment of tracking during record that is provided for a qualified technician with specialized equipment.) There are also separate adjustments of the amount of tension applied to the tape during record and playback. When operator adjustment of tension is available during playback, it is sometimes called *skew*.

The reason why there is frequently a need for adjustment of tracking and tension arises from differences in tracking, tension, VTR alignment, temperature and humidity during record and playback. If the environmental conditions are substantially different during playback than recording, tracking error may be introduced.

For example, consider the location of the tracks on a tape that is recorded when the temperature is -20. The VTR and tape contract and become brittle in the cold.

As the tape warms to room temperature, it expands. In the process, it relocates the location of the track as it becomes more flexible and changes the drag added to the tension adjustment. Users of portable equipment in the frozen north encounter many interchange problems.

Interchange can be confirmed with an alignment tape, which is recorded on a critically aligned jig and cannot be made on any production VTR. If the alignment tape plays back properly on a VTR, the tracks are within the specified locations on the tape. Use of an alignment tape does not guarantee that a given tape will play on a given machine. Tolerances within the format specification can allow too much slop for completely reliable interchange.

The tension adjustment of a VTR is effectively an adjustment of the *time base error* present in the playback video signal. The time base of a video signal is the time spent on the horizontal scans. If this time is not correct, usually about 0.000064 seconds, there is a time base error. If time base error is present, the width of the lines that don't have the correct period can appear shifted to the left or the right in the picture. The left drawing shown in Figure 4 indicates a signal without time base error displayed by a cross-pulse monitor. (A cross pulse monitor shifts the window through which you look at a signal so that the super black horizontal and vertical sync pulses are visible.) The right drawing in Figure 4 shows a typical time base error found in VTR playback signals. A time base corrector, TBC, re-establishes proper horizontal scan periods.

Problems with tension and time base error may be min-

imized by *repacking* (fast forward to the end then rewind) a new, fresh tape. This process minimizes the effects of adhesive chemicals used during tape manufacturing and layer-to-layer cohesion that builds up during storage and transport.

Adjustment of skew or tension during playback is critical in editing operations when no TBC is in the playback circuit. Incorrect adjustment can create a *whip* or *flag* edit. In systems without a TBC, the tension control (if available) should be adjusted during playback so that the top of the picture does not bend to the left or the right.

Figure 5 shows a schematic diagram of a basic cuts-only editing system. The source VTR plays back production material as it is rearranged and re-recorded by the edit VTR. Monitoring of the picture is provided on the input and the output of the edit VTR; monitoring of the video signal waveform is provided on the output of the TBC.

A waveform monitor is required for proper adjustment if the TBC offers the operator control over video signal parameters, such as gain, setup and burst gain. An edit controller or editor commands the various playback, recording and editing functions of the two VTRs at the proper times. The edit controller knows when to issue the VTR commands by reading tape positioning information in the form of control track pulses or digital time code words from each VTR.

In addition to stabilizing a playback video signal, a TBC also makes the corrected output signal synchronous with a reference signal, frequently the black burst signal, that is also input to the TBC. The corrected VTR playback signal can then be timed into a system and used just like any other video source. The playback video signals from two or more TBCs can be timed together by referencing the same video signal, allowing the operator to fade or dissolve from one VTR to another without distortion. When multiple VTRs are used, the source VTRs are labeled A, B and C to create an A/B- or A/B/C-roll editing system.

It is recommended that a TBC be used only twice before release of a given program. A distortion called quantization error starts becoming objectionable beyond that. A quantization error occurs anytime an analog signal is converted into a digital signal and vice versa.

The use of magnetic videotape is the state-of-the-art of media in storing video and audio signals. In the immediate future, many operations will replace the ribbon of magnetic tape with a spinning hard disk of magnetic material. Non-linear editing systems using disk storage of digitized video and audio signals are spreading like wildfire. Where tape offers one window through which you can sequentially look at various scenes on a tape, disk-based systems enable the rapid selection of one of several windows through which you can look at the scenes. The primary difference between linear and non-linear systems is the speed with which the scenes can be selected.

One of the key discussions in the emerging, non-linear editing market is the method of compression that is used. In these systems, the analog video signal is digitized (if not input in digital form) and then the number of pieces of

information required to produce an acceptable picture is minimized. Reducing the amount of information cuts down the required size of expensive storage space on a disk. There are no pat answers to how much compression is allowed within a given scheme before a picture becomes unacceptably distorted. Any compression past a given point will reduce the quality of the final picture. It's more a question of what's good enough for your needs.

It's been quite a challenge to complete the four installments of the "Capturing the Best Image and Sound" series of articles. It takes a lot of time and effort to assimilate even a portion of the available information. As you progress in your quest toward video proficiency, just

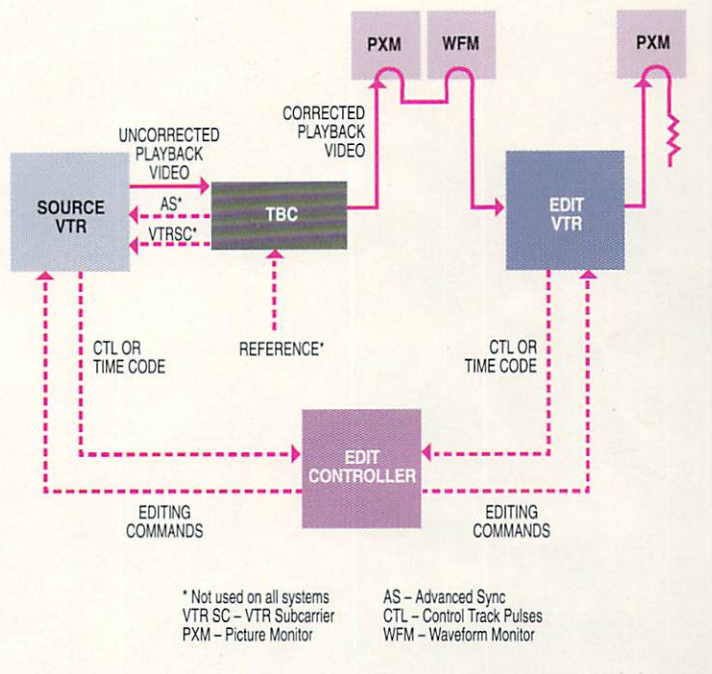


Figure 5: Typical basic "cuts-only" editing system

remember one thing: You are using electronic equipment to communicate an idea or evoke an emotion. It's all too easy to get caught up in all the bells, whistles, buzzwords and hype that have become a by-product of today's technology. Don't forget that the message is what video is truly all about.

VTU

Cecil Smith is a professional engineer who specializes in the design and documentation of imaging and television systems and also writes and presents seminars to train imaging professionals. He is the author of Mastering Television Technology: A Cure for the Common Video and Answers to Television Technology: An Encore and many other books and magazine articles. Further information about his services and publications can be obtained by calling (800) 232-3321 or (214) 231-6804.



Business Opportunities

Special-Interest Video Offers Rewards for Those with a Message

by Allen Edmonds

Just as the 1950s heralded a new era in the distribution of information to the masses, complete with winners and losers, the technology-driven changes of the 1990s are forming a new roster of even bigger winners and losers.

Lost to the advent of television in the postwar marketplace were the colorful homogenous magazines that once graced coffee tables across the nation—*Look*, the *Saturday Evening Post*, just to name a few. Some have reappeared as more focused publications, catering to a segment of the population that appreciates the nostalgia, photography and homespun wisdom contained within the pages of these one-time American institutions.

In the 1990s, television as we've known it is under direct attack from advancements such as on-demand video capability—both through our VCRs and an ever-widening satellite signal delivery system. In this new revolution, we are already seeing the losers begin to fold their tents. The big three networks for years have been cutting budgets, production is being handled outside network studios more than ever, and America is becoming accustomed to the art of channel surfing.

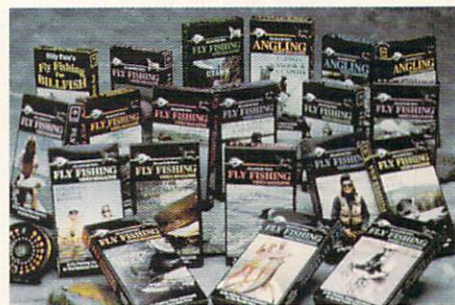
But who will capture the spoils from this battle of technological change? For the individual, the

answer to that question may be the most exciting aspect of our new era. Just as broadcasting has changed to narrowcasting, video programming has begun to categorize itself. As veteran outdoor television producer Jim Watt has found, there are fly-fishing enthusiasts by the thousands who will pay to see the sport through his eyes. And James DeBee has found an enormous market for video that specifically addresses various issues faced by the hearing-impaired and those who work with those individuals.

Because of technology—specifically the advent of affordable tools such as the Toaster, as well as increased public access to various forms of delivery—they've found that an individual with a solid idea and the training to put together the pieces doesn't need the resources of a major network to produce work that will entertain, inform and sell.

Where There's a Market

Watt, president of Bennett/Watt Entertainment Inc., in Bellevue, Wash., knew absolutely nothing about marketing when he and his wife decided in 1981 to launch a video magazine on fly-fishing.



The *Fly-Fishing Video Magazine*, a weekly outdoors show produced by Bennett/Watt Entertainment Inc. for ESPN, has been a marketing boon to the company's special-interest video division. For \$25, customers receive a one-year membership to The Fly-Fishing Video Club plus one free tape and the option to buy others for \$9.95.

"I just figured I'd put an ad in one of the fly-fishing magazines, and the world would beat a path to my door," said Watt, who proceeded to sell all of six tapes. In their case, the problem certainly wasn't production quality. Jim and Kelly were husband-and-wife partners in the freelance production business long before *Fly-Fishing Video Magazine* ever got off the ground. For a time, the couple spent more than 300 days a year on the road for various networks, producing segments for magazine shows and news pieces.

The problem, they discovered, was that the home marketplace simply wasn't fully saturated with VCRs. Five years later, that problem had corrected itself. Despite the challenges involved with finding an attractive pricing and marketing strategy, the Bennett/Watt firm is the world's largest producer of fly-fishing videos for the mail order market. The company is also gaining further exposure with a regular slot in ESPN's Saturday morning outdoor sports rotation—a position many could argue would be the dream of an independent video producer.

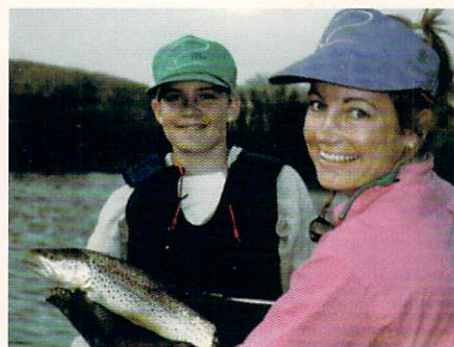
"Anything's possible if you can find the right niche—the right focus," said Watt. "The real test is if you can show it to someone, and they understand what it says. You have to find reasonable critics. Show your product to someone who knows nothing about your topic, and if they're entertained, then you have a good product."

Most importantly, he said, "check to see how many people are interested in the activity, not whether or not a video's been done on it. You don't do a video on fly-fishing if there are only 12 people in the country who fly-fish. You're going to be making your own market to a degree, but you can't make your own market if no one's involved in the activity."

For James and Joanne DeBee, both of whom are deaf, a market seemed ready-made. Their firm, DeBee Communications of Carlsbad, Calif., produces video products designed to meet the demands of an estimated 24 million deaf and hearing-impaired people in the United States.

With more than 15 years of experience in video and film and degrees in the field from California State University-Northridge and Rochester Institute of Technology, James DeBee has worked as a production assistant, lighting director, photographer, media specialist, producer, director and executive producer with such media groups as KTLA-TV, Beyond Sound, Group W Cable, Silent Network and DeBee Productions.

continued on page 44



The *Fly-Fishing Video Magazine* travels the globe in search of the best fishing holes. The 1994 shooting schedule includes locations such as Panama, British Columbia, Washington, Idaho, Florida and Montana, among others. In addition to providing fishing tips, the one-hour videos go behind the scenes to give viewers a taste of the local area.

Vital Statistics:

Name: James DeBee

Age: 37

Previous job: Freelance production and direction of various video programs for other companies since 1984.

Company: DeBee Communications Corp.

Established: 1993, full-time

Start-up capital: \$50,000

Specialty: Video programs for the deaf

First product launch: March 1994

First year of profit: Anticipated \$100,000 to \$300,000 in 1994 revenues.

Number of current titles: Just completed a 12-tape series entitled "American Sign Language Video Series."

Name: Jim Watt

Age: 50

Previous job: Freelance video production for several major networks.

Company: Bennett/Watt Entertainment Inc.

Established: 1981

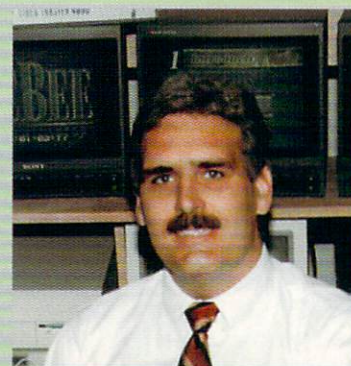
Start-up capital: Not available

Specialty: Fly-fishing videos

First product launch: 1981

First year of profit: Not available

Number of current titles: 39



Toaster 4000 FONT SECRETS

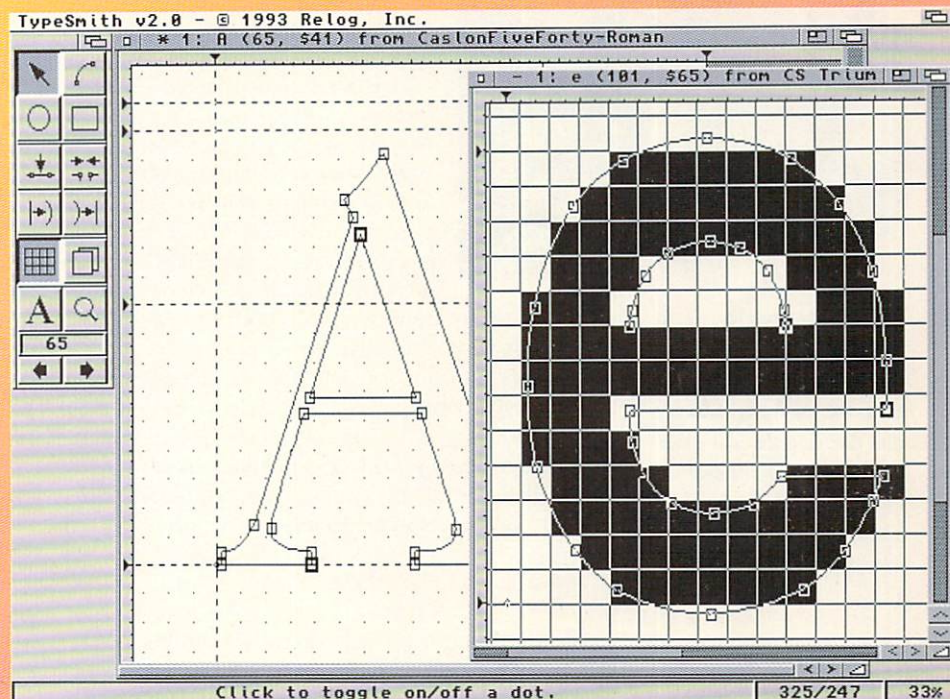
NEW!

Get more than 250 fonts without robbing a bank!

Fonts are too expensive. Fortunately, your Toaster 4000 came with 250 PostScript fonts. But even that isn't enough to offer you or your clients a good selection. Now you can get more without having to spend a fortune. TypeSmith 2.0 is an easy-to-use font editor that allows you to create your own fonts. You can load PostScript and Compugraphic Intellifonts, edit them as drawings, and convert between formats. You can even open multiple fonts and copy and paste characters between them!

TypeSmith 2.0 has an autotracer that will turn your bitmap pictures and scans into outline font characters, plus a character generator that turns outline fonts into bitmap fonts. If your other computer is a Mac, TypeSmith 2.0 can load Macintosh format PostScript fonts and convert them for use with your Toaster. It can also load Windows PFM files and save them in AFM format. And TypeSmith's professional hints will make your fonts render better than ever.

TypeSmith 2.0 has it all—font editing, conversion, bitmap creation, autotracing, ARexx, and hints—and it's your link to Mac and Windows fonts.



"...it's a must." — *Amiga Format*

"TypeSmith is a must-have... I give it my highest recommendation." — *Amazing*
"TypeSmith is a must-have for Amiga typographers and video titlers." — *Compute!*

"...it's good. Extremely good. ★★★★★" — *Amiga Shopper*

How much to end font hell?

Less than you would think. The suggested retail price is \$199.95, which is about the same as one font family from Adobe. And for a limited time only, Toaster owners can purchase TypeSmith 2.0 for only \$125 directly from Soft-Logik Publishing. That's a savings of 37%.

How much for font nirvana?

How much would you expect to pay for 1000 fonts for your Toaster 4000? You can receive the Serials II TypeCollection for only \$499 on CD-ROM. It includes 1000 fonts in PostScript and TrueType format that you can use with your Toaster software, Macintosh or PC. If you don't have a CD-ROM, we also offer the collection on Syquest cartridges. (Call for pricing.)



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Circle Reader Service No. 148

In the process, he won a Cable ACE and an Emmy award in 1985 for his work on *The Los Angeles Club for the Deaf Story* documentary.

"I wanted to own a business to prove that I could succeed," DeBee said. "Many film and video companies didn't give me a chance because they were concerned how I would communicate and that I couldn't hear sounds. However, there are ways to make up for that. I never let the fact that I am deaf stop me from doing what I love the most, despite what people in the film and video business have told me in the past."

His *American Sign Language Video Series*, the cornerstone project for his newly incorporated firm, is projected for release this spring. The series, which consists of a dozen 90-minute tapes, is designed to teach American Sign Language to both deaf and hearing students and individuals. DeBee selected it to be the firm's first project because of its projected rapid growth in sales; he expects the series to gross between \$100,000 and \$300,000 in the first year of release.

DeBee's introduction into the market was hastened by his observation that a few companies were producing what he saw as low-quality sign language videotapes. "I decided that high-quality videotapes should be done," he said. "And I am the only deaf person to do it."

Prepare to Stumble before You Run

DeBee thought he was doing everything right, but his experience with financing is a perfect example of the type of contingency planning that's required of anyone desiring success in an independent venture.

To qualify for U.S. Small Business Administration (SBA) financing for his initial project, he was required to develop a business plan and financial projections with the help of Service Corps of Retired Executives consultants.

"They were committed to helping me set up a video/film educational company, and I worked hard to develop the material that was needed," DeBee said.

However, after a year of preparation, DeBee's loan was denied by the SBA. "It was SBA's policy that the government could not loan funds to any video/film or publishing company that influences public opinion and that makes a profit," DeBee said. "I was very disappointed with the SBA for wasting more than a year of my time."

In the end, DeBee secured a total of \$50,000 by pooling funds from a conventional loan, his own money and contributions from deaf investors.

With the money, he was able to begin his venture by purchasing the computer editing equipment.

For Jim Watt, the demand for his service had increased by 1986, when he and his wife decided to restart their venture. But pricing the product was no easier. In their case, no amount of contingency planning could have substituted for trial-and-error experience.

In 1981, he had put a \$59.95 price tag on a one-hour tape, admittedly a figure he picked without much research. "But somewhat in my defense, nobody else had really ever tried this," Watt said. "There were a few other fishing videotapes that were selling better and better. But I, of course, felt mine was much better."

When looking back, he isolated two factors that influenced his first production: a lack of VCR-equipped homes and his own inexperience in narration. By the time Watt and his wife decided to try again, they felt the marketplace had grown, and they were eager to produce a better product.

After producing four half-hour shows, the couple marketed the product as a home video magazine. A subscriber received six issues—one every other month—at a price of \$150 per year.

"No one had ever tried to do a video magazine, so we just didn't have anyone to go to school on, aside from just asking our friends," he said.

However, by attending trade shows, they quickly discovered that people didn't want to buy a half-hour home video. "So we immediately switched to an hour. And we muddled around at the \$150 price for awhile, until we decided the price was too high. We tried giving away fly rods with a three-year subscription, and we tried all kinds of little ploys."

In short, Watt said, "we did everything wrong."

Finally he and his wife found what they considered to be the right price point for a six-tape subscription: \$79.95. In Watt's case, success followed success. By studying the response of both a potential readership and actual subscribers to his company's direct mail and advertising campaigns, the Watts learned that the marketplace didn't want to subscribe to a video magazine but preferred to pick and choose the videos they could buy. Thus, they launched the Fly-Fishing Video Club. With a \$25 initial investment for a year's membership, a member receives one free tape and can buy any of the others in the catalog for \$9.95.

"We just tweaked it around, and that's the only way you can do it in a new business like this," Watt said.

Technicalities Can Break or Make You

The crucial stage of video production, the point at which a right or wrong decision can most affect an entrepreneur's bottom line, may well have nothing to do with narration or camera angles.

Recent advancements in editing technology are, of course, the primary reason we're even been able to talk about independent video pro-



DeBee Communications Corp. produced these two commercials for Sprint Telecommunications. The top frame is from a spot detailing the 911 emergency services for the deaf and the bottom frame is taken from a spot explaining how to use relay services.

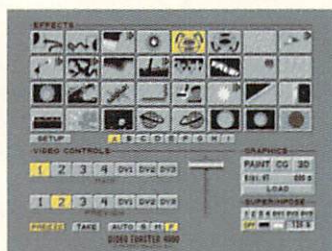
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duction. No longer is a \$500,000 nest egg required to effectively edit and produce network-quality video. However, with a Video Toaster and some technical experience, it's easy to get carried away.

"You have to be careful not to use too many effects," Watt said. "Keep it understandable."

DeBee uses his Toaster for character generation, graphics and some digital effects—all of which he feels are necessary to communicate his message on American Sign Language. He believes his dream would be impossible to achieve without the capabilities his in-house equipment provides.

"I much prefer to work with my own equipment instead of using outside services. I have much better control of the product, as well as more time to be creative," DeBee said.

Other technical aspects, such as which tape stock to use, how the packaging is produced and printed, and how to settle on a duplicator, could also have a drastic impact on the level of your success. Once again, making the proper choices can be an inexact science.

"We shopped around for duplicators and bounced from one to another," Watt said. "Duplication is very possibly the most competitive business there is. You constantly have duplicators calling and quoting a better price and promising as good, if not better, service."

"The best thing to do is ask someone like us, who has been in business, who they recommend. Because aside from the price and turnaround time, the only other measure you have is the number of returns you get."

Because it's not practical for the small business person to preview every copy that is sent out, a great degree of trust must be placed in the duplicator.

Watt's current return percentage is right where he wants it. "In the past three months, we've sent out 1,000 to 1,500 and only five were returned. We think that a couple of those were broken in the mail. With another duplicator, we might have had 100 tapes sent back," he said.

DeBee, who combed the business listings of the *San Diego Creative Directory* for potential duplicators, asked for bids from several companies.

"I made sure the price included stocks, wrapping and packaging," he said. He also made sure the house was equipped for one-inch, Betacam, D2, Hi8 and VHS. DeBee settled on Betacam SP

as his duplication mastering format and Hi8 for acquisition. As the business grows, DeBee plans to switch to D2 for his edit master and acquire footage with Betacam SP.

Watt has found that the duplicator often "tells you what he can use to master. I think that with any sort of volume, you'll want to use the best sort of master you can afford." Bennett/Watt uses Betacam SP as a master, although he said 3/4-inch Umatic SP would be acceptable.

Packaging is another element of this process that, though often overlooked, can prove to be a huge expense that must be computed into the production cost.

"We're lucky," Watt said, "in that my partner Kelly does all of the design and color separation—all the way to film—on her computer. So we're able to do everything in-house, and we've found a great printer that will do under 5,000 covers. This guy will do 2,500 at around 20 cents apiece. That would certainly be the price to shoot for."

Getting Your Product to Market

So, you think you've secured your niche. Your financing is in place, your production schedule is set and you're ready to begin selling. But your neighborhood video store won't accept your tapes—even on a consignment basis. You're not alone, said Watt.

"We have never been successful at getting tapes into video stores. There are some special-interest video groups out there, but we've never had them deliver any sort of business. The market is very young, and video rental houses are very shy," he said.

Watt has found video chains reluctant to free valuable shelf space for a new service. "They simply don't perceive that they're going to make their money back—even when I offer to give them away."

DeBee's marketing has focused on facilities that directly serve his niche: the telephone directory for the deaf, advertising in publications for the deaf, at various schools and universities, agencies and organizations, and Gallaudet University in Washington, D.C. He relies on demographic and census information from the U.S. Center on Deafness, as well as networking with friends and colleagues. Despite the fact that he is involved with several distributors, his main distribution channel is mail order, a process Watt also swears by.

"You've got to market nationally," Watt said, "and the most obvious way to do that is through direct mail."

By using agencies that manage mailing lists, an entrepreneur is able to create a promotional piece and send it to those most likely to be interested in the product.

"And you really need the help of a designer who understands direct mail," he said. "We've done some on our own and some with the help of designers. And believe me, the designers know what they're talking about."



These three scenes are from DeBee Communications Corp.'s upcoming release of the *American Sign Language Video Series*—a dozen 90-minute tapes designed to teach American Sign Language to both deaf and hearing students.

Watt suggested that a 1- or 2-percent return from a well-designed direct mail campaign is a solid response.

He has also used television advertising for his tapes, a campaign that complements the fishing program he produces for ESPN.

"There are alternatives if you are looking to reach a specific locality, though," he said. "With ESPN, for example, each local cable company gets two 30-second spots per half-hour that they can sell themselves. And those spots, in a lot of cases, are just dirt cheap. The ones I've been associated with go from around \$40 to \$150 for a 30-second spot."

Capitalize on Your Strengths

The key to selling any product, once a niche has been found, is to prove that it's a superior value to its competitors. That doesn't mean it has to be the cheapest—just the best value.

In his original business plan, DeBee argued the merits of his idea to potential investors in just such a manner. Anyone whose product can meet the standard set by the following description stands at least a chance in today's marketplace.

"Though not the only producer of these types of products (American Sign Language educational videotapes for individuals, schools and libraries), DeBee Communications has identified areas needing improvement with the current

products available from other companies. Other products are not user friendly. 'ASL' will use real people from the deaf community in a more natural setting. The goal is to make its viewers feel less threatened and more comfortable with friendly features. Unlike other ASL videotapes, a friendly instructor serves as a guide to the student through each easy-to-follow step. Its price will be lower than the others available because of the company's low overhead costs, and the use of company-owned equipment rather than costly rentals. The quality will be excellent because of the backgrounds of the experts making the video."

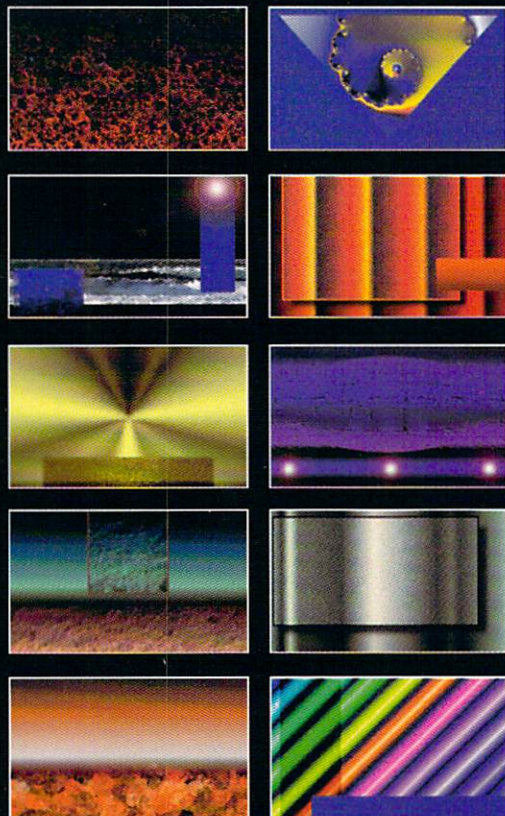
As Watt has realized, and DeBee hopes to soon discover, technology has created the marketplace. Much as commercial television grabbed the opportunity to shape the world in the 1950s, the path is clear for individuals to fine-tune at least a segment of that same world in the 1990s.



With a portion of his start-up capital, DeBee purchased equipment for his desktop editing studio, including the Video Toaster.

VTU

Allen Edmonds is a freelance writer and desktop publishing specialist based in Kansas City, Mo.



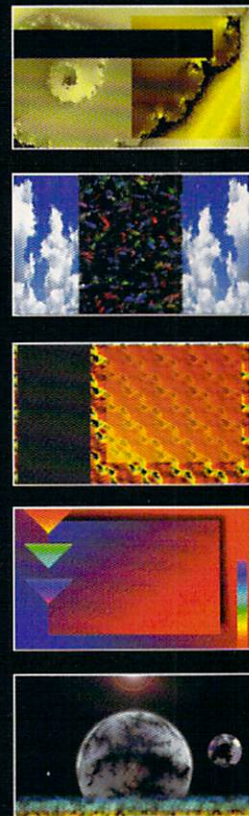
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Grasping *The* **BiG** Picture

The LCD Solution for Toaster Presentations

by Peter Utz

If you use the Video Toaster to provide imagery for large group presentations, you can lose a lot of points if you ask a room full of guests to gather around your portable 10-inch TV monitor. Cozy, but not impressive.

It is far more elegant to transport your picture to your guest's eyeballs than to transport their eyeballs to your picture. There are several ways to do this.

You could buy or rent a muster of TV monitors on stands and loop your video signal from one to the next, allowing one 30-inch monitor for every 30 guests or so. If you don't loop the signal too many times (making it weak), the monitors should yield excellent sharpness, brightness and color. In fact, this is the only way to go if you're working in a brightly lit room or an area where daylight floods through uncovered windows. Nothing beats the brightness of a direct-view TV set.

However, multiple TV images scattered about the room tend to fractionalize the attention of viewers, whereas a single large image focuses attention in one place, preferably near the presenter. TV monitors also are heavy, and their stands take up a lot of space in your van or basement.

CRT vs. LCD Projection

The two most logical and affordable methods of video projection for medium-sized groups are the CRT (cathode ray tube) projector and the LCD (liquid crystal display) projector. The CRT projector forms its picture from three small, bright TV screens in a box. Each image is beamed through a colored lens onto the screen where the colors merge into one full-colored picture.

The LCD projector works more like a slide projector. The projection lamp's light is split into three primary colored beams. Each beam passes through a 2-inch square plate of semi-transparent liquid crystal dots; they become clear or opaque depending on the video signal sent to them. The three images are combined inside the projector and exit through a single lens. Because only one lens is involved (as opposed to the CRT's three), the projector is as easy to set up as any slide projector.

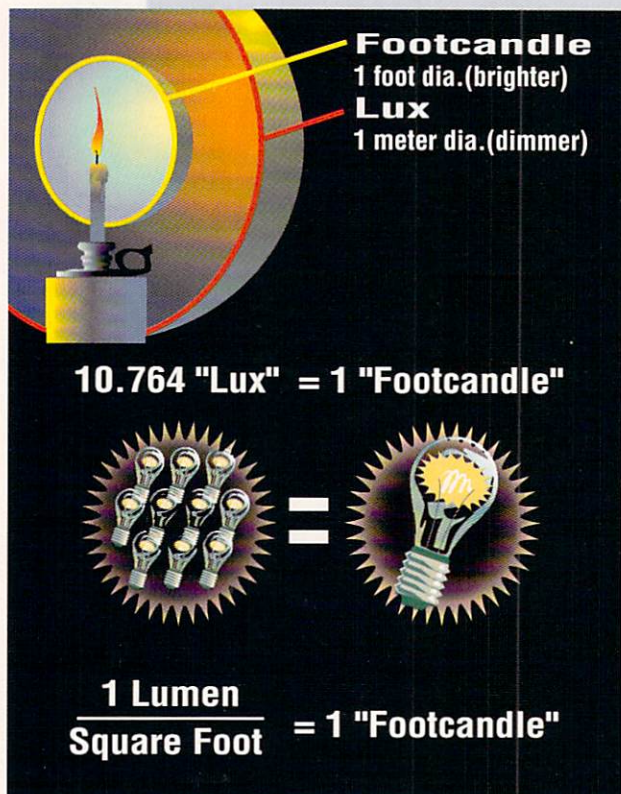
Size and weight represent the biggest differences between CRT and LCD projectors. CRT projectors weigh between 60 and 90 pounds. LCD projectors barely tip the scales at 9 to 30 pounds, which is quite manageable for a portable system.

LCD projectors have a few other advantages over

CRTs. First, they are easier to set up. CRT projectors must have their color images converged each time they are used. This process could take two to 20 minutes depending on conditions. LCD projectors only need to be focused and zoomed to the desired screen size.

Second, CRT projectors are designed to work at a specific distance from the screen, creating a certain size image. Some models allow this distance and picture size to be changed, but you have to swap lenses, a tedious process. LCD projectors can operate at practically any distance from the screen, making any

continued on page 52



Footcandle
1 foot dia. (brighter)
Lux
1 meter dia. (dimmer)

10.764 "Lux" = 1 "Footcandle"

**1 Lumen
Square Foot = 1 "Footcandle"**

ILLUSTRATION BY TOM TWOHY

What's a Lux?

In psychology, brightness is measured with an IQ test. However, in physics it is measured in footcandles, lux, lumens and other bizarre-sounding measures.

Picture in your mind the light given off by one ordinary candle. Years ago this was defined as one candela. Physicists with their notorious intolerance for variation have since speci-

fied a candela more accurately as "a unit of luminous intensity equal to one-sixtieth of the luminous intensity of one square centimeter of a black body surface at the solidification temperature of platinum."

If you don't mind, we'll settle for the first definition for now.

Of course, the brightness of a candle depends on how close you are to it. If you held a white piece of paper exactly one foot from a candle, the brightness on that paper would be one footcandle. Genuine physicists demand that the white piece of paper be shaped in a perfect globe one foot from the candle and that you measure the brightness over the entire inside surface of that globe. Goodness knows how many paper globes they set afire trying to take that measurement.

One footcandle is the amount of light falling on each square foot of the globe's inside surface if the globe has a radius of one foot. If the globe were bigger, the light striking it would be dimmer. A 2-foot globe would receive an illumination of one-fourth footcandle over one square foot of surface.

Other units of illumination are the meter-candle or lux (if the distance is measured in meters). Lux and footcandles are two specifications you sometimes see describing the brightness of

a projector or the sensitivity of a camera. Footcandles and lux are similar, only one is measured in feet and the other in meters. Since there are 10.764 square feet per square meter, it turns out that one footcandle equals 10.764 lux.

Now that we satisfied the mathematicians with a precise definition, we less compulsive mortals need only remember that one footcandle (the brightness one foot from a candle) equals about 10 lux.

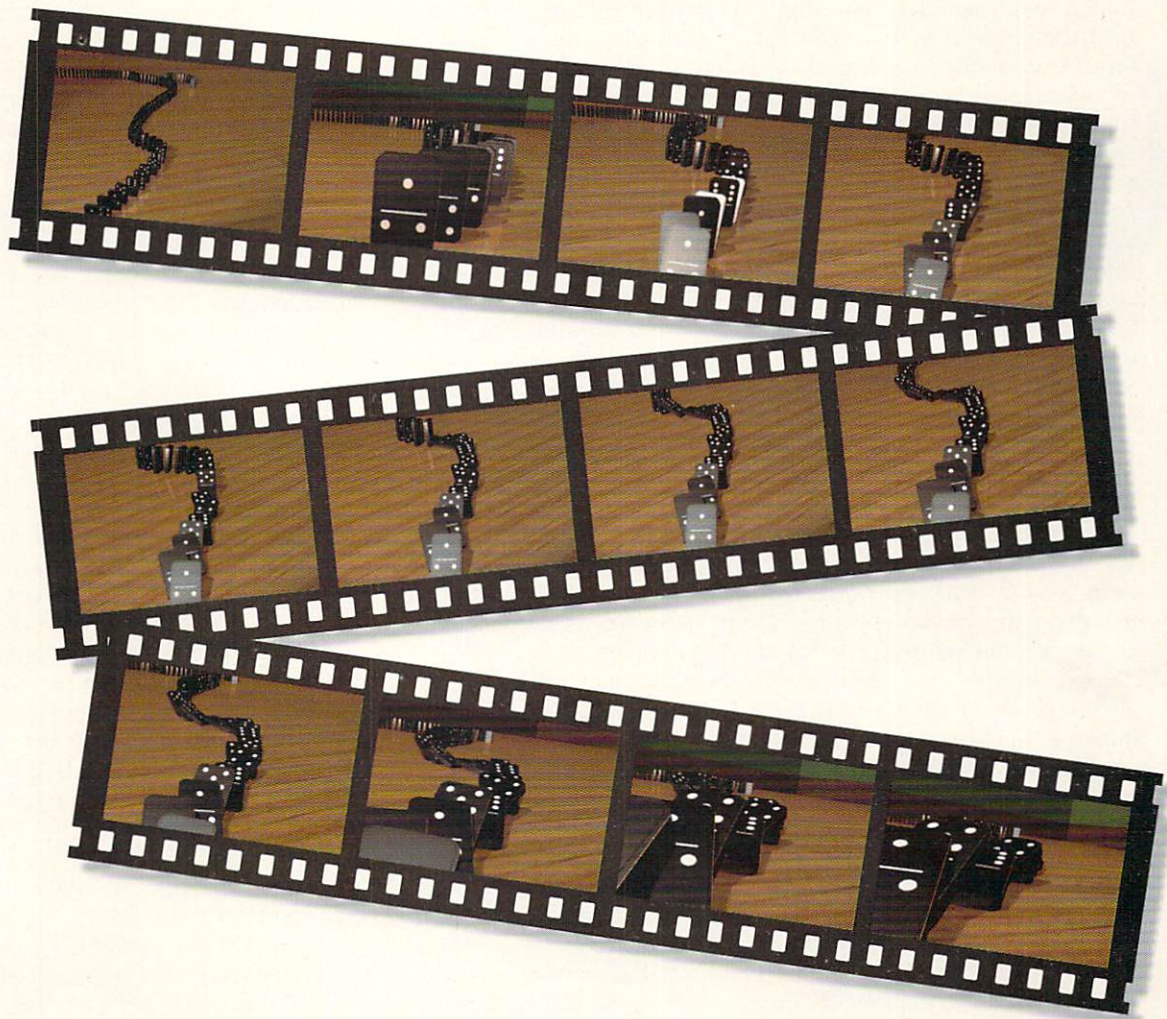
Why do we need to know this? Because some projector specifications are listed in footcandles and others are in lux. You may need to know how to convert from one measure to the other when comparing models. Always compare apples with apples, lux with lux, and footcandles with footcandles.

Here's how I remember which measure is about 10 times as much as the other: lux is a little word; footcandles is a big word. So, 10 little lux fit in one big footcandle. One footcandle equals about 10 lux, two footcandles equal 20 lux and so on.

A lumen is a measurement of light quantity taken at the source of light against a predetermined constant. Lumens per square foot equals footcandles. So who cares? Well, slip this into the conversation at a cocktail party and I guarantee people will not crowd you at the buffet table.

VTU

THE DOMINO THEORY.

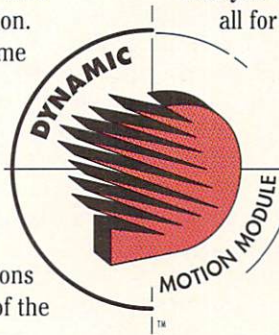


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size picture, and some models can be zoomed, allowing the picture to change size without having to move the projector.

Third, LCDs are more reliable. Not only do CRT projectors need to be statically converged, a three-minute exercise each time they are moved, but after bouncing over a few New York potholes, they require dynamic convergence, a 20-minute process of twisting all three pictures to lay exactly over the top of each other. CRTs also age, the electronics drift and their colors change as their phosphors wear out. Scanning a static image on a CRT screen for a long period of time will leave a *burn-in* where a ghost of the image remains in the background of your picture. LCDs don't have any of these problems. They are factory sealed and converged, and their transistorized parts neither burn, fade nor drift. According to Bruce Pollack, a spokesman for Sharp Electronics, Sharp's LCD projectors have a mean time between failure of 80,000 hours. That would be about 80 years at 20 hours usage per week. All you need to replace is the projection bulb when it burns out, and the metal halide lamps last about 2,000 hours.

Fourth, LCD projectors display no scan-line flicker. When TV images are blown up, they tend to flicker more visibly and the horizontal scanning lines that make up the picture become more noticeable. CRT projectors can employ special circuits and line doublers to fill in the space between the scan lines and also step up the number of times per second that the image is drawn on the screen to reduce flicker. LCD projectors don't suffer a flicker problem. Unlike phosphors that glow and then fade, LCD pixels remain at the same brightness until their circuitry tells them to change.

Fifth, LCD projectors generate very low radiation. CRT projectors use high-voltage circuits that generate significant electromagnetic radiation. Not everyone is anxious to sit next to a high-voltage CRT projector. LCD projectors don't need high voltage and have very little electromagnetic radiation.

Sixth, LCD projectors are insensitive to magnetic interference. TVs and CRTs, because they deal with electronic beams, are sensitive to nearby magnetic fields. Even the earth's magnetic field will affect the tint and purity of a TV screen image. Nearby speakers or motors can create magnetic fields that bend or twist the picture, causing misconvergence or other image distortion. LCD projectors are immune to this.

Finally, LCD projectors are letterbox and HDTV capable. CRTs can display letterbox images (where a wide-screen cinema image is displayed in its entirety with black bands at the top and bottom of the screen where there isn't any picture). Similarly, CRTs can show 16:9 HDTV images, which are also wider than the 3:4 aspect ratio of normal TV. The problem for the regular TVs and CRT projectors is that letterboxing the image ages the phosphors in the middle of the picture faster than the unused phosphors at the top and bottom of the picture. When you go back to

showing 3:4 aspect ratio pictures, the tired phosphors in the middle show a ghost where the active picture used to be. Further, because the blacked-out areas are still scanned by the CRT, they can occasionally display specks of snow, the result of noise in the picture image. Consequently, the letterbox bands aren't completely black. LCD projectors can *turn off* the pixels at the top and bottom of the picture, leaving that part of the picture completely dark. The LCD material also doesn't age with use, and therefore doesn't show bands at the top and bottom of your picture when you go back to displaying 3:4 pictures.

Although CRTs are the only projectors that can yield a sharp enough picture for high-resolution electronic graphics and data coming from professional computer workstations, LCD projectors are gaining ground pixel by pixel. At the Japan Electronics Show, Sharp demonstrated a 2-inch LCD component projector capable of 1,000 lines of horizontal video resolution or 1,280x1,024 pixels. This projector, the XGA, is capable of HDTV projection and may soon encroach on some of CRT's sacred ground.

If the last time you saw an LCD projector was one to three years ago, you probably were unimpressed with the image sharpness. One major complaint about LCD projectors was the *screen-door* effect. The image looked like it was projected through a screen door. This was the result of early LCD projectors having two few picture elements (those little dots of LCD material on each plate) to reproduce a high-quality video picture. You may also recall the older projectors having fairly dim images, good only for darkened rooms. Well, it's time to take another look. LCD projectors have improved.

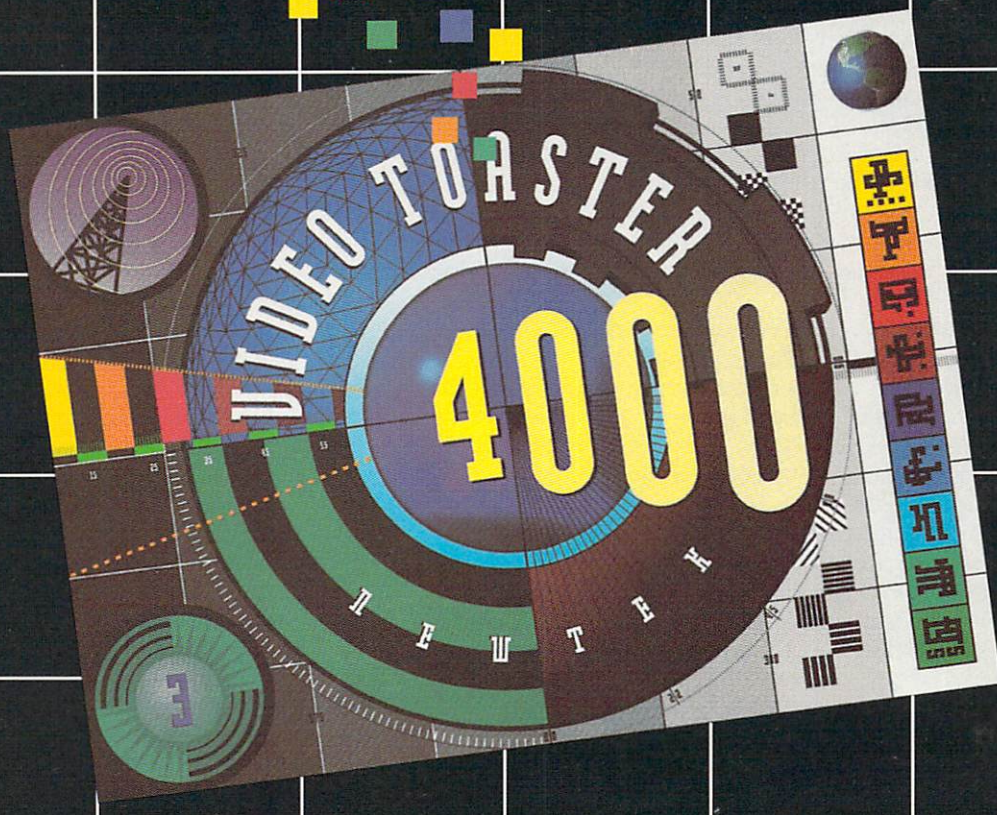
Sharp's basic projector, the XV100, used to display 89,000 pixels with 250 lux of image brightness. Today its basic model, the XGH400, displays 112,000 (480x234) pixels at 800 lux, making it about 26 percent sharper than its predecessor and almost three times as bright. The popular XHG400 also has stereo sound and an RGB input and costs \$4,495.

For higher quality imagery, about \$11,000 can get you a horizontal resolution of 560 TV lines with a built-in line doubler. These models can also take VGA/Mac II computer inputs giving a resolution of 643x480 pixels.

If the projector absolutely must fit in your bike basket, Sharp has a 9-pound model costing about \$2,000, but it is dimmer and displays only about 100,000 pixels. You pay for your portability with a screen-door effect.

Selecting a LCD Projector

You want the LCD projector to be bright. How bright it needs to be depends on your projection conditions. Without silvered high-gain screens, no LCD projector (nor CRT projector, for that matter) can yield much of an image outdoors in daylight or in a brightly lit room. At the other extreme, almost any projector can look good in a completely dark-



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ened room or in theater lighting (about 1-2 footcandles). Office and boardroom lighting fall somewhere in-between. Brighter rooms need brighter projectors.

Here's a thought: Before spending several thousand dollars extra on a super-bright projector, remember that light fixtures are relatively cheap and easy to modify. Perhaps extra switches can allow fluorescent lights to be shut off in groups, leaving perhaps one fixture lit. Incandescent lights can be dimmed.

Working at a college, I am always on the lookout for cheap-and-dirty solutions to problems. A \$40 standing, living-room lamp that beams light indirectly off the walls or ceilings allows you to shut off the classroom lights yet still have enough illumination for note taking. Even cheaper, one may buy a light bulb, screw it into a socket that has an AC plug at the other end and carry this little marvel in your ditty bag. When elegant solutions fail you, merely plug the light into any electrical outlet and shut off the room lights.

Projector brightness is measured in lux. About 500 lux is common for LCD projectors. Strangely, higher-resolution pictures, because they require tinier dots of LCD material, make dimmer images. A 112,000-pixel image (480x234) can throw 800 lux of light on the screen where a 309,000-pixel image (643x480) is likely to yield only 500 lux.

Image brightness also varies depending on whether you are displaying straight computer signals or video. A 500-lux computer image could turn into an 800-lux video image because a greater number of light transmitting pixels may be employed in creating the video image. When comparing equipment specifications, try to compare apples with apples, video brightness with video brightness.

Generally the brighter the image the better, but brighter projectors cost more and may display reduced resolution.

Resolution

The more pixels an image has, the sharper it is. Since each LCD is made of an array of transistor-driven liquid crystal dots, the greater the number of dots, the sharper the picture. An array of 480x234 pixels yields 112,320 pixels. An array of 643x480 yields 308,640, almost three times as sharp.

These numbers are for one panel, capable of a monochrome image or just one color. It takes three primary colors to make all the rest of the colors, so it requires three panels to do the whole job. Put another way, one pixel is technically made of three pixel elements, one on the panel that makes the green color, another on the blue panel and a third on the red panel. Beware that some unscrupulous manufacturers list the total pixel elements to describe the resolution of their projectors. This is misleading because it is three times as large as the effective number of pixels visible on-screen. When checking specifications, be alert that you are com-

paring pixels with pixels or pixel elements with pixel elements.

Some TV projectors have built-in line doublers, circuits that fill in the space between interlaced lines of video. Although line doublers don't increase resolution per se, they do create a smoother, sharper-looking image without visible scan lines on the screen.

Some manufacturers describe their LCD projectors in pixels, while others convert the numbers to horizontal TV lines of resolution. TV lines are more common in the video world, while pixels are more common in the computer world. As a benchmark, 643 horizontal pixels on a three-panel LCD projector yield about 560 horizontal lines of video resolution.

Colors

It takes about 16 million colors to reproduce full-color video. Although many images can look pretty good with as few as 256 colors, the greater the number of colors, the greater the realism. This may not matter if you are only displaying graphics, animations, and character-generated text having a limited number of colors. But if you are displaying live video, grabbed pictures and graphics with smooth graduated backgrounds, you need at least a million colors to re-create a realistic image without artifacts. Some projectors re-create 1.4 million colors and dither (a technical word for fudge) them into 16 million colors. When comparing specifications, make sure you are comparing dithered numbers with dithered numbers and raw colors with raw colors.

Composite vs. Y/C Inputs

The Toaster generates a very clean, sharp composite video signal, which if sent to the composite input of a TV projector, should look excellent. If you happen to have a Y/C Plus installed in your Amiga, then running the Y/C signal to a projector with a Y/C input would provide a slightly sharper, smoother image with fewer artifacts. Y/C signals, since they are traveling on separate wires, require less electronic processing than composite signals, and therefore bear fewer scars from electronic messaging.

Since TV projectors are also used with VCRs and other video devices, it may be wise to get a projector with a Y/C input to work with those devices. Low-cost VCRs are especially hard on composite signals. Using Y/C bypasses some of their cheap circuitry to maintain an improved picture with reduced moire and color dot crawl along the edges of saturated colors.

Types of Lamps

Some projectors use halogen lamps costing \$30 and lasting 30 to 50 hours. Others use metal halide lamps costing \$200 and lasting 2,000 hours. Not only are the metal halide lamps a better deal financially,

but they reduce the effects of Murphy's 68th Law, "Your lamp will fail during the most important part of your most important presentation."

In case your bulb does burn out during a presentation, some projectors have a niche to hold a spare bulb. All LCD projectors have user-replaceable bulbs.

Other Features to Look for

Some LCD projectors contain internally generated focus patterns, allowing you to set up and focus your projector in one quick step. The process is much more efficient than connecting a VCR to your projector and playing a tape with lots of leaves, grass and trees, and then wondering if the videotape or your projector's focus is fuzzy.

If your projector travels a lot and is subjected to the whips and scorns of outrageous baggage handlers, you may wish to ensconce it in a heavy-duty case. Some projectors have cases designed for them.

Some projectors have remote controls for zoom lens and power, especially handy if the projector is attached to the ceiling.

Hanging a projector from the ceiling generally makes the picture upside down. It's quite a sight watching a roomful of bankers kneeling on their seats with their heads tucked between their legs to view upside-down pie charts. Some projectors have a switch to invert the image. Some also have one to reverse the image, appropriate for rear-screen projection.

Higher-end models have computer inputs that allow you to feed VGA or similar images directly from your IBM or Macintosh computer. Without this feature, you would have to run the computer signal through a scan converter to make composite video for your projector.

Some manufacturers have toll-free tech support telephone numbers to help you out of jams.

When all is read and done, nothing beats a road test for selecting a projector. Attend an INFOCOMM shoot-out to compare one projector against another. Ask dealers to give you a demonstration of their projectors in

your environment so that you can see how brightness and resolution look on your projection screen or in your boardroom. Unless you've seen the projector before, don't buy one through mail order; it's sort of like buying mail-order shoes or a mail-order bride.

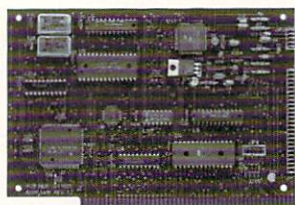
When selecting projectors, the better your image, the better your image.

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Peter Utz has published more than 200 articles and seven books on audio and video.

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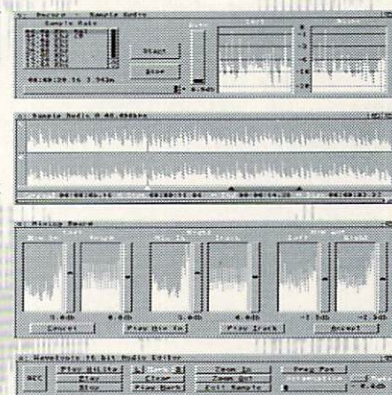
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Monday Toaster Essentials

Learn how to use your Toaster to supercharge your video productions. This brand-new version of the class has wowed thousands of Toaster users. In Toaster Essentials, you'll learn timesaving tips and mind-blowing techniques for the Switcher, CG, ToasterPaint and ChromaFX. This course does not assume that you own a lot of expensive video gear or that you are a computer wizard. You'll be truly amazed at just how much can be achieved with just a basic Toaster setup, and how quickly you can become a Toaster expert. This class also features an extensive Q&A session with the "World's Smartest Toaster Guy."

Tuesday LightWave & Modeler Essentials

Whether you are a beginner who's been intimidated by LightWave, or a user who's just having trouble getting that broadcast look, this is the class for you. More than just fancy techniques, this class also shows you the right method for creating 3D graphics quickly and easily. You'll learn the right way to set up scenes, tricks for cutting rendering times, and insights on sometimes confusing topics like modeling, lighting, morphing and motion paths. LightWave & Modeler Essentials cuts through the noise of confusing terminology and focuses on what you need to know to effectively use 3D in real-world video productions.

If you attended Toaster Training in the past, be aware that the above two courses have been updated to cover the latest Video Toaster information available.

Wednesday The Complete Toaster System

Go beyond the essentials and become a real Toaster power user. In his simple, down-to-earth style, Lee explains the Toaster's operating system, including file structures and organization, working with other computers, and ARexx. This brand new class also shows you how to use the important third-party products that every Toaster power user needs to stay competitive. Whether you're a novice or have been using the Toaster for a while, you'll learn practical tips, tricks, and hidden features that will save you time and frustration. Best of all, you won't have to pour through hundreds of manual pages to get the information you need for professional results. Topics covered include:

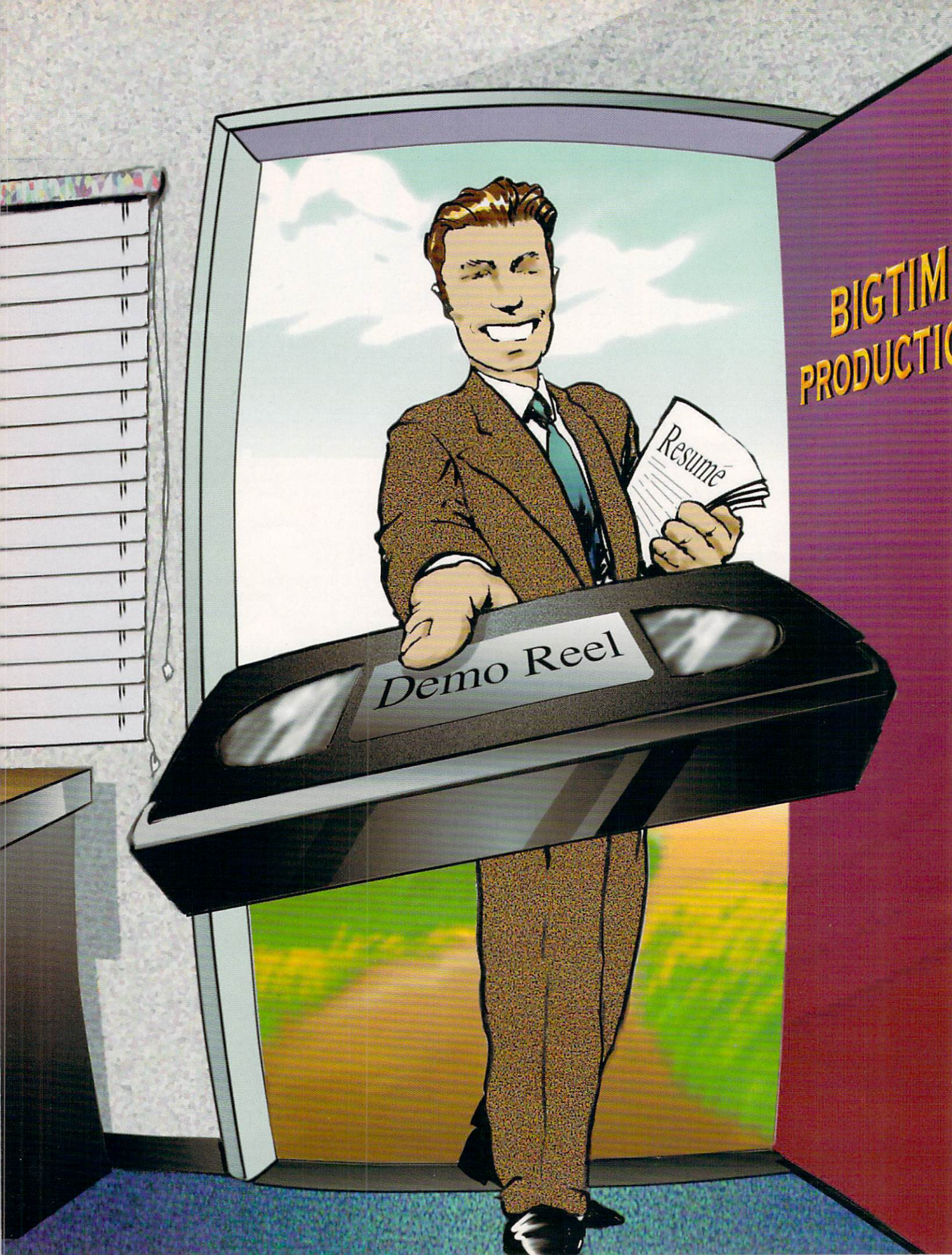
- Important information every user needs to know about the Amiga's operating system and exciting ways to supercharge your system
- Use of third-party products.
- Transferring files from PCs & Macs
- Customizing your Toaster for easier, more productive work
- ARexx and other scripting functions made simple
- Using peripheral equipment like scanners and printers
- Networking

Thursday More LightWave & Modeler

This course will pick up where Lee left off at the end of his LightWave & Modeler Essentials class. The focus will be on specific modeler projects as well as advanced modeling tools. How to apply surfaces and actual animation projects will be presented along with the following topics:

- Spline Patch Modeling
- Working with particles
- Image Compositing
- Special-Effects Lighting
- Bones and Displacement Mapping
- Morphing, Envelopes and more!

Wednesday's and Thursday's classes feature new written materials, disks and information you won't find anywhere else. Material from these classes is brand new—there is almost no overlap with our already popular Toaster Essentials and LightWave & Modeler Essentials classes. The Complete Toaster system is designed for anyone, while More LightWave & Modeler assumes a basic level of familiarity with LightWave. If you've taken one of Lee's seminars before, you'll leave even more excited about the Toaster and LightWave. If you haven't, don't miss this chance to learn from Lee!



BIGTIM
PRODUCTIONS

Demo Reel

Resume

How to Get a Job as an Animator

by Mojo

People in the movie and television business are frequently asked how they got their job. I haven't been working on *Babylon 5* long, but even I've been asked this question a few times. Some people don't like to talk about it much and act as if getting a job as an animator is no big deal.

Fortunately, I have a huge ego and am absolutely thrilled to be here, so I talk about it whenever possible. I also wanted to write this article for a long time because I understand what it's like to be on the outside looking in, hoping to cross that great abyss.

How I Got My Job

My story began when I was 10, watching *Star Wars* for the first time. The movie literally changed my life. I lived, ate and breathed it. I read everything that had anything to do with it. As a result, I slowly learned about the land of Hollywood and how movies were made. I soon realized that making movies is what I wanted to do one day, and growing up with *Star Wars*, *Star Trek* and *Battlestar Galactica* instilled in me a strong desire to make space movies.

I did the usual thing. I played with my dad's Super-8 camera, went to film school, learned a few things and wondered what would happen next.

Right Place, Right Time

While in school, a friend sold me his Amiga 1000, and I started to learn about computer graphics as a hobby. Within a year, I had moved up to a 2000 and started playing around with 3D. Then NewTek released the Video Toaster, and I wrote a magazine article about it. Along the way, I got to know a few people at NewTek, and I was eventually invited to their 1991 Christmas party, where I met Ron Thornton.

He told me all about an upcoming science fiction TV show called *Babylon 5* and explained how he was going to generate

all the special effects with LightWave. Bells went off in my head.

I knew something about 3D. In fact, I had just made my first 3D object, a TIE Fighter from *Star Wars*. I told Thornton how exciting *Babylon 5* sounded and that I would love to be a part of it. We spoke a couple of times over the next few weeks until he surprised me one night by telling me that he had decided to hire me as an assistant for the show.

I couldn't believe a dream of mine was coming true. I spent the next few weeks boning up on LightWave and eventually moved to California, where I worked day and night on the *Babylon 5* pilot—all the time learning and improving.

Now, about a year-and-a-half later, I'm a full-fledged special effects artist, creating space scenes for what promises to be the biggest science fiction show in a long time.

I was by no means a good 3D artist when I got the job, but I was enthusiastic. Thornton told me months later that he had hired me purely on that basis. Anyone could learn 3D software, he said, but you can't teach someone to be passionate about their work. He knew my genuine desire and eagerness to help create *Babylon 5* would turn me into a good employee, and I'm grateful to him for taking a chance on me.

It's not easy to get a break like I did, of course, and there are few bosses out there like Thornton. However, this story does illustrate that attitude is important and big breaks can happen. While luck certainly had a lot to do with my break, I wrote that article; I called NewTek an awful lot and got invited to that party; I made a point of talking to Thornton and stayed in touch with him. That's not your typical road to success, but it worked. Whatever you do, never dismiss any means you may have at your disposal to help you along the way.

However, most people will have to force their way into their dream job with brute, raw talent. It sounds harsh, but you typically have to prove your ability and worth before you get a job. Different companies look for different skills and personalities, but they all have a basic, common objective: They want people who are creative and professional.

Two of the largest, most respected computer animation houses in the country are Rhythm & Hues, creators of the *Star Trek: Deep Space Nine* wormhole effect and the Coca-Cola polar bears, based in Northern California; and Pacific Data Images (PDI), which also has offices in the San Francisco Bay Area that work mostly with commercials and high-profile music videos. PDI's Los Angeles facility works on motion pictures. With more than a decade of experience, both companies have won countless awards for their outstanding work.

Representing what can only be classified as the next generation CGI house (industry lingo for computer graphics imagery) is Southern California's newest upstart, Foundation Imaging, my home turf. Foundation Imaging, which received an Emmy award last year for the special effects used on *Babylon 5* continues to impress with high-quality graphics created low-cost personal computers such as the Amiga and Video Toaster.

The Demo Reel

What does it take to get a job at one of these places?

"It doesn't really matter what your official background is as long as you have the talent," said Suzanne Datz, advertising and publicity manager at Rhythm & Hues. Her sentiment was voiced by everyone I spoke to: If you're talented, most other concerns fall by the wayside. No one cares where you went to school or even if you went at all, how old you are or who your dad is. If you have a good demo reel—a videotape of your work—you're in good shape.



Suzanne Datz, publicity manager, at Rhythm & Hues

"The reel is usually the most important thing," said Thornton, "because it shows you whether or not somebody has a good eye." He added that strictly computer-related work isn't necessarily all he's after. "I don't care if somebody has never had a job working with a computer before, so long as they've got a background of at least doing the same sort of thing in the real world. If they've sculpted or painted and can give examples of work, it's just as relevant as far as I'm concerned."

John Swallow, executive producer at PDI in Los Angeles, also likes to see traditional graphic art portfolios, as well as good reels. "To me, it's all based on the look of the work," he said. "I want creative people. We push that pretty hard here. We all have the same kinds of tools, and it all comes down to the people you hire that make the tools sing."

Although everyone agrees that going to art college is by no means required, it helps. "I think we're seeing more people coming out of school now because more schools are offering [CGI]," Swallow said.

Among the schools mentioned as having a strong CGI program were California Institute of the Arts in Valencia, the University of Southern California in Los Angeles, and the School of Visual Arts in

New York City. These institutions provide a structured learning environment that can benefit those who have difficulty learning at home by themselves. They also allow students to work with professionals and use costly equipment they otherwise would not have access to.

Falling somewhere between the importance of the reel and the take-it-or-leave-it attitude toward school is the resume. Job

A Picture Is Worth a Thousand Words

A silver tongue, college degree and crafty resume can get you a lot of jobs in this world, even if you're not qualified. In Hollywood, however, things work a little differently.

People who talk a lot aren't trusted, resumes are used to wrap fish, and diplomas only come in handy when the toilet paper runs out.

"Send us your reel," is all anyone usually asks of you. People want to see what you can do. If you can't prove you've got the talent, don't try until you can. Only the best are hired, and people who send in lousy reels are laughed at by the staff and their tapes used to record soap operas. Honest.

How do you know if you're up to snuff? Simple. Suppose you want to work for Foundation Imaging. First, turn on the TV and watch an episode of *Babylon 5*. Next, look at a few of

your animations. Do you notice a difference? Does your prized chrome teapot pale in comparison to the alien space fleets of prime time? If so, don't rush it. I can tell you from experience that sending in a reel with inferior work is a bad idea. I've watched many a reel at Foundation Imaging, and the vast majority of them contain low-quality animation. A lot of them do show promise, but they've obviously been sent in long before the person is ready.

People are understandably eager to show the pros what they're up to, but try and remember the rules about first impressions. You can do more harm than you might think by displaying unrefined examples of your talent. The people you're trying to impress may wind up remembering you as the person who sent in the green blobs.

On the other hand, the people who

have sent in good reels have been kept on file, remembered and hired. Everyone working at Foundation Imaging got their jobs primarily on the strength of their reel.

What separates a good reel from a bad one?

Here are some simple yet important ideas to keep in mind when putting together your job-snaring demo:

The quality of the work is the most obvious component. Perhaps your stuff is good, but being your own worst critic, you don't think so. Get some help. Have a few friends critique your animations and take their opinions seriously. In most cases, you should be able to judge yourself. Remember who you're sending the tape to and ask yourself, "Is this comparable to what they do?"

Send only your best work. People

experience is a desired asset for applicants at these companies. Employers want to see that a person can function in a professional environment. Working at home in your spare time is a far cry from the hectic pace of a major animation house, and evidence of prior experience helps convince people that you are up to the challenge. Even if your resume has nothing computer-related, it's important to show a prospective employer that you've held a job. Something as simple as the layout of the resume and quality of your cover letter can also make important impressions.

Attitude can often be a key factor, since you'll be working with other people, and companies want good-natured employees who can get along with the rest of the team. It's also important to let them know you're excited by the prospect of working for them. "Enthusiasm for the material is very important," said Thornton, who also looks for "a will to want to do good work and just generally a professional work attitude."

It's also important that a job candidate is willing to learn. "We've had a couple of people who have worked here who thought they knew a great deal and weren't willing to listen to other ideas, and that's always a problem," Thornton said. "I've been working in this business for 15 years, and I don't know anything yet; I'm still learning."

Anyone underestimating the importance of a good attitude should re-read the explanation of how I tracked down my job. But what does an enthusiastic animator with plenty of experience actually need to know to start working?



John Swallow, executive producer, at Pacific Data Images

Nuts and Bolts

Both PDI and Rhythm & Hues use custom software running on high-end Silicon Graphics workstations and require animators to be well-versed in both UNIX and C. Because of the proprietary nature of the software being used in these environments, the platform that people are familiar with has little relevance. New employees at both companies are given extensive training for one month to familiarize themselves with their new surroundings.

Knowledgeable Amiga users may have a head start since AmigaDOS and ARexx programming are both quite similar to UNIX. Unfortunately, few artists I know have spent much time with their noses buried in source code. Can non-technophiles still manage an entry-level position in these companies?

"It's a harder sell because of the time it takes to learn [UNIX and C]," said Swallow. "But we have hired people that creatively have a good look to their work, and it's worth the investment [of extra time]. I don't try to pigeonhole anybody." Datz of Rhythm & Hues agreed, stating that people without programming experience have a more difficult time getting hired.

On the flipside, Foundation Imaging has received a fair share of publicity because it uses low-cost, commercially available hardware and software—mainly Amiga computers and the Video Toaster's LightWave 3D animation software. Company founder Thornton felt there was no need for expensive, hard-to-learn software when LightWave was so powerful and cheap. He also had no interest in programming, so LightWave's intuitive point-and-click interface allowed him

seem inclined to send in everything they've ever done—from the first DeluxePaint animation to the latest 3D opus. Everyone I talked to agreed they'd rather see one minute of excellence than five minutes of humdrum containing one minute of excellence.

Don't be lazy. I can't tell you how many demos we've received of models rotating in front of the camera. When was the last time you saw that on TV? If you want to show off a good model you've built and have the resources to spin it around, why not make a real animation with it? Showcasing a model in a small mini-movie will be far more impressive and also displays your other talents. Don't rush and take the time to do it right.

Be professional. We get a lot of tapes from people who obviously don't have single-frame recorders. I've seen too many DCTV animations playing back at maybe five frames per second. This looks bad. It can make a

great animation look terrible.

If you don't have a single frame recorder, either rent the equipment you need or go to a service that will lay your frames to tape. If this is beyond your means, do the best you can. Toaster 4000 animations would be a perfect alternative. And don't dismiss the abilities of the native Amiga. Everyone reading this should have the ability to create low-resolution, non-overscan HAM animations. Don't laugh. They just about always playback at full speed (especially with the new ANIM 7 tools), and dithered HAM has more than enough color information to get the point across. We use REND 24 to create such previews for *Babylon 5* and they look great. Sure, it may mean sacrificing some color or resolution, but if it means smoother animation, it's worth it.

Send a good cover letter. Keep it short, but let people know who you are and what you're looking for. Give

them a way to reach you. If your writing skills are suspect, have someone help you. It's also a good idea to talk a little about the reel. Explain exactly what you did on it. We've seen a number of reels in which we were unable to determine the sender's contribution. And don't lie.

It may be a while before you get a response. If they didn't like your work, they may never call you back. In this case, follow-ups are OK. Feel free to call in a week or two after you've sent your reel to be sure it was received and use the opportunity to get an opinion on your submission. A follow-up letter may also be a good idea and could further exemplify your professionalism and desire to work there. If you don't hear from anyone, try again once you have new material to show. Remember, if they like your work, they will eventually contact you. Most important, never give up.

VTU

Not Ready for Prime Time

Although this article has been geared toward the Hollywood-bound, keep in mind this information could apply toward getting a job anywhere. Most of these tips are simply common sense and basic professionalism. Many of you may not be ready to tackle a major motion picture yet. No problem. There's a lot of opportunities between home and Hollywood. Hundreds, maybe thousands, of 3D jobs are available that can help sharpen your skills, build your resume and make you some money.

Check want ads. It may sound obvious, but how many of you regularly check industry publications? Periodicals such as *Variety*, *The Hollywood Reporter*, *Advertising Age*, *Computer Graphics World*, *Electronic Media* and *Broadcasting* not only have helped wanted ads, but also contain valuable information about the 3D/entertainment industry. News features and articles often highlight new companies, including animation houses and may provide you with leads for potential employers. (Even before the *Babylon 5* pilot aired, many people sent their reels and beat the rush to Foundation Imaging because they read about it in a magazine. Some of those people were hired to work on the series.)

Also remember that many magazines, such as *VTU*, contain art galleries that feature readers' work. This is a great way to get exposure. If your material is published, it's not unlikely that someone looking for artists may contact you. There may even be prize money.

Watch TV. Check out your local cable channels. There is often a lot of horrible animation to be seen in both commercials and promos. Perhaps you can do better. Keep track of the companies showing this stuff and offer your services to them. A way to knock their socks off is to send them an animation with their logo (or whatever is the case) without being asked. When they actually see what you can do, they are often less likely to refuse. Local businesses and cable channels usually don't have a lot of money but can probably pay for expenses. Even so, they

get better animation, and you get a notch on your resume and your work on TV.

Bum off Big Brother. Many people don't realize that various branches of local, state and federal government have video production divisions. Some provide information to people via videotapes. Some just make training tapes, but there is work available.

A case in point: I once opted to take community service over paying a fine on a traffic ticket. I went to the court office and filled out the paperwork, listing animation and video production as skills. I almost felt silly for listing them, since I was sure I would be up at 6 the next morning scrubbing graffiti off buses or cleaning freeways. Much to my surprise, the local police corrections office had a video division. I was sent to them and told the manager I was good with the Video Toaster. He was excited and asked me if I knew 3D. I told him I did, and my community service was to do a flying logo for the department's videos.

I don't recommend that people deliberately speed to get a job, but you could call local government offices and find out who provides similar opportunities. A friend of mine noticed some of NASA's cheesy animation and sent his reel to them. He now does some freelance work for the Jet Propulsion Labs.

Don't forget hardware and software companies. Businesses such as NewTek and other manufacturers of 3D software like to see what users are up to. They love to receive solid examples of animation with their product to show new customers what it can do. You may wind up on their company demo reel. It can even lead to greater things. When *seaQuest* was looking for LightWave experts, NewTek put the show's producers in touch with animators.

Big breaks can come from the most unlikely places. Be persistent. If you are dedicated to making a living in the world of 3D, there's no reason why you can't. There are so many opportunities out there today I dare say it would be tough to fail.

VTU

and his staff the luxury of full-time creativity. Foundation Imaging primarily expects talent from its animators and has a separate staff to deal with technical mumbo-jumbo. New facilities using low-cost, high-power tools may follow this trend.

The Back Door

For the beginner with his eye on the big time, LightWave has been quite a boon. It has placed high-end tools in the hands of ordinary folks with thin wallets. Shows such as

Babylon 5 and *seaQuest* have proven LightWave's effectiveness in the professional arena, and more high-profile projects are using it as a result. With the market for LightWave experts maturing, many opportunities are opening up for people who know how to use the software. Many people on the staff of both shows made the jump to Tinsel Town straight from their homes as a result of their experience with the Toaster. Undoubtedly, more artists willing to hustle are finding themselves getting into Hollywood ahead of the pack through the LightWave back door.

At the same time, people shouldn't fret if they've gone through the trouble of learning other 3D software. Thornton, Datz, Swallow and other shops are always looking for people

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Mark Stocker

Mark S. Stocker
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with talent, and he said it would be self-defeating to turn away someone simply because of a platform bias. "LightWave is probably the easiest 3D program to use," he said. "If someone has battled their way through Imagine or (AutoDesk) 3D Studio, they would be able to translate that experience to LightWave."

In the end, it doesn't matter what software or programming techniques you use. When someone sees your reel, all they come away with is an impression of your work; how you did it and all other concerns are secondary.

Jacks of All Trades

In the world of traditional special effects, model builders are hired to build models. Cameramen point the camera, and matte painters know they're being hired to create matte paintings. However, these lines have been blurred in the world of CGI.

Due to the singular nature of working with computers, many animators have educated themselves by practicing all aspects of the trade. After all, an aspiring animator must build models to animate. Modelers must texture map (paint) their models to finish them, and rendering (lights and camera) is essential to see what they look like. It actually would be difficult to learn any single area of animation without at least gaining some expertise in the others.

While many artists prefer working on all aspects of their scenes, some discover that sticking with a particular specialty is more to their liking. Fortunately, all preferences seem to have been adopted by various CGI shops, depending on their particular needs and philosophy.

Both Rhythm & Hues and PDI's facility in the Bay Area divide people into specialties, such as modelers, animators and lighting specialists. PDI's motion picture division and Foundation Imaging prefer to have artists create their shots from head to tail. PDI's Swallow said the one-person-one-shot is conducive to motion picture work and is complemented by the extra time allotted for movies.

Thornton agreed but attributed his feelings to a philosophy. "I feel that animators get much more out of their job by

following the whole thing all the way through," he said. "You get a lot more satisfaction out of seeing a finished shot that you completed from start to finish—lighting, building models, shooting, everything. I think it helps a great deal in terms of morale and in moving people towards a more advanced, better type of animating."

This style accommodates the hectic pace in which work must be completed on a weekly TV series, he added. "Speed is very, very important, and you can't just work in a linear fashion, either," Thornton said. "When you're creating the effects for something like *Babylon 5*, you can't just build models and then make shots up. You've kind of got to do it all at once to a certain extent."

"If you know you're only going to see a model from one side, you only detail it on one side. You can only know the best way to build it if you're going to do the shot. You can't put all your eggs in one basket by making this incredible model and then have no time to animate it. You have to be able to be in a position where, if time runs out, you've got something usable, even if it isn't the best that you can do."

Due to the inevitable crossover of jobs in CGI work, Thornton said it would be difficult to hire a specialist who wasn't capable of wearing several production hats. "To be able to build the models, [the animator] has to be able to at least do setups and be able to light and shoot it. You'd be able to see that in the reel. If there's potential there, you can always refine it afterwards."

Animators should never be afraid of developing an area of expertise. With few exceptions, no one is equally strong in every suit, and strengths inevitably develop. I personally can't stand modeling, but I know it's an important part of the process, so I've forced myself to at least be competent at it. It seems like fair advice that people interested in this field should try to learn a little about even their least favorite skill. It will eventually pay off. But when?

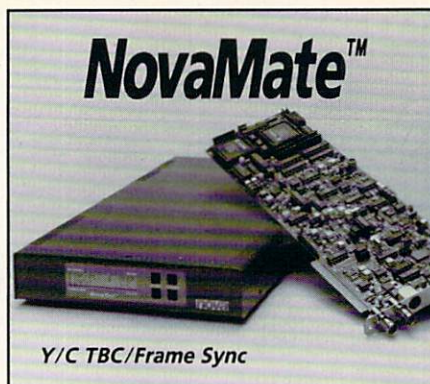
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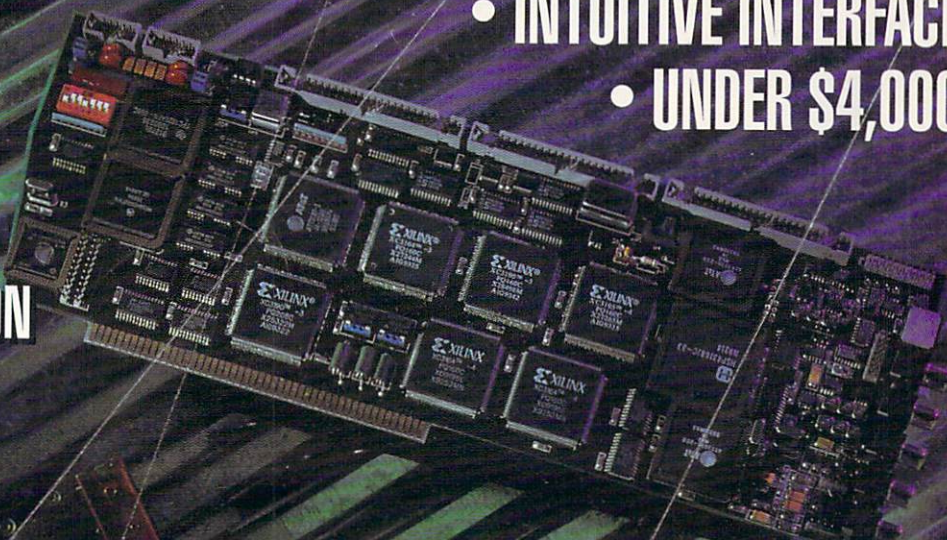
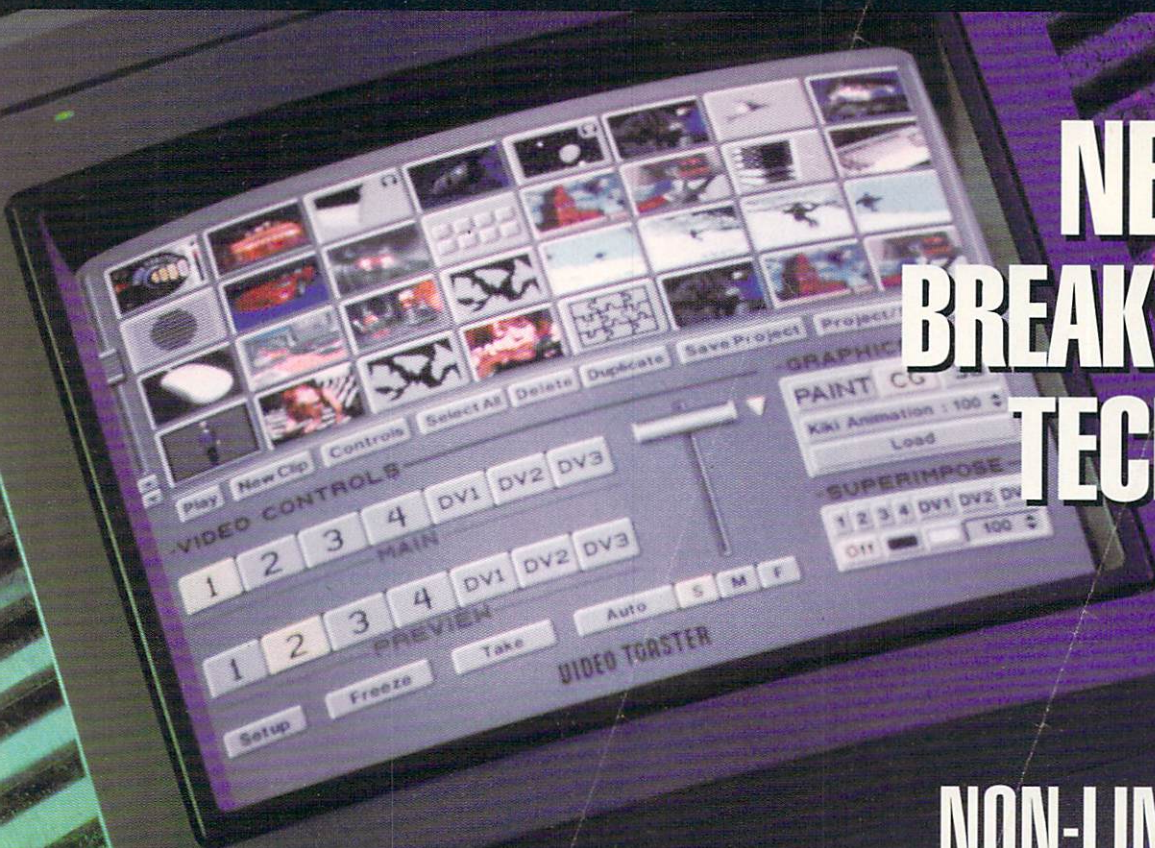
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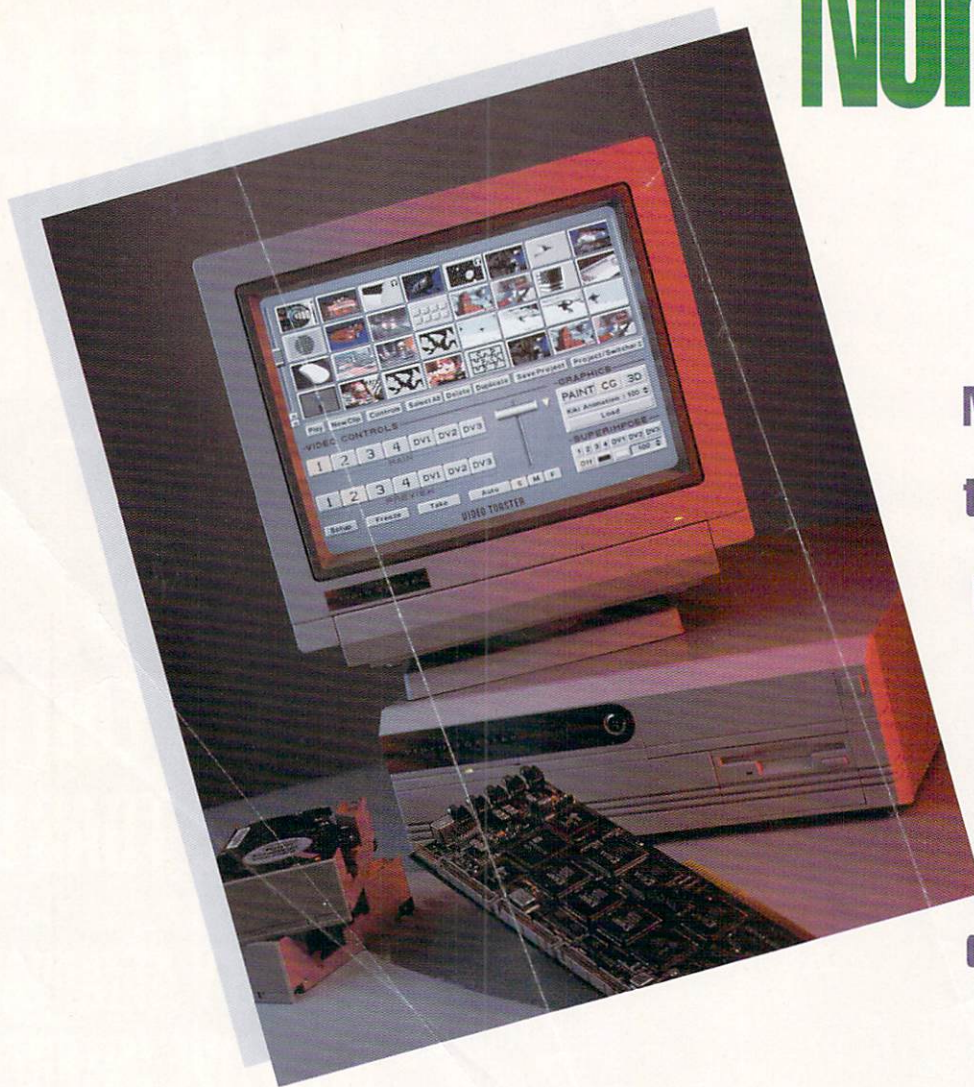
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Toaster Goes Non Linear

by Phil Kurz



**NewTek ushers in
the next wave of the
personal video pro-
duction revolution
with its new low-
cost, broadcast-
quality Video Flyer.**

A

s anyone who has used the NewTek Video Toaster knows, it's nearly the perfect low-cost video production tool. With exceptional video character generation and switching, creative digital video effects, an outstanding 3D animation program and an acceptable paint program, the Toaster has offered most of the features any video producer could possibly want.

However, the emphasis is on the word "most." As anyone who has tried to build an A/B-roll editing suite around a Video Toaster knows, the Toaster is far from

a complete desktop video solution. Peripheral devices, such as time base correctors, edit controllers, videotape recorders and editing decks, a stable sync generator (or other sync source, such as a camera) and much more, must be combined into a video system, which operates in a highly precise way, to achieve an A/B-roll edit. (If you've never constructed such a system and doubt the complexity, simply review the first six parts of the recently completed "ABCs of Video" series of articles in *Video Toaster User*.)

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As a result, what developed on the desktop to support the Video Toaster mirrored the traditional kludgy approach to video editing that dominated the field since the dawn of electronic post-production. In a sense, the shortcomings of the Toaster created a vacuum on the desktop that sucked in established video equipment makers and newcomers alike with solutions that for the most part adhered to the status quo. These products, while physically smaller and less expensive than their predecessors, pretty much mimicked what had come before.

However, with the introduction of the NewTek Video Flyer (\$3,995) in March at the National Association of Broadcasters (NAB) convention in Las Vegas, the company has brought closure to desktop video production, completing with breakthrough technology the revolution that started with the Video Toaster.

The Video Flyer, a tapeless video editor, fulfills the vision NewTek president Tim Jenison had when he began development of the Video Toaster six years ago. "The Toaster was designed in 1987 as a complete desktop video system," he said. "That was the vision we had at a time when apparently no one else was interested. As we worked on the Toaster system, some parts were easier than others, and what we ended up shipping in 1990 was as much as we could get done at that point in time. But there was a piece missing. And that piece, which was in the original 1987 design, was a random-access, broadcast-quality, non-linear editing system."

With the Video Flyer, users will be able to edit video and audio for video without the complexity of an analog videotape-based system. Additionally, because NewTek designed its method of digital video compression with video production in mind, the tapeless editor is not hampered by many of the compression artifacts that plague other non-linear systems. As a result, when operating in its highest performance mode, the tapeless editor can deliver lossless compressed video that NewTek claims is as good as video played back from a D2 digital videotape player.

Compression Conundrum

The media used in the Video Flyer are computer magnetic hard disks. Unlike videotape, hard disks provide instant access to the data they store, which makes them ideal for non-linear video editing. However, this benefit isn't without penalty: hard disks—even big ones—typically hold far less video than videotape.

Compounding the problem is video's voracious appetite for storage space. Typically, one second of uncompressed component digital video requires about 27MB of storage. At that rate, it's easy to see that even the largest computer hard disks would be unable to hold more than only a few minutes of video. Thus, for a non-linear video editor to be useful, the digitized video data must be compressed so that enough source footage can be stored to complete a project.

To date, various digital video compression algorithms have made their appearance in desktop video and multimedia products. JPEG (Joint Photographic Experts Group), MPEG (Motion Picture Experts Group), MPEG 2, Wavelet

and some more exotic methods, such as fractal compression, have grabbed the spotlight as solutions for everything from HDTV transmission to multimedia, from satellite transmission to non-linear video editing.

NewTek chose not to base its non-linear design on these methods. "In doing our research," Jenison explained, "we discovered there was no magic bullet that could give you astounding compression ratios with no loss. When we started the project, our overriding goal was to build a product that was fully suitable for video production. Thus, we were only interested in compression that could sustain a broadcast-quality picture."

Thus, Adaptive Statistical Coding (ASC), NewTek's proprietary dynamic, user-variable compression algorithm, was born. The father of ASC is Kenbe Goertzen, NewTek's director of product development. Recognizing that discrete cosine transform (DCT) based algorithms, such as JPEG and MPEG, were incapable of delivering broadcast-quality video, Goertzen sought a solution that would take advantage of the signal characteristics of video in designing NewTek's compression algorithm.

"ASC is based on some distinctive statistical aspects of the video signal, exploiting some mathematical regularities in a way that have not been done previously," said Goertzen.

"Although the device is capable of operating in a lossless mode, it will more often be used with some level of lossy compression. When operated in extended play, low-data rate modes, our compression algorithm degrades the picture in a very graceful, almost organic way, by reducing the signal to noise ratio.

"Visually, the effect is similar to analog tape. In contrast, JPEG and MPEG tend to hallucinate block shape artifacts into the picture that our eyes are not accustomed to.

"Another feature built into our compression hardware is a noise-reduction function that can actually improve the appearance of video with high noise levels, such as scenes shot in low light with gain up."

NewTek's compression algorithm also is dynamic, varying the amount of compression applied to frames of video based upon their signal characteristics. It also provides editors with the ability to vary the amount of compression that will be applied to any specific project. Typically, users desiring broadcast-quality performance will operate the tapeless editor at about 3MB of information per second.

PAR. 1500
TBC 800
MKRO 1200
2217 1200
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Video Flyer System Price

Product	List Price	No. Required
Video Flyer	\$3,995	1
Micropolis 2217	\$1,920	2*
Video Toaster 4000 card	\$2,395	1
Opt'l NewTek TBC	not available	**
CD-ROM (Chinon 535)	\$399.95	1
Amiga 4000	\$3,699***	1
Amiga 4000T	not available	1****
Total (with two 1.7GB Micropolis drives)	\$14,328.95	

* Two hard drives are required.

** A TBC is required; however, many users may have an existing TBC.

*** Toaster 4000 list price as of May 17, 1993. Price based upon Commodore Amiga 68040-based 4000 with 6MB of RAM and no monitor.

**** Amiga 4000 Tower not yet available.

4000
1200
1000
800
400

8400

"...the Toaster non-linear editing system appears to be unmatched."

However, to emulate D2-quality video, the upper threshold of required information can be as high as 5MB per second. For some applications, such as multimedia authoring, 1MB per second may be suitable.

Thus, to accommodate one hour of full broadcast-quality compressed video requires about 10GB of hard disk storage. Longer times can be handled by adding more drives.

NewTek defines the cut-off for broadcast-quality video from the tapeless editor as a video signal having a 50dB signal-to-noise ratio and a chrominance bandwidth of at least 1.5MHz.

Video Flyer users also have the option of running it in either absolute lossless or compressed lossless modes. While the data rates are greater for operation in these modes (typically 5MB per second for compressed loss-

thermally recalibrate (as do most hard drives), which can cause disastrous dropouts of video information in a non-linear editing system. They also have sustained data transfer rates that let them pull sufficient information off the drive quickly enough to maintain a broadcast-quality video image.

Once video and audio have entered the editor, the video is digitized, compressed and stored on a hard drive in real time. Audio is sampled at the CD rate of 44.1kHz and stored separately in an uncompressed fashion.

Video being played into the tapeless editor must have a stable time base. To accomplish that, users need only one TBC. They may choose to feed source video from a VCR with an internal time base corrector, through a standalone or board-based TBC, or through the new, optional TBC daughter card for the Video Flyer. Once the video is digitized, its time base remains stable and no longer requires time base correction.

Once the source material has been compressed and stored, it's ready to be edited. At this point, the Video Flyer decompresses a desired video clip and converts it into an analog video signal. This signal feeds one of the Toaster's video inputs. While this is happening, the editor decompresses and converts the next video segment and feeds it to another Toaster video input so that a Toaster Switcher wipe or dissolve can be added.

Additionally, all the other functions of the Toaster are available to the editor so that titles can be keyed over video, still store images can be added, or any of the other features can be used.

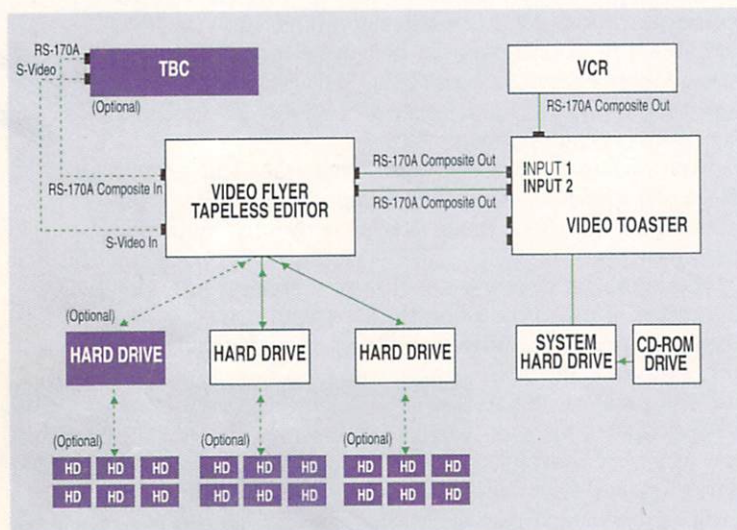
To the Toaster, the editor and hard disks act exactly like the source VTRs in a traditional A/B-roll editing system. However, to the user, the random-access ability of the hard disks is a big improvement over the constant searching, cueing, pre-rolling, playing and recording cycle of videotape machines in a typical video editing setup.

Once the desired video program has been created, the Toaster editor plays back the source video and audio material from the hard disks, triggers Toaster transitions, keys titles and does all the rest to play the completed program through the Toaster. Users simply record the video program in one pass, eliminating the need for expensive edit recorders.

At first glance, it may seem that the conversions between the analog and digital domains would introduce artifacts into the system. However, the latest generation of A-to-D and D-to-A converters are so good that they have a negligible effect on the quality of the video, said Jenison.

"Merely going from A to D introduces such a slight degradation in the signal that you have a hard time measuring it in the signal," said Jenison. "Analog-to-digital converters do an excellent job. That wasn't always true in the past. In the very early days of digital TV boxes, those converters introduced a lot of artifacts, primarily contouring. These days, the process of going back and forth from analog to digital is so transparent that you cannot see any degradation."

The editor also provides for audio post-production. Its onboard digital signal processing (DSP) chip allows multi-



The typical Video Flyer setup stores video onto two hard drives.

less), this feature assures users concerned about maintaining the utmost quality that the data coming out of the NewTek non-linear editor is identical to the data going in.

Hardware and Setup

What makes the Toaster non-linear editor work is a single-video compression board that slips into any Amiga 2000, 3000 or 4000. The board accepts composite RS-170A video and S-Video (Hi8 and S-VHS) and two channels of stereo audio. It outputs two channels of RS-170A video that feed two of the Toaster's four video inputs and two channels of stereo audio.

In a typical non-linear editing configuration, the board will work in conjunction with two SCSI-2 magnetic hard drives in addition to the computer system's hard drive. However, there are three digital channels from the board, so up to 21 hard drives (seven per channel) can be added to the system for storage.

So far, one hard drive has been used with the system: the 3.5-inch Micropolis 1.7 gigabyte (GB) 2217AV drive. Other suitable drives from Micropolis, Quantum, Seagate and Fujitsu are expected soon.

These drives have been chosen because they do not

channel mixing of digitized audio material. Typically, the editor will be used in an audio-follow-video mode; however, the product also provides for more complex audio editing, including split edits.

Operating Software

One look at the new Toaster operating software tells veteran Video Toaster users that things definitely have changed. The new software comes on a CD-ROM, and while the primary change is the inclusion of an icon-based non-linear editor interface, it also sports updates to ToasterCG and LightWave.

The operating environment of the new Toaster software is analogous to a video storyboard. Traditionally, storyboards have provided a workspace on which individual frames of a program can be arranged left to right and top to bottom prior to going into the field to shoot. Each frame on the storyboard represents a key event or shot within the program. Through the new Toaster operating software, this approach has migrated to the post-production process.

The storyboard paradigm coupled with the high performance of the editor fundamentally changes how video is edited. In the Video Flyer, there is no need for traditional machine control operations. NewTek's Video Toaster tapeless editor controls the hard drives so that the desired

video source plays at the appropriate time. Thus, from a control point of video, SMPTE time code is not required. The Video Flyer at NAB did not support SMPTE time code. However, NewTek plans to add support for SMPTE time code to assist editors in important housekeeping chores. "The hardware is fully capable of reading SMPTE time code from incoming video and logging that information into the file," said Jenison. NewTek's president said this support should be helpful to editors desiring to log existing videotape footage.

The latest release of Toaster software establishes four operating modes from which Toaster users can work: Project/Files, Project/Switcher, Files/Files and Project. The Project/Files mode allows users to drag files, which are represented as individual croutons on the lower half of the interface screen, into a project on the top half of the screen. Among the file croutons that can be dragged into a project are video segments, switcher transitions, CG pages and still stores. As the croutons are dragged into the project, they are arranged eight to a row with a theoretically limitless number of rows stacked horizontally down the screen. If it becomes necessary to insert a video segment or transition between two croutons already placed in the project, the crouton representing the new segment is simply dragged where the insert is required, and the project is expanded to accommodate the new clip.

continued on page 81

Catch Up on Your Bread Making Skills

Send for Back Issues of Video Toaster User

March 1994

An in-depth analysis of the history of HDTV. Learn how Todd Rundgren uses the Toaster on tour. Avoid editing traps by planning ahead. A review of NewTek's System 3.1.

February 1994

Video entrepreneurs talk shop. Find out about the future of TBCs. The Toaster gets used on the Simpsons.

January 1994

seaQuest animators reveal the secrets of creating an underwater scene; Learn about choosing the right lens in "Looking Through the Looking Glass;" and a review of the Prime Image Y/C++ transcoding TBC.

October/November 1993

Includes a report on SIGGRAPH 1993 with a focus on NewTek's Screamer; a review of the Sanyo GVR-S950 S-VHS recorder; and "The Men Behind The Machine II," an interview with Tim Jenison and Paul Montgomery.

August/September 1993

Contains a review of the Toaster 4000; a look at LightWave 3.0's skeletal deformation feature; and the first of two interviews with NewTek founders Tim Jenison and Paul Montgomery.

June/July 1993

Reports on NAB 1993, the unveiling of the Toaster 4000; also included: the first annual VTU Buyer's Guide.

April/May 1993

Presents a tutorial on how to survive as a freelance videographer; a review of Sony's CCD-VX3 3-Chip Camera; plus, a walk through One-Stop Music Shop.

Other VTU issues currently available:

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A Conversation

with

**Closing the Loop on the
Desktop Video Revolution**



Tim Jenison:

by Phil Kurz

C

hange is frequently an uncomfortable but necessary part of life, and NewTek has experienced its share of changes over the past few months.

The departure of company vice president Paul Montgomery and five other key employees has triggered a number of changes at the Topeka-based business. Under company president Tim Jenison's leadership, NewTek has embarked on a reorganization that has thrust some new and some familiar faces into positions of leadership and responsibility. Jenison seemed pleasantly surprised that the transition was as painless as it has been. The company has absorbed the initial shock of the split and rebounded with a clear assessment of where it is and where it is headed.

According to Jenison, NewTek is poised to bring the revolution in personal video production equipment and desktop video gear to fruition. At the National Association of Broadcasters (NAB) convention in Las Vegas, NewTek introduced the Video Flyer, a low-cost, broadcast-quality, non-linear video editing system.

At the core of this system is a NewTek-developed digital video compression engine that the company claims can deliver on-line, full broadcast-quality video for far less than competitive systems. Not unlike the Toaster's introduction in 1990, the unveiling of NewTek's non-linear system seems destined to send shockwaves through the video industry.

Intended to be coupled with the Video Toaster, NewTek's non-linear editor not only promises to deliver D2-quality video in its highest performance mode for a fraction of the cost of a digital videotape machine, but also real-time switcher transitions, digital effects, character generation, paint and all of the other staples Toaster users have come to expect. Thus, in a true sense the product brings to completion the Video Toaster system. It closes the loop on the desktop that to

date has been filled by lower-cost, professional video decks, edit controllers, single frame animation recorders and the rest.

Jenison seemed confident that all video producers—from the broadcast ranks to the home hobbyist—would recognize the importance of this system, and that through it, NewTek has ignited another period of explosive growth in personal video production. Thus, the recent transition at NewTek seem to have foreshadowed the dramatic changes that the company once more is likely to cause throughout the entire video industry.

I met with Jenison on several occasions immediately following Montgomery's departure. While it was clear that Jenison will miss his close association with Montgomery, it was equally evident that NewTek's president had a firm grasp on the reigns of his company and an unobstructed view of where he wishes to steer it.

He clearly identified his destination as the personal video producer—the man or woman from every walk of life—who has a message to communicate with video but doesn't have a stack of money. According to Jenison, it is these people who will bring diversity to the content of future video productions and fill the emerging video channels with programming.

However, this diversity will wither unless personal video producers have access to affordable, high-quality tools, and that, according to Jenison, is what NewTek's new Video Flyer is all about.

Video Toaster User: *In the past you have said that NewTek's goal was to build a video production device easy enough for your mother to use. Is that still your vision for the direction of NewTek, or is the company headed elsewhere?*

Tim Jenison: Our stated goal at the beginning of the Video Toaster odyssey was to make televi-

DevWare Video

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We believe so strongly in all of our products that we offer a 100% complete satisfaction guarantee...the best in the industry!

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\$84.95

Makes 3D modeling simple! Considered essential for LightWave 3D. Create useful 3D objects, including text and logos. Load from or save your work into most 3D object formats. Buy now and upgrade to version 2 for \$40 later! T5158

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Create, play, edit and add sound to your Animations...automatically! Use Art Dept on any/all frames of your animation! Now supports Anim5, 7 and 8! T5104 \$99.95

WaveLink

Double the speed of LightWave! Allows two Toaster systems to render at the same time. Also allows file sharing. T5155 \$99.95

Pixel 3D Professional+ ANIM Workshop 2 T5160 \$174.95

MONTAGE



24-Bit Graphics Breakthrough for the Video Toaster from Innovation Technology. Your definitive solution for video titling, image composition, and effects presentation!

Features: Incredible Real-Time Font Scaling and interactive "click and drag" font scaling allows for unprecedented text display flexibility! Scaled text retains ultra-high level anti-aliasing. Import of font formats including Chroma Fonts such as Kara Toaster Fonts collection! All of these titling capabilities are not available anywhere else! •Stunning Text Attribute Options •24-Bit Graphics Imaging •Powerful Transition Capabilities •Complete Text Editing Control T3053

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T5244 \$489.95

CROUTON TOOLS 4000

A complete operating system for video and graphics production



Okay, so you own software like ADPro, SFC, Studio 16, Pixel 3D, ImageFX, Bars & Pipes Pro, AmiLink, Personal Anim Rec., ImageMaster RT and others...and they all say that they're ArExx compatible...great!! Now what? You can spend all your time programming in ArExx to make these powerful applications work with each other, or you can continue producing videos like you set out to do. Crouton Tools 4000--The Easy to Use Video Operating System (VOS)--was created by a video enthusiast with over 20 years of experience. 1100 Pre-defined video tools, 150 NEW synergistic functions, \$129.95

ToasterSmart™ Directory Utility and Visual Logging System...power at your fingertips! Crouton Tools 4000 greatly accelerates your pre- and post-production video while seamlessly integrating your applications directly within your Toaster environment. A must-have package for serious video pros! T5012

Video Toaster System 3.1

The latest and greatest version of the Video Toaster Software. All modules have been improved and new features added!

NOW AVAILABLE!

BUY YOUR TOASTER SYSTEM WITH CONFIDENCE FROM ATOMIC TOASTER!

Our Atomic Toaster Division has over 20 years of video production experience. They have been servicing Video Toaster Users since Day One with unrivaled technical support, a catalog so informative we receive referrals from NewTek, and innovative seminar training. With Atomic Toaster and DevWare Video, you will be able to count on our creative support and in-depth knowledge of all products for the Video Toaster--combined with DevWare's product purchasing power and abilities to fulfill your orders quickly! The net result is our ultimate combination of both technical know-how and the best pricing available for all your Video Toaster needs.

Why should you buy Video Toaster systems and Video Toaster-related products from Atomic Toaster Catalog? Because we love Toasters! The Video Toaster is the most successful video production tool ever. We don't sell Video Toasters as commodities and leave you without answers to your questions...we use them every day! We are Toaster fanatics who are constantly pushing the systems to their limits. To us, a good Toaster computer system is made for audio, video and print applications. Atomic Toaster wants you to be the most successful producer ever. Our combination of production skills and our constant testing and use of new Toaster-related products--will give you the Creative Edge.

Every Video Toaster system leaves Atomic Toaster completely configured. Each hardware element is installed, tested, and burned in for 12 hours before we release it. Any additional software is always installed and assigned properly. All you need to do is follow our instructions on setting up the system, connect the necessary cables, turn on the system, and start being productive. Below are examples of systems we can customize to your specifications. Any substitution is possible. Call us for pricing.

The Starter System "I need just a basic Video Toaster System. I'll need to perform some edits, create some graphics, prepare some title pages, and add pizzazz to general production skills."

Solution: Amiga 4000/040, Video Toaster 4000, 10 MB RAM, 240 MB Hard Drive, Amiga Monitor. Some options might include: TBCs, remote rackmount, monitors, Crouton Tools 4000 and/or Toaster Toolkit 4000 utilities. Call for pricing!

The Animator "My interest is in 3D graphics and animation. I can't afford a big system but, I need to create and animate high quality 3D graphics for a variety of clients. As my client list grows, my system must be able to grow with me."

Solution: Amiga 4000/040, Video Toaster 4000, 18 MB RAM, 340 MB Hard Drive, Amiga Monitor, Pixel 3D Professional, Art Department Professional, Brilliance. Some options might include: DKB memory board for longer animation playback directly out of the Toaster and an SFC for tape based animations.

The Animator VTR "My interest is in producing 3D animation for broadcast or industrial clients. I already own a time code accurate VTR and I would like to add 3D animation capabilities to my existing talents. My systems need to be fast, reliable, and easy to use."

Solution: Amiga 4000/040, Video Toaster 4000, 18 MB RAM, 340 MB Hard Drive, Amiga Monitor, Pixel 3D Professional, Art Department Professional, Brilliance, SFC, Dynamic Motion Module.

The Artist "I am a computer graphics artist. I need the power of the Toaster's 3D, CG and paint systems, but I will supplement it with my own graphics skills. I know that ToasterPaint is powerful, but I need a full screen 24-bit paint system that will work with a variety of computer images."

Solution: Amiga 4000/040, Video Toaster 4000, 18 MB RAM, 340 MB Hard Drive, Amiga Monitor, Retina Board (4MB), Paint Paint, Pixel 3D Professional, Art Department Professional, Image FX, Brilliance, Crouton Tools 4000. Options might include: Removable media for transferring images from one system to another, drawing tablet, Professional Page or PageStream for outputting your work to Postscript or print, Sharp or Epson scanner for scanning of images and artwork into the system.

The Craftsman "I produce video for a wide variety of clients. Whatever they ask for, I need to be able to supply it to them. My work has to be top quality, as my competitors are actually the local TV stations. Whatever they can do, I need to do for my clients."

Solution: Amiga 4000/040, Video Toaster 4000, 18 MB RAM, 380 MB Hard Drive, Amiga Monitor, Retina Board (4MB), SunRize AD516, Pride A/B roll editing controller, MONTAGE for the Video Toaster, SuperJam! Bars & Pipes Professional, Roland Sound Canvas (MIDI module), Art Department Professional, MorphPlus, MultiFrame, ProFills, Brilliance, TV Paint Pro, Vista Pro (landscape generator), Toaster Toolkit 4000, Crouton Tools 4000. Options might include: Removable media for transferring images from one system to another, drawing tablet, Professional Page or PageStream for outputting your work to Postscript or print, Sharp or Epson scanner for the scanning of images and artwork into the system.

The Professional Animator "Besides using the Toaster as an all-around production tool, I need to create corporate, industrial, and commercial animations. My work has to be broadcast quality and I must have the power to compete with other top competitors in the field."

Solution: Amiga 4000/040, Video Toaster 4000, 18MB RAM, 780 MB Hard Drive, Amiga Monitor, DPS Personal Animation Recorder, Nucleus Single Frame Controller, Pixel 3D Professional 2.0, Art Department Professional 2.3, Morph Plus, ADP Tools Professional (animation processor), Dynamic Motion Module (real-world motion animation module), Vista Pro 3.0 (landscape generator), Toaster Toolkit 4000, Crouton Tools 4000. Options might include: DPS Personal TBC IV for rotoscoping applications. Call for pricing!

The Editor "My goal is to create a complete edit suite based around the Video Toaster. I need to perform A/B roll video editing, create graphics and animations, as well as record narration, edit sound effects and synchronize music with video."

Solution: Amiga 4000/040, Video Toaster 4000, 18MB RAM, 380 MB hard drive, Amiga Monitor, Pride Integrated A/B Roll Editing System, SunRize AD516 (8-track digital audio), Crouton Tools 4000, Toaster Toolkit 4000, Montage (character generation software), Roll'em (teleprompting software). Call for pricing!

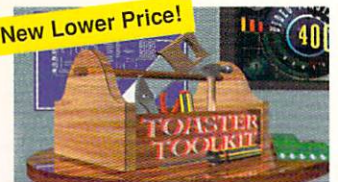
We integrate and support all Toaster-related software and hardware.

Do you want to know about the Video Toaster revolution and what it can mean for you? Call Atomic Toaster/DevWare now!



•Realtime playback of your animations in 256,000 beautiful colors!
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•New CG software supports Postscript type 1 and Compugraphic outline fonts!
•LightWave 3D software has been completely optimized for the 68040 processor and features over 250 new photo-realistic features! V5050

New Lower Price!



TOASTER TOOLKIT 4000

The indispensable collection of utilities for Video Toaster users. Toaster Toolkit 4000 breaks all barriers for harnessing creative control over your Toaster Environment--allowing for presentation professionalism limited only by your imagination. You raved about version 1, break free of the mundane with these new and improved power tools of Toaster Toolkit 4000! •Toaster Sequence Editor •Toaster Project Editor •FrameStore Compressor •AnimtoFX •FXtoAnim •Color Font Converter. T5095

DYNAMIC MOTION MODULE

The easiest, most accurate way to motion-animate with LightWave 3D!

\$129.95

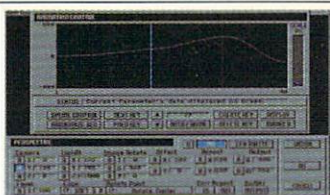
Dynamic Motion Module lets both animation novices and experienced animators rely upon the laws of physics and computing power of the Amiga to automatically define and create real-world motion and object interaction in LightWave animations. Tell the program how much an object weighs, how fast it's moving, and its direction of travel. Then sit back and let your Amiga define the motion and interaction of the objects in the scene. Many other features which make it perfect for all animation tasks! T5054

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ADPTools 2 PROFESSIONAL

A powerful, spline-based animation system providing image processing, compositing, and special effects for digital video and animations. Built by professional animators for developing broadcast television effects and multimedia productions, ADPTools Professional harnesses the raw power of ASDG's image processing engine to provide a creative tool for all animators and video producers.

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\$124.95

VISUAL INSPIRATIONS



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Automates sequential frame grabbing with the Sanyo GVR-950 and Sony EVO-9650 decks. Makes single framing and rotoscoping a simple task with BCD, AmiLink or other VLAN controllers.

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Perfect for LightWave, Real 3D, Imagine, Opal Paint, Brilliance and others! Completely seamless real world images!

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Automate common tasks via ARexx for these applications: ADPro, Cygnus Ed Pro, Final Writer, ImageF/x, Personal Anim. Rec. ImageMaster R/T, Morph Plus, Opal Paint, PageStream 3, PPage & AmigaDOS.

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Digital Sound Track T5202 **\$69.95**
Add sampled sounds and music MOD files to your videos with the greatest of ease! Sync audio to video with any of these controllers: AmiLink, BCD's, V-Lan's, Sanyo GVR-950 or Sony EVO-9650!

A+ Development

AutoPaint for ToasterPaint

This program saves you time and effort! AutoPaint has 25 point-and-click screen templates that automatically composite your pictures in just a few keystrokes using framestores and 24-bit RGBs or IFFs in ToasterPaint.

AutoPaint controls ToasterPaint and will shrink and place pictures accurately into templates. The multi-screen templates allow you to create builds, screen by screen, with plenty of room for adding text. Other features include auto beveling, adjustable drop shadows, flash directories, pseudo multi-file rendering, and a Toaster utility accessory.

T5142 **\$74.95**

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Automatically compresses 24 bit IFF, DCTV, FrameStore and HAM8 images with JPEG compression. Saves lots of hard drive space and is invisible to your video applications! Works automatically in the background! T5123 **\$74.95**

MacroSystemUS



Multiframe (for ADPro) The ULTIMATE special effects device for your Toaster! Easily create complete motion-picture quality special effects for any Toaster application. No jaggies or artifacts. The professional's tool for creating digital video sequences, special effects and animations. Apply ADPro's single-image processing power to your animations. T5098 **\$69.95**

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New Low Prices On Retina Boards!

Retina 24-Bit Display Board w/4MB Get photorealistic display capabilities with this 24-bit graphics card and plenty of "chip ram" for your most intense graphic needs. Go way beyond AGA and still maintain full compatibility. T5129 **\$499.95**

Retina 24-Bit Display Board w/2MB T5222 **\$369.95**

Retina Board + TV Paint Pro 2 w/2MB Retina Board T5223 **\$589.95**

Retina Board + TV Paint Pro 2 w/4MB Retina Board T5163 **\$699.95**

Toccata 16 Full 16bit audio digitizer with 3 Stereo inputs, 1 Mic input and 1 Stereo output. Toccata can digitize at up to 48KHz in 16bit direct to hard disk! Includes an onboard mixer and optional ADPCM compression! Can be used with VLab IFR to digitize the audio for a video sequence! T5226 **\$489.95**

VLab Y/C 30 fps video digitizer. 2 composite inputs and 1 S-video input. NTSC/PAL compatible. T5225 **\$449.95**

VLab - External for A600/1200 T5244 **\$439.95**

MultiLayer for ADPro 2.5 compositing/layering tool for video pro's and artists using ADPro as a compositing engine. Several types of compositing/digital keying are supported including Zero-Black keys, Luminance keys, Chroma keys and Alpha keys to 32bit precision. T5227 **\$129.95**

MultiLayer for ImageF/x Yes, you can do it too! T5228 **\$129.95**

The Ultimate Animator's Bundle for LightWave

Crucial: Tools 4000, Brilliance, Dynamic Motion Module, Pixel 3D Professional 2, ANIM Workshop 2, WaveMaker, ADPTools Pro, Art Department Pro. Original combined list prices of over \$1600! T5180 **\$929.95**



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More Power! More Features! Was \$299!

If you do image processing, you must have the new **ImageMaster R/T**.

Retargetable operations gives you true colors on all popular 24-bit cards and even adjusts the display to compensate for your monitors shortcomings, so what you see is truly what you get. Thumbnail Image Support (to select a picture, click on a picture—not just some filename in a listing), Modal User Interface. Save notes with images. Lossless 24-bit Compression, Automatic Image File Readers to access popular file formats, plus the hottest image manipulation tools ever available on the Amiga...bar none. T5100

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S-Video in and out, 4:2:2 processing for the cleanest possible video image.

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Contains both AmiBack and AmiBack Tools. This is "the" all-in-one powerful disk maintenance package. Full backup and restore (with SCSI tape support) plus disk optimizing, disk error and deleted file recovery.

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Use your SCSI DAT, 8MM or QIC tape drives as normal AmigaDOS volumes! Fast volume storage! Great for storing huge anims or framestores!

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The premier image-based processing package, preferred by Toaster and graphic users everywhere just got better! A completely new interface and updated loaders/savers!! T5238 **\$149.95**

TRexx Professional 2.0 T1180 **\$134.95**

A highly integrated ARexx script generation environment with powerful tools specifically for the Toaster.

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New! 75 wipes and effects for your Toaster!!! 34 Live Action Wipes and 41 assorted 3D Style Wipes, Matte Wipes, Soft Edge Wipes, 16 level Alpha Effects and their own 24bit Effects on any Toaster System.

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ROLL'EM

T5013 **\$49.95**

Use your Amiga 500 or 1200 as an automatic teleprompting and titling program, powerful enough to satisfy your most demanding professional applications.

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Enlan DFS 2.0 New! Peer-to-peer Networking for the Amiga and Video Toaster Systems - at less than \$70 per node! Interworks' Ethernet-based Distributed File System gives your customers powerful disk, file and peripheral sharing that, until now, has not been available for the Amiga. T4010 **\$259.95**

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Toaster-Net brings the power of the pros to all LightWave users with an impressive list of high-end features that will drastically improve animation productivity! Toaster-Net allows multiple LightWave scenes to Render with the Toaster-Net Scene Queue. T5232

LAN Rover Ethernet Card Ethernet adaptor for A2.3,4000's. T5153 **\$299.95**

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DevWare Video



MultiFace III Add 1 parallel and 2 serial ports (up to 115,200 baud) to your A2000, A3000 or A4000. Supports MIDI devices, redirected output and is fully compatible with serial device and parallel devices. T5239 **\$89.95**

Oktagon2008 SCSI-2 controller and RAM expander for A2000 series. Supports removable media drives with auto diskchange detection and is expandable to 8MB RAM. Includes FREE GigaMem software. T5240 **\$139.95**

CD & IDE Controller An IDE controller for the Mitsumi LU-005 CD-ROM drive or double-speed FX001-D, popular IDE hard drives or SyQuest removable drives. T5252 **\$99.95**

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Store 1.76 megabytes on a single high-density floppy diskette, instead of 880K. Also reads/writes IBM high density diskettes to easily exchange files between platforms (including Mac!) Requires AmigaDOS 2.1 or above. T5229 **\$179.95!**

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JS-105-1MP+ Best value! Newest version of Migraph "Touch Up" V3.07 and Migraph OCR.

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GI-600N The Amiga market's best selling mouse

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GI-6000N Fully optical, no ball to clean with mousepad

Mouse Pen T3018 **\$49.95**
JP-60N 250 dpi, light and easy to use.



A Powerful Morphing System, at an Affordable Price!

Oay, so you own software like ADPro, SFC Studio 16, Pixel 3D, ImageF/x, Bars & Pipes Pro, AmiLink, Personal Animation Recorder, ImageMaster Rlt and others...and they all say that they're ARexx compatible...great! Now what? You can spend all your time programming in ARexx to make these powerful applications work with each other, or you can continue producing videos like you set out to do. Crouton Tools 4000-The Easy to Use Video Operating System (VOS)-was created by a video enthusiast with over 20 years of experience. 1100 Pre-defined video tools, 150 NEW synergistic functions, ToasterSmart Directory Utility and Visual Logging System...power at your fingertips! Crouton Tools 4000 greatly accelerates your pre-and post-production video while seamlessly integrating your applications directly within your Toaster environment. T5056 **\$49.95**

PIV • 2001 Pride Integrated Video Editing Systems

The PIV-2001 software and hardware system allows your Amiga to have integrated video editing capabilities. From "cuts-only" to fully integrated A/B roll editing with the Video Toaster, the PIV-2001 solution will make your desktop video workstation complete. The PIV-2001 features RS-422 control, configurable TTL or Relay GPIs, +/- 0 frame accuracy with timecode, Industry Standard Editing functions, Save Toaster/EGV-100 Switcher Transitions, CG, Framestores & Keys in EDL and full online help. T5235 **\$2449.95**

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This amazing hardware locks to SMPTE code for effortless Audio-Video synchronization. Comes complete with the all new Studio 16.3.0, 16-bit editing software. The standard by which all digital audio boards are measured! T5066 **Only \$1174.95!**

SMPTE Output Stripe timecode onto audio or video tape. Let your Amiga be the sync master! Looks to the video sync pulses of each frame of video when used with a genlock or with the Video Toaster. T5067 **\$149.95**

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HomeBuilders CAD 2

Includes all of the above except Contractor's Upgrade and Library 1. AmigaDOS 2 compatible. With 2 disk drives, requires 1MB, with hard drive, requires 1.5MB. Original list price: \$249.00 T2040 **\$49.95**

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Finally you can enjoy the full power of your Amiga 3000/4000 and transform it into the most powerful Desktop Video System in the world!

Use 11 slots at the same time! 10 Drive Bays (5-5 1/4", 4-3 1/2" + your Amiga floppy). Install any Amiga video card on the market! 300 Watt UL listed power supply. Complete with mouse, keyboard and joystick extenders, harddisk & floppy cables, 2 cooling fans, all metal RF enclosure, L.E.D. clock-speed readout.

Call for pricing on A3000 and A4000 models.
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The answer to your expansion prayers. 8 PC-style power slots in a mini-tower case.

DPS 2-Channel Rack Chassis T7006 **\$559.95**

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Personal SFC 2.5 T5206 **\$394.95**
100% accurate single frame controller.
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Other Hardware

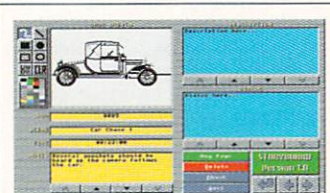
AlfaColor 400 dpi color scan T5214 **\$324.95**
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"You are going to see NewTek delivering a lot of new products."

sion production accessible to anybody who wanted to use it, and the Toaster was the first step toward that goal. We haven't given up on that goal. That is exactly what we want to continue.

Desktop video has been estimated to be a \$1 billion industry right now—in other words, Toasters and all of the ancillary equipment. Analysts are saying that is going to multiply many times over the next few years. Some of the reasons for this growth are the increase in demand for broadcast video with more cable channels, more satellite distribution and more high-tech ways of getting video into the home that are just around the corner. What doesn't change is that somebody has to make the video, and if there is a bottleneck in this whole new world of information, it is people making the video to feed that demand.

In corporations alone, there may be a tenfold increase in demand for video over what we had just a couple years ago. In the past in corporations, if you wanted to do a video you had to contract with a video producer outside, or you could try to set up a corporate video department. Very few corporations could afford it or knew how to do it.

Now if there is an interest in doing a video in a corporation, it is possible that you can set up a desktop video system and do it yourself. We think that there is an explosion about to happen in corporate video.

Another area is education. Since the Toaster shipped, we've heard from a lot of schools using Toasters and they say that the effect of the Toaster goes far beyond what you might expect. When this started, what I had in mind was that a teacher would produce tapes to use in the classroom, and that perhaps a mass communications course might have the students use the Toaster to learn about video production. But what's really happened is that some teachers are making tapes for their classrooms, but that's just a tiny, tiny percentage of what Toasters are being used for in schools.

I talked to a teacher in Dallas who said that the Toasters are being used in almost all aspects of their curriculum. He said that LightWave is being used to teach geometry, and the fine arts department is using the Toaster to train illustrators for the booming field of graphics for video. Now, if you want to be an illustrator, you have to go out and get a job. Where are the jobs? In video.

This teacher said that one thing is universal. The kids are immediately turned on by the power of desktop video. These kids grew up with television, but they have always been recipients of television, and he said the lights just start going on when they see that they can get on the production end instead of being on the receiving end. As we make the Toaster even easier to use and less expensive, I see us going over a threshold where it just explodes. Right now it takes a pretty good budget and a certain amount of stick-to-it-tiveness and motivation to really get a Toaster system up and running. In the near future, we think that the new Toaster system is going to be that thing that puts us over that threshold—that for the first time, a layman can walk up to the Toaster and get a video production out of it without a lot of training or money.

It is hard to draw an exact parallel between desktop publishing and desktop video, but what really made desktop publishing take off was the ease of use of the Macintosh computer and the fact that you could get a Mac, a desktop publishing program and a laser printer for under \$10,000. That's when all heck broke loose. People who never thought they wanted to be in the printing business got into it, and now we have seen an explosion in the number of magazines and all forms of printed communication.

A similar thing is clearly happening in video right now. What's been missing is that easy-to-use system in that price range, and that's what the new Toaster system is.

The direction of NewTek is to deliver on that promise. We've been working on it for a long time. We are not going to give up until we get it, and when we get it we will continue to improve it.

But we are also branching into a lot of related areas, and over the next year you are going to see NewTek delivering a lot of new products for a lot of new applications, but all related to easy-to-use personal video production.

VTU: *In the past, you have said that the Toaster as introduced was only half the solution. What is the other half?*

TJ: The Toaster was designed in 1987 as a complete desktop video system. That was the vision we had at a time when apparently no one else was interested. As we worked on the Toaster system, some parts were easier than other parts, and what we ended up shipping in 1990 was as much as we could get done at that point in time. But there was a piece missing. And that piece, which was in the original 1987 design, was a random-access, broadcast-quality, non-linear editing system.

That's what the original Toaster system was designed for, and the user interface was the key to making that accessible. Aside from broadcast quality, which is necessary for acceptance among professionals, the most important ingredient of this Toaster system is that you be able to use it casually. In other words, you don't have to be a full-time video professional to use the thing. You don't have to devote weeks to studying manuals and getting intensive training. You can use it for a few days, walk away from it for a week, come back, and you still know how to use it. Our goal is to make it so simple that you really wouldn't have to have a user's manual to make it work. And that involves a lot more design effort because you still have to provide the versatility to do the things the professional wants but at the same time you have to hide it from the initial user so that the most important parts of video production and the most common parts of video production are there on the surface and are intuitive. So that's been the hard work in designing the user interface.

The other hard part has been getting broadcast-quality video onto the hard disk for random-access editing. That has taken longer than we thought. We thought we could deliver it in 1990, and it was a tough problem, and we had to solve that problem on our own. Existing compression solutions couldn't get us the performance that we wanted. So, we had to design our own compression

technique from the ground up with the goal that it please the most critical video engineer, that it pass test signals transparently and not degrade the video in any way. Not that our lowest end user required that, but to truly be video production gear, it had to meet those specifications.

Our premise with the Toaster system was that we meet or exceed the performance of the highest-quality recording formats in use. The Toaster has always had something to prove to the video production world—that we could meet those specs and in spite of its low cost, it could deliver high-quality video right along with the best of the boxes. So, being able to pass that muster was important for the success of the Toaster, and we think it is just as important for the Toaster editing system.

That is why we have put this emphasis on the broadcast-quality aspect of the Toaster recorder.

VTU: *Does your non-linear digital editing system use JPEG, MPEG, wavelet or other off-the-shelf video compression chips?*

TJ: No, we use a proprietary compression technique developed by NewTek.

VTU: *Why?*

TJ: When we began this non-linear editor several years ago, we looked at all of the available video compression techniques, and we have looked at all new techniques that have been developed since, and they all have certain problems.

One of the biggest problems when we began this project was cost. So we needed to find a compression technique that could be built into a low-cost product. At that time, JPEG and MPEG chips weren't available, but we looked at the scientific literature on image compression and that body of art goes back to the 1950s.

Back then, a lot of basic research was done by the military, the phone company and others on different types of digital compression and how effective they were versus image quality. And they went to great trouble to bring in groups of test subjects to quantify the visual degradation of various compression formats and ratios. So even without JPEG chips available, for example, it was possible to go into the scientific literature and see how ordinary people perceived images compressed at 4-to-1, 10-to-1 or 100-to-1 ratios. And even though JPEG as a standard hadn't yet been developed, the basic principle behind it, the discrete cosine transform, had been well-researched.

In doing our research, we discovered there was no magic bullet that could give you astounding compression ratios with no loss. Our overriding goal has always been to build a product that was fully suitable for video production. Thus, we were only interested in compression that could sustain a broadcast-quality picture.

The emphasis in the development of MPEG to this date has been in achieving very low data rates, but allowing the picture to be degraded. So, even today, off-the-shelf compression solutions are not available to do the job at a reasonable cost.

When we began this process, we decided that we had to come up with our own compression format that would allow us to get broadcast-quality video onto a computer hard drive. It is not an easy task, and it has taken us this long to deliver. But I think you will agree it has been worth the wait.

The picture quality is extremely transparent compared to other data compression techniques, and you will find that the suite of test signals that video engineers use to evaluate video equipment passes through our system cleanly and without computerish artifacts. This is very important in a piece of equipment that is used at the network level. But, of course, that benefit exists to all Toaster users across the spectrum, down to the video hobbyist.

While a video hobbyist does not typically have a Tektronix VM700 test unit, it's still important that video quality be maintained because any loss or degradation in the video is eventually seen by the final consumer.

VTU: *Is the compression ratio constant or dynamic?*

TJ: The compression ratio varies constantly depending upon the content of the video. In other words, it will use more data when there is more detail in the picture.

VTU: *Can you equate the image quality delivered by this product to that of existing videotape formats?*

TJ: There are several quality settings available that the user can choose. At the highest level, the quality is equivalent to D2 digital tape. The other settings range down to Super VHS quality.

VTU: *What data rates are required to support D2-like performance and other levels of image quality?*

TJ: So far, our tests indicate that the higher-quality modes, depending upon picture content, may average 4 to 5MB per second. We think most users will choose modes requiring about 2MB per second on average, and some applications may use as little as 1MB per second or less.

VTU: *Not only has quality been identified as being of the utmost importance, but you have said that ease of use was a major design consideration. Could you explain how that is reflected in the Video Toaster editor interface?*

TJ: We felt that back in 1987 when we started on this project that the Toaster control panel, the user interface, be friendly, intuitive and free of what we call computer complexity. In other words, it is a computer, but we didn't want to limit personal video production to people who were comfortable with computers. So, when you boot up the Toaster, it is a very palpable, tactile, almost physical machine on the screen; you can push the buttons with your mouse and it behaves like a video switcher that television people are accustomed to, and it does what they expect. We didn't want a lot of secret handshakes where you had to hold down three keys on the keyboard and drag down a sub directory to activate a particular function.

And compared to a lot of other products in the marketplace, the Toaster still stands out as something that is

"...a random-access, broadcast-quality non-linear editing system"

friendly and understandable. That philosophy also applies to our editor. We want it to be simple on the surface so when you walk up to this thing, you can make an educated guess about how it will work and that guess will be right.

VTU: In the days when film dominated television post production,

everyone edited by looking at the pictures—in other words, the frames of film. I see a lot of similarities between that style of editing and your editor's interface. Did you intend for that analogy to take place, and will that change the structure that required specialized technical knowledge?

TJ: In the beginning of film, in the silent film days, virtually anyone

could make movies and did. Editing those films was a pretty intuitive process. You found the frames you wanted, you took a pair of scissors, you stuck two pieces of film together, and you had an edit. Everyone understood that.

In those days, if you go back and look at the silent film—not much remains—there was an incredible amount of diversity. There was a lot of sort of what would now be called event videographers making feature films. They would grab a camera and run out to the scene of a burning building and in five or 10 minutes come up with a plot around this natural scenery. They would shoot a film of a burning building and a victim being rescued by a hero.

With the advent of sound, it suddenly got more complicated and expensive. But it was still fairly intuitive. You still stuck those pieces of film together, but now you had to deal with a parallel process—that of sticking the sound pieces together. But it was still understandable by a lot of people.

When video came along, they discovered that sticking two pieces of tape together just didn't work very well. So, we ended up with this rather bizarre technique of electronic editing, and nobody was really crazy about the way it worked. I mean, people probably would have preferred to fasten two pieces of tape together if that worked, but at that point the editing process became more esoteric.

Editing video depended on these computerized edit controllers, and it was no longer as immediately tactile an experience. You were dealing with columns of numbers that made up the edit decision list. Videotape editors got used to this and became very proficient at this process, so much so that they could run rings around a film editor trying to put two pieces of tape together. But editing videotape was still something that needed a lot of training and experience to do properly. There is really no way that a client could walk into a post house and sit down in front of the editor and do any work himself. But that is exactly what we are trying to accomplish.

We are trying to make the entire editing process, including the special effects, character generation and even 3D ani-

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mation, accessible to ordinary people, who have other things to do with their lives than climb the steep learning curve of professional video editing equipment.

VTU: *NewTek introduced the Toaster in late 1990, and now it's 1994. That's roughly 42 months since the last significant product introduction. Does this lengthy time span reflect a lack of R&D funding, and will NewTek accelerate its product development so that we begin seeing more regular product introductions?*

TJ: As a percentage, NewTek spends more on R&D than most companies. We think it is the key to our future, and since the Toaster shipped, we've been hard at work on a number of technologies for the future of desktop video.

NewTek is a company that doesn't ship a lot of products. Some companies will try anything in the marketplace and see if it flies. We try to focus on a small number of products that we know will be blockbusters. So in the process of doing that, we pour all our blood, sweat and tears into a very small number of projects.

Over the next year, you are going to see some of the results of that R&D. But many won't appear for two or three years. The kind of products we like are those that break new ground in technology and price/performance. We don't like to be in the position of selling me-too products. We like to hit them where they ain't.

That's our product philosophy at NewTek, and that's what makes it such a fun business. Technology lets you do that—it's like clay that can be molded into any arbitrary sculpture. And once you have the final sculpture, it's mass production.

Microelectronics and designing silicon chips is almost like a printing process. The way they make integrated circuits is done by the thousands at once, and the technology is inherently cheap and gets cheaper every year. This makes it possible for us to bring the formerly expensive electronic systems to the masses at a price that anyone can afford.

VTU: *You said one of your product development philosophies is "hit them where they ain't." Where ain't they?*

TJ: They're not making a fully capable

broadcast-quality non-linear editing system at a very low price, but more importantly, one that is so easy to use that a layman can walk up to the machine and operate it after a few minutes of training. That is our goal with our new system. The other systems I've seen have been pretty intimidating to a layman.

With our system, you still need talent and skill to make a good television show, but you won't need to spend three months learning how to become a technical director guru.

VTU: *Commodore U.S. is less than healthy. Several analysts have looked at their financial statements and*

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"...the quality is equivalent to D2 digital tape."

wondered how they have kept the doors open. What steps have you taken to protect the Toaster, given its reliance on the Amiga and the status of Commodore in this country?

TJ: Well, there is hardly any computer company these days that hasn't had financial scares, and Commodore is no exception. But it is not so scary that we are really afraid of losing the Amiga computer. Commodore has so many divisions that it's hard to tell which is in trouble and how much trouble they are in. But in Europe, they are doing quite well with some of their new machines.

In the U.S., clearly their day has passed as a mainstream personal computer. We never really depended upon it as a mainstream personal computer. At the time the Toaster was designed, the Amiga was the only system that was practical as a host for the Toaster because of its real-time multitasking operating system. The intimate coupling of the operating system to the video frame rate was perfect for the Toaster application and is still unsurpassed in those areas.

VTU: *Recently, NewTek vice president Paul Montgomery and five others, including two programmers, severed their ties to the company. What impact will their departure have on NewTek's ability to deliver products for the desktop video market?*

TJ: Their absence is being felt here. They are good friends, and it is like losing a couple members of the family. But it will not affect our ability to bring out new products. There are still more than 50 great people at NewTek to produce and promote these products.

The short-term problem is replacing them and making sure their jobs get done. Over the last two weeks, that's been my primary concern. The situation is under control now, and it looks like things are better than ever. There is some new talent in the company. It's like a breath of fresh air, and the people who were here hadn't been happy for a while. Unfortunately, it was dragging others down. That's gone, and there is a new gleam in NewTek's eye and an excitement and vitality. You can feel it in the air.

Our relationship with those people was long and pleasant, and it's sad to see that end. But change is good. They're going on with their lives, and we are getting on with ours, and that frustration is gone on both sides.

VTU: *In the past, third-party developers often have been surprised by NewTek product development. Do you now plan to keep your them better informed?*

TJ: That's one of the big changes taking place. We want to actively cultivate relationships with developers—something we haven't been real good at in the past. We haven't been good at disseminating information about the Toaster or guiding developers in directions we think they should go. There just has not been good communication with the world of Toaster developers.

And that is one of my challenges now in remaking NewTek's structure: to make sure that happens effectively. Also, with the advent of the new Toaster system, we have

locked down a lot of the Toaster's internal structure that we knew had to change through the various versions—things that might break a third-party application. Now, we are in a position to document and guarantee the way things work in a Toaster. So in some cases, for the first time we are comfortable with sharing the innermost Toaster secrets with other developers.

VTU: *Is the recent announcement that NewTek and Prime Image will jointly pursue the PAL market an example of the increased communications between NewTek and third-party vendors?*

TJ: Yes. Since we started showing the Toaster in the late 1980s, the demand for the PAL Toaster has been as strong as the demand for an NTSC Toaster. The way the Toaster works made it difficult for us to make an equivalent PAL version, so for years we have been looking longingly at the PAL market.

When I first heard that Bill Hendershot (Prime Image president) was attempting to solve that problem, I was skeptical because what he was proposing was a transcoding system that would transcode the PAL signal to NTSC, pass the NTSC through the Toaster and then transcode back to PAL.

Even if you do transcoding in an optimal way, there are motion artifacts, especially judder. And I thought that going through two conversions would make the result unusable for broadcasters. However, when I found out what (Hendershot) was really doing, I got very excited about it because with a clever frame interleaving technique, he solved the motion judder problem.

VTU: *What are some of the other products you might introduce to feed the desktop video and personal video production marketplaces?*

TJ: The technology in the Video Flyer is extremely powerful and has a lot of applications outside the Toaster. We are also working on the next generation Video Toaster and several other related products. The wonderful thing is that the technology that we are working with gets cheaper and better every single day. And one nice thing is that you can predict how much better and cheaper it is going to get. As we are designing products that are one and two years out, we can make accurate guesses about how much performance we can add and still keep this in the desktop video price range. It is very exciting because the kind of performance we can get in one or two years exceeds all of the high-end equipment that we have associated with six- and seven-figure equipment in the past.

So that is our goal: to bring that technology down to the desktop. That's one of the most exciting things I can imagine. Whatever we do at NewTek, it is going to be video, it's going to be graphics and it's going to be high-performance, but it is going to be low-cost. And to me that's what makes my job the best thing in the world.

A row of buttons in the Project/Files mode arranged between the project in the upper half of the screen and the files in the lower half allows users to modify their projects. For example, the Select All button lets users click on a series of croutons, which are then highlighted for easy identification. These croutons can then be moved to another location in the project or deleted. Users also can record video clips by clicking on a button in this row of controls and modify a control panel to set the duration of lower third CG keys, audio events, such as split edits, and framestores.

The Project mode is similar to the Project/Files mode, except it excludes the source files from the bottom half of the screen. This operating mode would be useful for projects in raw form that require the user to have a broader view of the project content and the ability to move and delete croutons. It also gives video presenters a broader view of their overall video and graphic content so that they can modify their presentations on the fly.

The Project/Switcher mode will be somewhat familiar to Toaster users. In the lower half of the interface, users have access to typical Video Toaster Switcher functions. However, the area of the current Switcher screen occupied by transitions now displays the storyboard croutons of a video project.

The Files/Files mode is a file requester that allows users to conduct basic housekeeping chores in a graphical environment. For example, by pointing and clicking with the mouse, users can copy fonts, textures and switcher transitions from the system CD-ROM drive to the desired system hard drive.

The system operating software is a drastic, but logical, departure from what has come before. Just as the editor has brought a closure to desktop video hardware, the software too brings to fruition a desire to give first-time users and experts alike a simple, yet powerful way to build their video programs.

However, the simplicity of the storyboard analogy doesn't mean that the software lacks the powerful tools professional video editors require. The ability to trigger certain events, such as split edits and CG keys, at specific times can be set by opening control panels and entering the desired time values.

Back to the Future

NewTek's introduction of the Video Flyer promises to reignite the explosion that blasted through the video industry with the initial release of the Video Toaster. In the form of the Video Toaster tapeless editor, NewTek has shown that it understands what the personal video producer needs: an easy-to-use, broadcast-quality, non-linear editor at an affordable price.

On its own, the editor would be impressive. However, when coupled with the power of the Toaster's real-time video switcher transitions and effects, as well as LightWave, ToasterCG, Chroma-FX and Toaster-Paint, the Toaster non-linear editing system appears to be unmatched. Anyone who has ever waited for PhotoShop filter transitions to render will immediately recognize that.

Beyond its high quality and low price, Jenison is hoping that the editor's ease of use will bring to fruition

the revolution the Toaster began in video production. He is seeking to offer an "Everyman" video product that's easy enough for anyone with a desire to communicate with video to use and powerful enough to satisfy the requirements of professional video producers.

"We think that while making a good television show requires many talents and skills in many areas," said Jenison, "that the electronic process of editing should not put barriers in people's way because it can be made simple."

"And that is what we have attempted to do. With our system, you still need talent and skill to make a good television show, but you won't need to spend three months learning how to become a technical director guru. We want that part of the problem to be transparent. We want that to just happen. We want you to think your show together."

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To the Power of X

Exabyte Tape Transfers for High-Quality Rendering

by George Avgerakis



In every human endeavor, there is a struggle to attain high quality. Tom Wolfe, in *The Right Stuff*, called it the pinnacle of the ziggurat. It's a nearly self-destructive midnight desire that creeps into your soul and drives you mercilessly toward some minute perfection long past earshot of the voice of reason.

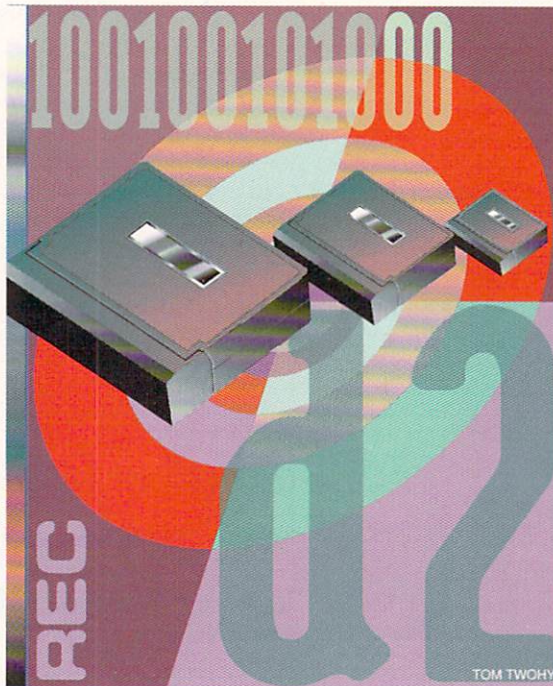
Stone sculptors and animators seem to be the most deeply afflicted. Both can work for days filling a nodule of marble or fine-tuning a pixel of data; however, when it's all over, the sculptor has a timeless piece of stone, while an animator has...Exabyte.

I know what you're thinking. "I just bought the Personal Animation Recorder, and now I need another gadget for perfect animation?"

Not quite. The Personal Animation Recorder, or PAR (approximately \$2,400 with disk drive), is a perfectly adequate storage and display system for receiving and playing several minutes of D1-quality video animation. It's an amazing device and many production houses need nothing more to satisfy hordes of clients. But the PAR achieves its enviable results by compressing each animation frame. Compression, while adequate for all industrial and even some broadcast applications, does not, as yet, represent prime quality. The ziggurat, the obscure object of desire here, is perfection.

If you want to come back to that rendered animation six months or a year later, will your PAR's Seagate hard drive still have the frames? Probably not. Will you have saved the scene files and objects? Maybe. And what if you ask yourself that dreadfully loaded question, "Is this the best there is?" Ah, then you have to know about Exabyte.

Exabyte is a company and a product. Exabyte, the company, offers premium quality backup tape drives. Knowledge about Exabyte is almost arcane. You can dig through the heavy compendium of computer hardware dealers, the *Computer Shopper*,



and find only two references to Exabyte. But ask a dealer if he can get you Exabyte drives and it's as if you whispered the secret hailing sign of a Freemason. You get respect.

Exabyte, the drive, runs a 5 gigabyte (GB), 8mm-wide tape cartridge that can be transported to any other Exabyte machine for transfer of data.

With an Exabyte drive you can dump more than 5,000 frames of *seaQuest*-quality animation and store them in uncompressed form indefinitely. Cut yourself a bit of space and store your scene files and objects too. This is top-quality archiving.

Better than archiving, you can take that tape and send it to a suitably equipped on-line editing house and render those frames, also uncompressed, to an Abekas A64 digital disk system for output to digital videotape or, dare we

suggest it, to a film recording system for rendering on 35mm motion picture film. Here it is: the movies—feature films—within your grasp.

The Exabyte 8500 machine isn't cheap. Retailing between \$2,399 and \$2,549 (street prices), it represents a serious commitment to animation quality. If you must pursue that quality for national television spots, broadcast logo work or entertainment media, the Exabyte represents a significant cost savings over buying an Abekas A60 or A65, which sells for hundreds of thousands of dollars.

Here is a practical missing link between a low-budget LightWave rendering station and a real, uncompressed D1-quality on-line edit suite or feature-film cutting room.

The Exabyte protocol was developed only recently for achieving network-quality effects at facilities such as Amblin Imaging, where all the animated effects frames for the NBC television series *seaQuest* are dumped to tape prior to editing.

John Parenteau, the Amblin animator who oversees "Exabyting," explains the procedure and how it is an extension of an overall quality assurance program on the *seaQuest* unit.

"Each shot begins, of course, at the script and storyboard stage," said Parenteau. "Once the board is approved, each CGI sequence, called a 'shot,' gets printed with the board picture and data on a simple file card. The cards then get distributed among our seven animators.

"Following the requirements on the card, the animator will then select the appropriate 'default scene' from the library. Default scenes have been designed for every object. These scenes will include the environment, textures, lighting—everything but motion. All the animator has to do is set up the motion paths and refine the results. When the animator is satisfied, he shows it to our animation supervisor, Jim Lima, before rendering a low-resolution version to the PAR. The PAR output is then recorded and sent to the post-production team to be cut with the live action scenes into the rough edit of the show. This lets the editors have a final chance to change anything in the animation that doesn't suit their needs."

Incidentally, all *seaQuest* animations are rendered at 24 frames per second to match the live-action elements that are shot on film. When *seaQuest* is released in Europe, the entire program is sent in film, so all of the animations eventually get converted to celluloid.

Parenteau's job represents the last square of Amblin's flow chart of animation production. "Once the low-res test is approved, the card comes to me, and I'll load the scene into LightWave. My first step is to make sure that all the extraneous information is set to 'off' or 'on.' For instance, the data overlay is always off, the resolution is usually medium with low antialiasing and the aspect ratio is selected for format. Then I save the file to our 25GB disk array and send it to our render farm."

Until recently, Amblin's render farm was a bank of 40 Toasters, but Parenteau, who received one of the first NewTek Screammers, says their conversion to the Screamer was successful and NewTek's 600MIPS workhorse lives up to its prerelease hype.

I was surprised to learn that medium resolution was sufficient for film rendering. Parenteau confirmed that except for occasional print-quality renderings for posters or magazine covers, medium resolution rendering was excellent for all applications.

"We'll occasionally go to medium antialiasing, especially for a motion blur with something going past a camera quickly. Medium resolution is the highest that television can use anyway, even at D1 quality. We tested our animations on film by rendering from the Abekas to a Solitaire 35mm motion picture film recorder, and the results were outstanding.

"My next step is to use the Single Frame Controller (SFC) by Nucleus to record all frames to a laser disk. This allows me to check that all frames are correct and the motion looks right. Our strategy is to be as careful as possible before committing the animations to the Abekas. The Abekas process is relatively expensive, so any inexpensive check method prior to Abekas is highly recommended.

"I then compile a list of frames using ASDG's Art Department Professional and its bundled ARExx program, FRED. Then I lay off all the frames to the Exabyte tape drive."

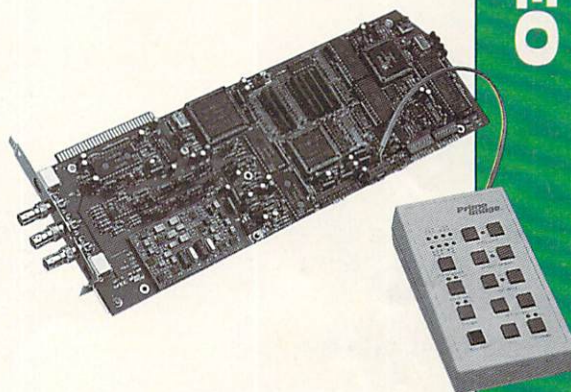
The process of converting 500-600KB frames to Abekas format on the Exabyte tape takes about 40 seconds per frame. The reverse process, executed at Amblin's favorite editing house, the Post Group, which takes the Exabyted images into the Abekas, takes only 10 seconds per frame. The average (non-Screamer) rendering time for a *seaQuest* frame, by the way, is 90 to 110 minutes.

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Once the frames are recorded on the Abekas, playback in full D1 quality is instant.

Peter Moyer, vice president of the Post Group in Hollywood, explains how his facility uses the Exabyte.

"Joe Conti, a Toaster pioneer, had a contract to create animations for *Unsolved Mysteries*. We were getting Betacam tapes, laser disks, all sorts of media from Joe. For years, we had been using the Exabyte as a transfer medium for graphics houses who were dumping their high-end animation systems to D1.

"We thought we could get the Toaster to format for the Abekas, which requires an aspect ratio of 720x486 pixels. We contacted NewTek, but in the end, it was ASDG, makers of Art Department Professional (ADPro), who responded by

writing Amiga-based software that would take the Toaster output to Abekas format. We owe our successful process to the aggressive creativity of ASDG.

"The Exabyte is relatively cheap. The cassettes can be bought for as low as \$3 each in bulk. It's the only way to go if you want top quality at off-line rates."

Exabyte makes two different tape drives in the multi-gigabyte capacity: the 8500 and the 8505, which has a hardware-compression system built in, resulting in a storage density of up to 10GB. Parenteau shies away from the 8505 because he's leery of compression and because, at present, *seaQuest* shots do not fill a quarter of any cassette.

"We tried the PAR first, but because of its compression we found that we got occasional banding and color

shifting on the higher resolution frames that we learned was caused by the compression," Parenteau said.

Amblin has not yet tested the 8505 to see if it causes loss of quality. As of this writing, I have just installed the 8505 and plan to conduct a test of a sample *seaQuest* scene. If the test is clean, the 8505 practically doubles the storage capacity on one tape. While this may not be useful yet for *seaQuest*, you can use the Exabyte to back up all your projects. Taylor Kurosaki, another Amblin supervisor, said there might be a future in the 8505: "Our files are getting larger. Who knows, maybe an extra 5GB per cassette would be useful."

After the frames are stored on the Exabyte, the Amblin team merely delivers the tape to their post-production house, the Post Group.

Said Parenteau: "All the soft filters, motion blurs and tweaking of frames are all done here. Nothing has to get done by the post house except downloading the tape to the Abekas. Rarely, Peter Mavromates, our post-production supervisor, may have to color correct some frames to match a live action scene's color, but the process is so automated that it leaves all the creative work of the animation in the LightWave facility.

"The key is to realize that this method allows you to keep your frames all digital and noncompressed from LightWave all the way until the show airs."

You can also use the Exabyte protocol to bump the quality of your animation to the ultimate. Here's what you'll need (list prices shown):

1. Exabyte 8500 tape drive: \$2,399 (internal)
2. Exabyte 8mm tape cartridge: \$10
3. ASDG's ADPro software: \$299
4. ASDG's Exabyte tape driver: \$200
5. Commodore's 2091 SCSI-drive controller: \$65
6. Optional generic SCSI connecting cable: \$25
7. Optional Corel SCSI utility software for DOS: \$65
8. Optional ASDG Exabyte driver for Windows: \$495

To begin, if you do not have a SCSI controller installed in your Amiga, you must install the Commodore 2091. In order to achieve its high-speed recording capability, the Exabyte drive is designed as a SCSI-controlled device. Keep in mind that with the SCSI installed, you can also install up to six more SCSI devices,

Exabyte Service Bureaus

Here's a list of approved service bureaus offering Abekas/Exabyte transfer. Now go out there and Exabyte off more than you can chew!

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Pacific Video Resources
2339 3rd St., Ste. M-4
San Francisco, CA 94107
(415) 864-5679
Fax (415) 864-2059

Pacific Ocean Post
730 Arizona Ave.
Santa Monica, CA 90401
(310) 458-3300
Fax (310) 394-6852

The Post Group
6335 Homewood
Los Angeles, CA 90028
(213) 462-2300
Fax (213) 462-0836

Action Video
6616 Lexington Ave.
Hollywood, CA 90038
(213) 461-3611
Fax (213) 460-4023

Florida:

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Disney MGM Studios
Roy O. Disney Production Ctr.
Lake Buena Vista, FL 32830
(407) 560-5600
Fax (407) 560-5483

Illinois:

Skyview Film & Video
541 N. Fairbanks
Chicago, IL 60611
(312) 670-2020
Fax (312) 670-2020

New York:

Manhattan Transfer
225 E. 43rd St.
New York, NY 10017
(212) 599-1616
Fax (212) 697-6387

Post Perfect
220 E. 42nd St.
Second Floor South
New York, NY 10017
(212) 972-3400
Fax (212) 972-9085

Texas:

Video Post & Graphics
2727 Inwood Rd.
Dallas, TX 75235
(214) 350-2676
Fax (214) 350-2676

Washington:

Digital Post & Graphics
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Seattle, WA 98101
(206) 623-3444
Fax (206) 340-1548

such as fast hard drives for multiple gigabytes of data storage.

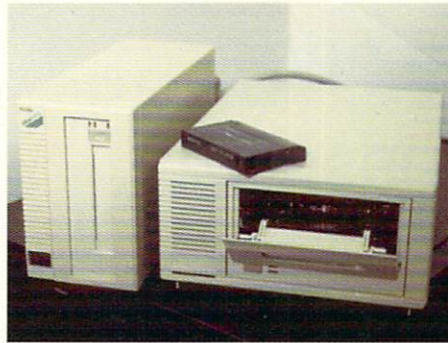
Installing a SCSI drive is a rather technical process; your dealer can provide an adequate explanation. Be sure, however, to attend to the 'termination' of each drive connected to the SCSI controller: The last drive(s) should be terminated, but all other drives should be unterminated.

To allow your computer to control the SCSI drives, you need special software called "drivers." In the Amiga environment, you'll need the ASDG Abekas driver, which should be installed on your bootdrive.

With the SCSI controller working, you can choose to mount the Exabyte internally or externally to your system. I prefer mounting externally, because the Exabyte can be moved from computer to computer. You can even set up the Exabyte to run as a backup device on a Macintosh or an IBM/PC-type DOS computer and double the value of your investment.

To run the Exabyte in DOS, use Corel's excellent drivers, which are designed to run hundreds of other SCSI devices, such as hard drives and CD-ROMs. The Corel software is easy to install and use and the technical support is superb. If you're going to run your PC in Windows, ASDG

makes an Exabyte/Abekas driver that lets you store Windows-acquired frames to the Exabyte and export them to an Abekas facility. This makes it possible to achieve D1 quality with products such as Crystal



The Exabyte can serve as the link between a rendering station and digital quality.

Graphics' Flying Fonts or TARGA board output. ASDG, like Corel, is an excellent software house with outstanding technical support people who are glad to take you step-by-step through the procedures of installing and using the program.

Once you've mounted the Exabyte tape machine and have it running, you need ASDG's ADPro software to enable the Amiga to run the Exabyte

utilities. Simply insert a cassette, format and follow the protocols outlined in the ADPro to automate your batch dumps to the Exabyte. From there, just send the tape (make a backup) to your post facility and voila, you're finished.

Costs for Exabyte rendering to Abekas vary with each post house. The Post Group charges a one-time setup fee of \$50 and a per frame fee of 25 cents. Once on the Abekas, your animations can be run off on a D1 cassette for a one-time charge of \$50, plus tape stock. D2 and D3 have a one-time charge of \$40, and Betacam is \$35. So, for 100 frames on D1, you'd pay \$125 plus tape stock. Because they've been at it longer than anyone I could find, I'd recommend the Post Group for West Coast or Florida animators (the Post Group has a facility in Orlando). I wanted to see if there were any facilities in New York and other areas offering this service. I found several and they are listed in the accompanying sidebar.

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George Augerakis is founder of Avetka Productions Inc., a motion picture production company in New York City.

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Logos and Beyond

Integrating Print and Video Using Typesmith

by Michael and Nicole Bushey

Many animators and special effects professionals are supporting themselves on their LightWave laurels, but there are other ways to increase profits, especially if you are already providing video or graphic services to a client who has many needs.

Let's say you are given the chance to design a logo in an animation. If all goes well, the client will be impressed by your efforts. So, before moving on to another project, why not sell a complete print package? The timing is perfect since you have won their confidence; at the same time, their new business image can be heightened by matching your newly created logo to their letterhead and business cards.

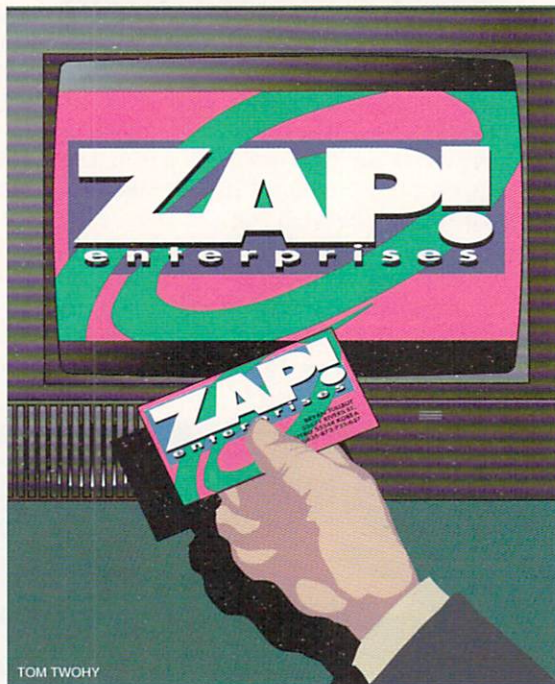
If your business prowess lands you extra contracts for a print campaign, there's a program that can reduce your work load. For instance, a logo completed in Modeler must be re-created with desktop publishing software so it can be printed. Luckily, Soft-Logik Publishing's Typesmith makes it possible to create just one version of the logo that can be used in both LightWave and desktop publishing situations.

Consult Your Client

It is important to interview your client before the work begins. What most clients say they want and what they actually like can be quite different. Remember, your client is paying for your artistic abilities; if they know exactly what they want, it makes your task easier. Generally you should keep logo animations simple and tasteful. If your client is in a creative field, such as fashion design, video production, toy manufacturing, etc., then you may consider a design that is more daring and bold.

Obviously, it is extremely important to discuss your client's budget for both the logo creation and the animation. Sometimes clients have big ideas and small budgets. It is foolish to create a masterpiece if they can only pay a hundred dollars. Agreeing on a budget answers the question of how many hours to work.

After interviewing your client, it is necessary to create rough



TOM TWOHY

sketches of the logo and storyboards of the animation. Using the computer at this stage is time-consuming, so work with pencil and paper. Try to have at least four logo ideas and three storyboards. Don't worry if they look rough; these are just ideas—not the finished product. Show your client the sketches and get feedback on which logo and animation they prefer. Often, your client may like one logo and storyboard strongly and stick to that decision. Asking for a commitment saves you time because they will be less likely to ask for a change later in the production process.

After you have a sketch of the logo, create it with Typesmith. This program is basically a font editor which allows you to replace or modify any individual letter of a font with a custom letter or logo. It can import and export most font formats,

including Compugraphic, Adobe Type 1, and IFF DR2D-structured drawings. This means that the 300 plus Adobe Type 1 fonts that come with the 3.0 Toaster software can be edited with Typesmith. Adobe Type 1 fonts were invented to meet the demands of high-quality print applications, so almost any desktop publishing program can support them. While Adobe Type 1 fonts are two dimensional, LightWave Modeler can extrude them into 3D objects. This gives you the ability to quickly and easily create animations from these fonts.

Now the quickest way to make your client's logo is to choose an already existing font and modify it. Letters of pre-existing fonts can be stretched and bent just by picking points and moving them on each letter. Whenever you change a font, it is important to save it with a different filename, so you do not lose the original. But before moving ahead, let's discuss a few options.

Logo Creation

There are three ways that you can create a logo using Typesmith. The first is to design it entirely in Typesmith. The second is to draw the logo in a paint program using two colors; then open an IFF ILBM template in Typesmith and auto-trace it. The third method is to framegrab the logo with a cam-

era or digitize it with a scanner. Convert this picture to two colors with an image processing program such as Art Department Professional (ADPro) or Imagemaster. Finally, use Typesmith to import the picture as a template and autotrace. (If you use autotrace, it may be necessary to touch up the logo.)

Once the logo has been created, it is time to save it as an Adobe Type 1 font. First name the font by selecting set font attributes and entering a name in the FullName box. Select Export PFB Postscript Type 1 outline and supply a filename. Once again be careful not to overwrite the original font.

To give you an idea of how Typesmith can be used, refer to the accompanying images. Figure 1 is a Typesmith screen showing an autotraced two-color image originally created in ToasterPaint. The left logo is the initial autotraced logo, while the right one has been retouched. Figure 2 shows this logo rendered in LightWave. Figure 3 displays the Accord font modified to have thicker accent lines and various-sized letters.

How It's Done

In Lightwave 3.0 Modeler, select Options-Text and load your font. Execute the Text ARexx macro. Select the font name (this is the name you entered in the FullName box), the desired text type and enter the assigned letter belonging to the logo in the text box. When you click OK, the macro automatically extrudes the logo into a 3D object. Position all text and logos in Modeler as it is easier and more accurate than LightWave. Double check to make sure all your polygons are facing the correct direction or just render as Double Sided. Assign the different surface names to the logo.

Next, load the objects for your animation into Layout and determine the length of your animation. For every second of animation you need 30 frames. Flying logos are typically three to five seconds in length. Type the number of frames in the Scene-Last frame box. Since most logos fly together, it is usually easier to mark your keyframes in reversed sequence. Just follow your storyboard in reverse.

Assigning Surfaces

It is time to assign surfaces once the wireframe preview looks satisfactory. It is important to learn how colors work together and what constitutes an even balance for the animation. Typically, you want to use three or four different colors. First is the main color which gets used the most. The second is relied upon less

than the first and is similar in color. The last two are highlight colors which add to but do not distract from the main colors. This, of course, is a rule of thumb that can be changed to whatever looks good. The coloring rule is a strong beginning for creating surfaces as it speeds up the design process and yields an animation with a more balanced look.

Client Approval

Have your client approve a super-low resolution test of the animation using the playback of a Toaster 4000 or Digital Processing Systems' Personal Animation

Recorder. If you don't have animation playback capabilities, then have some test frames rendered and dumped to tape along with a wireframe preview of the animation. Explain to your client that this is their last chance to make any changes. Get their written authorization before you proceed. This is to ensure that after completing the animation, your client doesn't demand that you create another logo with the company name in a different color without having to pay extra.

Hopefully, your client is now thrilled with the flying logo that you have created. If they haven't already expressed

continued on page 96

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MacroSystemUS Retina

More Than a Framebuffer

by Brent Malnack

The Video Toaster has so many capabilities, one might wonder why there would be a need for a dedicated framebuffer. But if you want to display images in true 24-bit color, a dedicated framebuffer is needed. Here's where the MacroSystemUS Retina (\$399) can help. Unlike other framebuffers, such as OpalVision from Centaur, which requires the same video expansion slot as the Toaster, the Retina happily resides in a Zorro II or Zorro III slot. (At press time, MacroSystemUS announced a newer version of the board specifically designed for the Amiga 3000 and 4000.)

RGB Output

One of the more common uses of a board such as the Retina is its ability to display 24-bit images in true RGB. This is purely for aesthetics, however, because at some point down the line, RGB data gets converted to a composite video signal. If this is the case, does an RGB framebuffer provide any help in videographics? The answer is a qualified yes.

In the case of a Toaster system, an RGB framebuffer is particularly useful when it comes to painting. ToasterPaint (TPaint) can be difficult to use in some instances, especially when freehand art is desired, because one can paint only in a portion of the screen at any given time.

Because of limitations in the original Amiga display modes, NewTek had to make some difficult choices when TPaint was written. In order to show as many colors as possible on-screen during painting operations, NewTek chose HAM (Hold and Modify) mode. This prevented ToasterPaint from instantly representing all of the pixels in a video resolution image on-screen. The result of that compromise is the scrolling in ToasterPaint. With the Amiga 4000s, not only is there a larger palette to draw from, but the machine can display more colors in higher resolutions. The new TPaint can take advantage of this feature.

In the meantime, Toaster artists have been forced to deal with alternative means of painting. [Editor's note: For more information about alternative paint programs, please refer to "Video Paint and the Toaster," by Maury McCoy, on page 68.]



The Retina card can display images in full 24-bit color, even exceeding video resolutions. This makes painting on a full-color, full-resolution image quite easy.

In the past, companies have produced decent framebuffers for the Amiga, such as the GVP IV24, but they were lacking efficient software. With the Retina comes an acceptable paint package: XIPaint. Much better than XIPaint, however, is TVPaint 2.0. Coupled with the Retina, TVPaint (\$349.95) becomes a sophisticated paint system. MacroSystemUS also offers a combo pack; Retina Pro (\$749) includes TVPaint and a Retina board with 2MB installed.

Bigger Bench

Besides its usefulness as a framebuffer for painting operations, the Retina can do much more. For one, it can emulate Workbench. After the board and software are installed, the Amiga Workbench runs from the Retina. In this situation, only one monitor is needed to display both the Workbench and any software that runs directly on it, such as TVPaint. Although an inexpensive Amiga 1084 monitor can be connected to a Retina, it is possible to attain higher resolutions with a VGA style or multisync monitor, such as Commodore's 1942 or 1960. For video resolution images, the lower resolutions are fine, but the added resolution may prove useful for other tasks.

AGA Emulation

Another Retina benefit is its ability to offer AGA emulation on non-AGA machines. Although this means that software intended for use on AGA machines can run on non-AGA machines, AmigaDos 2.1 is required. But this ability to run AGA-software on a non-AGA machine does not mean that a Toaster 4000 card can be operated as an AGA Toaster on an Amiga 2000. Still, having the ability to read and display images in more colors than the standard display modes is a big benefit.

The primary example that comes to mind is Art Department Professional (ADPro). Frequently, I'm converting images from one format to another with AdPro. If it's a 752x480 image, ADPro will display it in only 16 colors full

screen (on an Amiga 2000). This isn't always a major problem, but it can become frustrating if some aspects of the image require adjusting, such as color values. With the Retina, the image can be viewed as it was originally designed.

Having the extra color depth breathes new life into an Amiga 2000. I spent a few hours setting up higher-resolution Workbench displays and examining full color images. When setting up images for video use, it's important not to become too accustomed to the lack of chroma crawl. For example, if you draw an orange box in TPaint next to a blue one, the chroma crawl adds screen noise. On the Retina, this looks much like print quality—normal. This might make your graphics unsuitable for video use. With TPaint, at least you get immediate feedback for graphics suitability.

RTG

Perhaps the most promising aspect of the Retina and similar boards is Retargetable Graphics (RTG). Programs that support RTG can open a display directly on the board instead of merely displaying an image there.

An added bonus is that if the software is compatible, the interface for a program can be run in a much higher resolution. For example, if NewTek decides to rewrite LightWave for RTG, the user could work in nearly twice the resolution than is currently available. Not only would this enhancement improve Modeler, but imagine being able to view 24-bit texture maps in LightWave without having to render them first. With the added resolution and palette, these types of operations would become fundamental.

Will NewTek support RTG? Although there is no official comment at this time, it is likely that NewTek will support RTG in the future.

Installation

For this review, I installed the board in both an Amiga 2000 and a 4000 and

both procedures were quite easy (the board plugs into a Zorro slot). Once installed, connect your monitor to the VGA style port on the card. Users of a standard Amiga monitor may need an adapter for the cable. The software installs via the standard AmigaDos Install and asks if various RTG drivers are necessary. There are currently drivers for ImageFX, ADPro and Real 3D, among

Loading and running a 24-bit color Mac from within the Amiga is quite astounding. The Retina display updates are even faster than the standard Amiga AGA Mac emulation. I tested a handful of Mac programs, including InfiniD, Quark and Word, with no problems.

Other goodies included with the Retina board are programs to load pictures, create slideshows, and even create and play full-color animations. Although none of these programs have a detailed interface, they are quite functional.

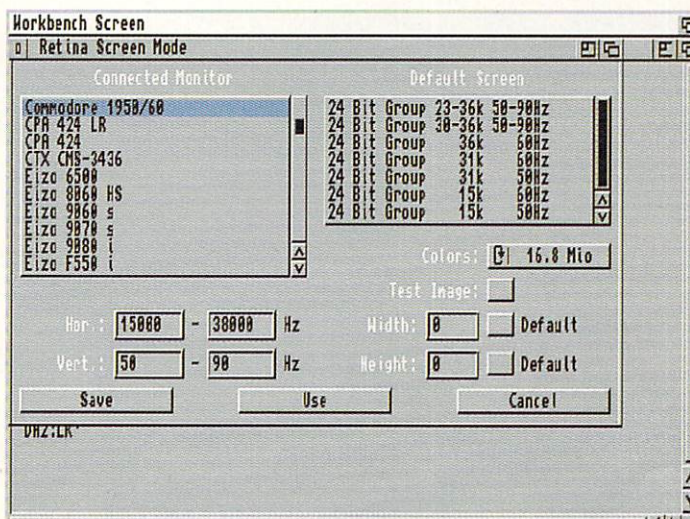
RView is a picture display program that shows individual graphic files from a large selection of file formats, including GIF, IFF (all formats), JPEG and even NASA. A list of images may also be created, allowing a slide-show type presentation. The size of the image list is unlimited, and the pictures can be flipped through as quickly as they can be loaded and decompressed by the Retina and Amiga hard drive.

RACE

Additionally, MacroSystemUS has included MakeRACE. It allows for the creation of an animation in 8-, 16-, or 24-bit modes with simultaneous sound playback (the sound file is played by the Amiga's built-in audio capabilities). The sparse documentation for this and most other features in the Retina often make it necessary to experiment. I was able to render and display animations with reasonably good results, but

was unsure whether I set all of the controls to their optimum positions. The 24-bit animation I tested had trouble playing back at a consistent 30 frames per second (with the Zorro II version of this board, I couldn't record the animation output to video anyway). For presentations and test animations, the quality is sufficient. The frames from the LightWave animation were compressed into an anim file, which appeared to be about 10 percent of the original image file sizes.

continued on page 103



A Retina board in screen mode while installed on an Amiga 2000



Retina gives Toaster users the ability to display 24-bit images in true RGB.

other programs. Once installed, these drivers allow the Retina to display interfaces in more colors and at higher resolutions than possible from standard Workbench screen modes.

Some software programs provide Retina drivers. Having a fair amount of success in the marketplace, more and more developers are including Retina drivers. A popular Macintosh emulator, the Emplant, is just such a board. For this review, I also ran the Emplant successfully with the Retina.

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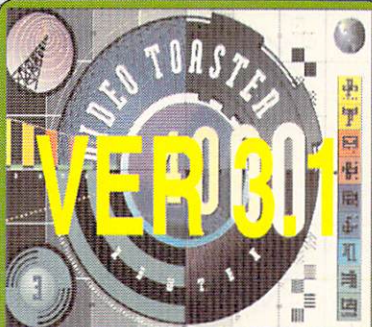
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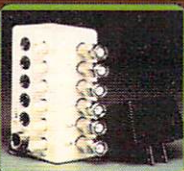
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Toccata 16/Samplitude-MS

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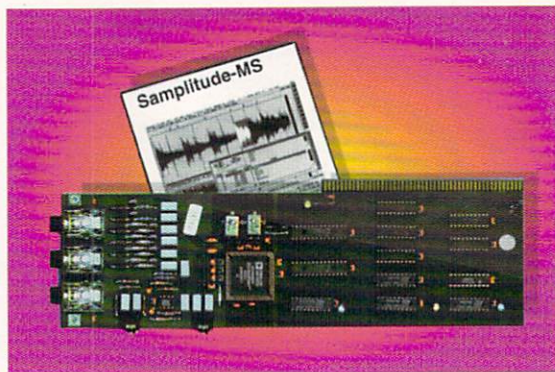
by R. Shamms Mortier

Audio and video applications are two areas of creative endeavor that continue to be addressed by the computer industry. Both have to be effectively linked in order to achieve a professional end product. A production that contains alluring professional animations and other visual candy, but a mediocre soundtrack can be perceived as a less-than-professional production. For this reason, it is vital that the producer, whether working in a fully outfitted state-of-the-art broadcasting studio or from a desktop video suite in the comfort of his home, have the best and affordable audio and video equipment.

Direct editing in real-time from hard drives enhances professional video and audio production. The capacity of hard drives and controller cards to achieve the necessary data transfer speeds for real-time editing, as well as the continual moderation in the cost of storage media in general, gives the producer access to tools and creative processes only dreamt of a short time ago. There are three elements necessary to consider when configuring a system that can allow you to edit directly from a hard drive: the drive/controller mechanism (can it handle the necessary speeds?), the hardware that acts as the interface or channel through which the data is sent (an internal or external unit), and the software (which offers the most needed creative options in terms of manipulating the data as it leaves the drive path on the way to your recorder). If any of these elements are missing, either because they are not affordable, work less effectively than expected, or are just plain not available, then the outcome of a professional production is in question.

The Toccata

The Toccata board from MacroSystemUS is not the first of its kind, having competition from the Sunrize Industries' AD516 and AD1012, in addition to the PeriSound 16 board from Interactive Video Systems. All of these have one thing in common: interactive non-linear editing. This means that



"I'm sold on the effectiveness and creative potential of this package."

instead of formulating a soundtrack in one single, linear piece, elements of recorded sound can be pasted together and targeted on the fly to a recording medium. In addition to its quality-laden features, there is one thing that sets the Toccata apart from its neighbors: price. The Toccata comes in at an unbelievable \$499.

The Toccata comes with three female RCA stereo pairs off the back of the board (Aux No. 1 input for capture, Main Line input for capture, and a Stereo Out), while a female 1/4-inch connector (Stereo Mic In) and another pair of RCA stereo inputs (Aux No. 2 input for direct connection to the Amiga output jacks) are attached to the board internally. These internal connectors are themselves attached to another bracket plate that takes up an additional end

slot position. In other words, no board that requires output from the back of the computer can be installed here. One way around this is to drill an appropriate opening in your case and to have the Toccata internal cables directed towards the drilled opening.

Some of the specific technical specs of the board were not available to me at the time of this writing (chip allocation, etc.), but MacroSystemUS is hard at work compiling specific product literature to be distributed in the near future (it may be available by the time you read this). Because of space tolerance levels, I had to remove the Toccata end plate when installing the board. It was impossible to seat the board correctly without this modification.

Installation Disk

Installation of the Toccata's controlling software was very simple and straightforward. The installation disk comes with four additional programs and a drawer of information for potential developers. The first drawer, ToccataInit, saves the current Toccata settings to disk. Next is the ToccataRecorder, a basic program that allows you to record an input without having to access the Samplitude software. Then, there is the ToccataJinglePlayer, which is a standalone Project player. Finally,

the ToccataControl, the most essential module, is where you tweak the Toccata's settings for recording mode, input options, output volume and the various mix setting levels. You can select these settings in the present project or save them as defaults.

Samplitude-MS

Developed by Dresden, Germany-based SEK'D, Samplitude-MS is the sampling software of the package. You have the option of installing it in your choice of several languages. To use it for manipulating 8- to 16-bit sound files, either the Toccata or the Maestro-Pro board (another MacroSystemUS product) must be installed in your computer. A future release of Samplitude-MS Professional promises to support 95 percent of the 16-bit boards on the market. The software, in its 2.0 release, has just added support for 16-bit audio along with integrating its use with the boards mentioned. The 2.0 software also adds many of the features we will soon discuss.

One of the most distinguishing marks of this software versus the competition is that you can edit together samples of dif-

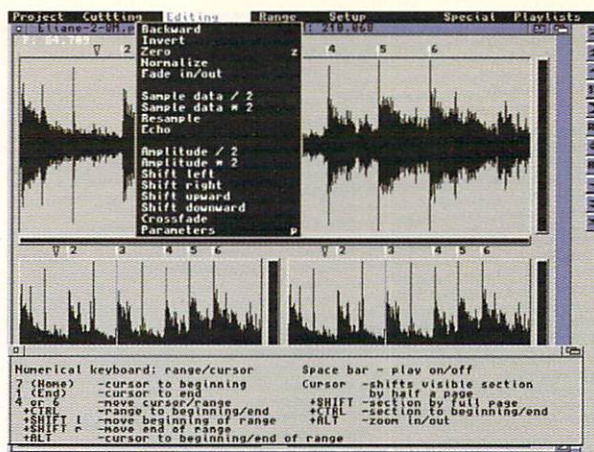


Figure 1: Here is the Samplitude Editing window displaying edit choices. In the background is the default sample waveform on three screens, ready to edit, while a help screen appears below.

ferent resolutions and on several simultaneous screens. The resolution (sample size) can be altered by a simple point-click menu of choices. Samplitude also supports screen resolutions ranging from PAL, NTSC, Interlace, ECS, AA and the A2024. Theoretically, samples recorded in from 9 to 16 bits can be reproduced in 14-bit quality by the Amiga sound channels by a process called cascading, which Samplitude fosters. The content of

Samplitude's Clipboard can also be permanently displayed. And the keyboard macros do not need the Amiga key depressed at the same time.

If you are using a RAM project type, the samples for it are kept in a RAM directory called RAM project type (RAP). Hard Disk Project types are kept in a directory called HDP on the hard disk. A third Project type, the Virtual Project, is where sample sections are displayed as rectangular areas, and the operations performed on them take on the appearance of a graphics manipulation program. There's room to explore here, using graphic elements such as color and alternate shapes to delineate specific audio parameters.

In the main edit area, all of the expected cut/paste operations are provided for working on your sample. You can add or delete workspaces and mix the on-screen sample with the stored clip. A separate Editing window allows you to choose whether selected sample sections should be reversed, inverted, faded, echoed, have their amplitudes (volume) cut in half or doubled, shifted,



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or cross-faded. There is also a Parameters window that offers toggles for setting the sample thickness in Hz, 8-bit, HiFi, Looping and RVS (my favorite), which allows you to hear a whole sample played in reverse without having to operate on it first.

Sampling Sound

A sample comes with the software for experimentation purposes and is stored in RAM by default. Titled Eliane, it's a sampled section of a jazz ballad and is great for playing with and getting used to the Samplitude controls. You can access any 8-bit sampler that can be addressed by Aegis AudioMaster software, which includes most all of the samplers that utilize the parallel port of the Amiga. But let's face it: this software shines best when addressing the Toccata (or MacroSystemUS' Maestro board). Sixteen-bit sampling and playback is the name of the game here. I used the Toccata inputs to sample my voice, output from DMusic through Blue Ribbon Soundworks' One-Stop Music Shop card and a piece of music from a CD, all in

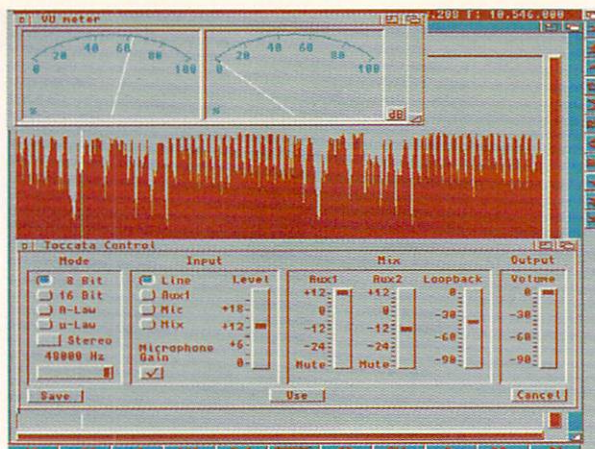


Figure 2: This figure shows the settings used to capture a 30-second sample from the output of Blue Ribbon Soundworks' One-Stop Music Shop. In the upper left are the VuMeters, which check the incoming sound. At the bottom are the ToccataControl window settings which made it possible to capture this sample.

full 16-bit stereo. The results? I'm sold on the effectiveness and creative potential of this package.

For the Composer

When the muses allow, I like to compose. Whether I am conceiving a piece of music for a soundtrack recording or live performance, we must consider that

the whole composition is made up of various repeated parts. Often, it is the arrangement of these parts that determines the character of a composition as surely as the melodic, harmonic and rhythmic elements of any individual section. There is a balance of tension and release from one section to another. With a dedicated non-linear sound editing package like the Toccata/Samplitude combination, it is possible to record each part of a composition separately to disk and then to use the system to glue these parts together in seamless fashion. Of course, you can take individual sections along the way and record them backwards or use cut and paste operations to redefine the fabric of a sequence. Add the ability to record directly to DAT, and you have the components of what marketable recordings are made of.

The bulk of the experiments focused on the One-Stop Music Shop (OSMS). Anyone out there who has this superlative synthesizer realizes the high-end sound capabilities it offers. If you have this card on the same computer that the Toccata resides, you can tap the OSMS

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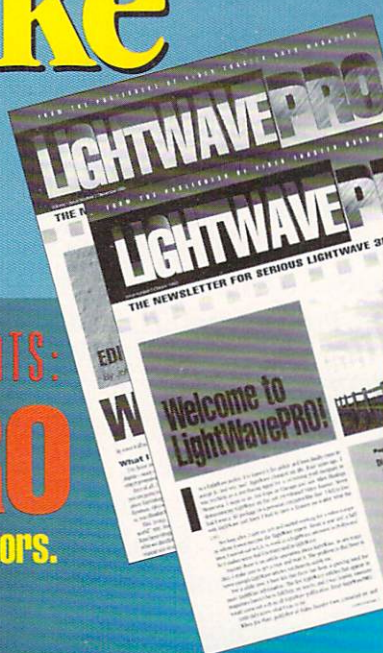
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outputs directly into the Toccata board and record away. In my setup, the OSMS card is on an Amiga 2000 that I use specifically for music projects. I tapped out of the OSMS on my A-2000 and into the Toccata on an A-3000 Tower, using the line input on the Toccata (the second pair of RCAs on the back of the card). See Figure 2 for how the ToccataControl screen was configured beforehand as well as the waveform of the sequenced sample I recorded. By gluing together many such samples in a dedicated Samplitude Project, I can record the finished composition to a high-end medium with no discernible loss of signal quality.

The Future as Digital History

The Toccata works with an accelerated Amiga that has an open Zorro slot and demands the use of a fast hard drive. An Amiga 3000 is a great choice because the onboard SCSI controller allows fast transfer rates for non-linear, real-time operations. Contact MacroSystemUS if you want just the Samplitude software alone (though I would recommend saving your pennies and purchasing the whole bundle). The software works on any Amiga, but the more RAM you have (if you don't have a hard drive), the fatter the samples you can utilize. As an example of hard drive storage needed, 10MB of space allows you to sample 16-bit stereo, while 8-bit mono requires about 1.25MB.

The best news is that Blue Ribbon Soundworks is going to support this package from within Bars and Pipes Professional, reinforcing an already strong alliance. I would like to see MusicX and DMusic do the same. MacroSystemUS is designing an enhanced professional level Samplitude for a near-future release that will include loads of additional Toccata-connected editing options. The new software will be available as an upgrade path for present Samplitude owners as well as a brand new package for interested Amiga electronic musicians. It's as solid and quality-constructed as a high-end German automobile. The best thing you can do is plan for the future now and purchase this product the moment the opportunity arises.

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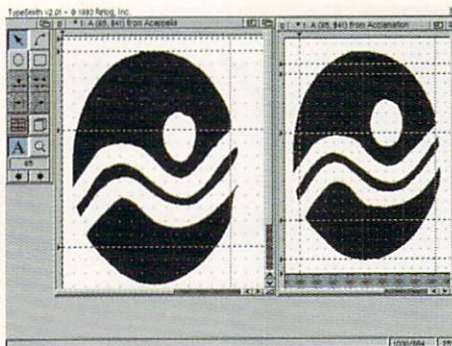


Figure 1

interest in matching letterhead, business cards, etc., this is the time to sell these items. This can mean extra income and repeat business.

The next step is to determine who can print your letterhead design. Obviously, you are a video person and more than likely do not have a printing press in your garage. The best thing to do is talk with printers in your area and find out what font formats are acceptable and if they give commission discounts (a cost percentage markdown on work brought to the printer by another business professional). The standard agency commission discount is 15 percent. Look at some samples to deter-



Figure 2

mine the printer's quality of work; also find out if they are punctual and meet deadlines. Remember your client is dealing with you and not your printer. If your printer does a bad job, then your client may choose not to hire you again. And if your client wants to go with their own printer, then you will lose the commission. However, most clients don't want to hassle with the printer and will be glad if you take care of it for them.

Typesmith allows fonts to be saved in several formats. Find out what the printer's layout program supports and convert fonts if necessary. For example, ProPage requires the font to be in Compugraphic format; Pagestream and most other



Figure 3

Macintosh and PC desktop publishing programs directly use Adobe Type 1 fonts. Make sure that when you give the fonts or layout to your desktop publisher or printer that you save the files to an IBM-formatted disk (Amiga device PC0:).

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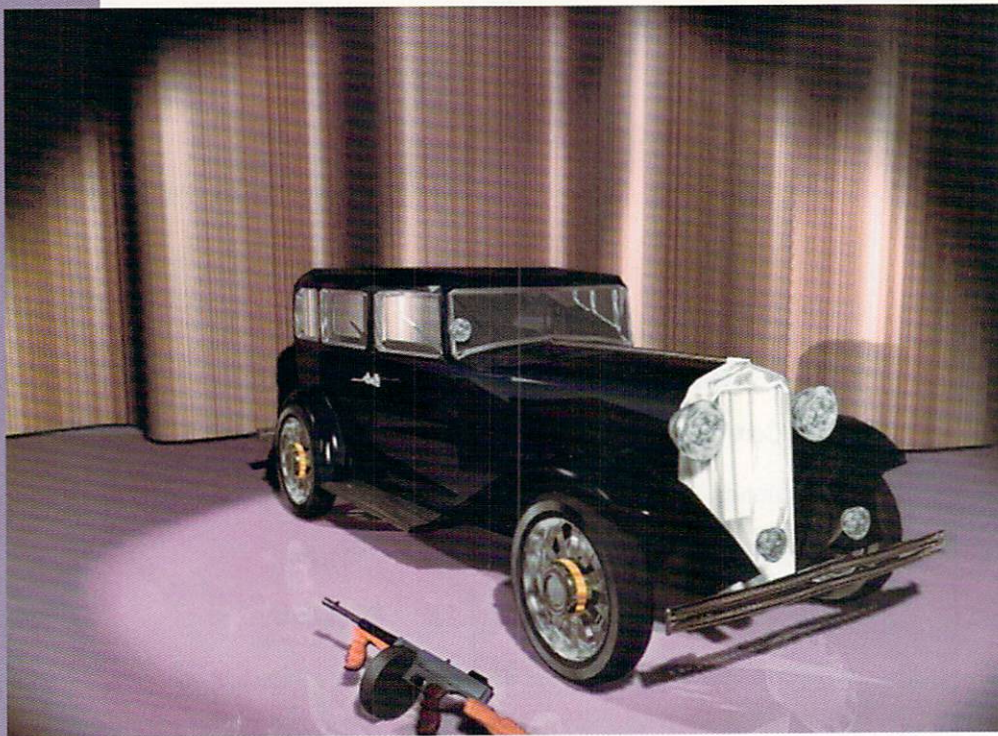


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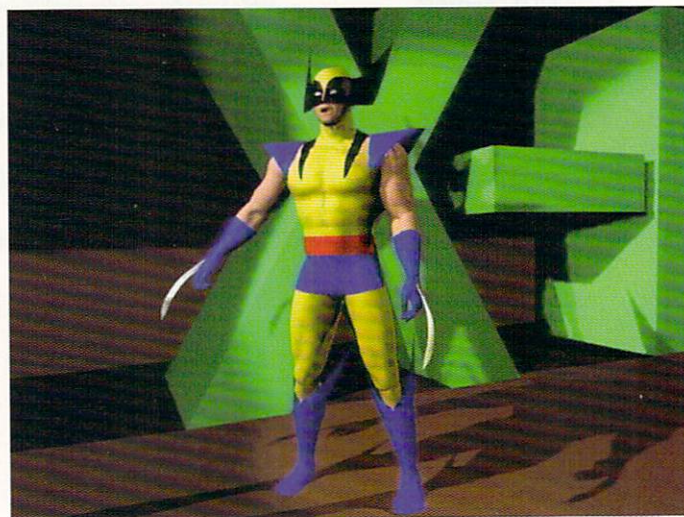
TOASTER GALLERY



Gallery Submissions

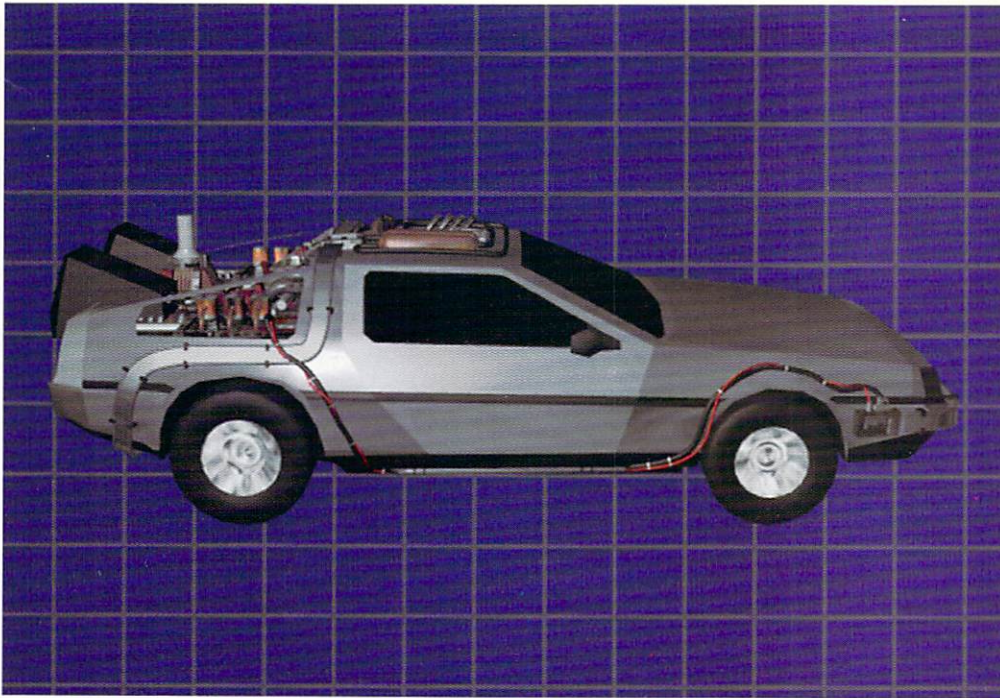
If your Gallery submission is published in *Video Toaster User*, we will extend your subscription for one year and send you a *Video Toaster User* T-shirt.

Send your submissions to:
Avid Publications
Attn: Toaster Gallery
273 N. Mathilda Ave.
Sunnyvale, CA 94086



Tommy Gunn

Intended for use in a 1940s-style animation, *Mob Car and Machine Gun* (top) is comprised of 44 objects, 46 surfaces and 39,167 polygons. In *Life Savers* (bottom, left), Tommy Gunn presents eye candy. *Wolverine from X-men* (bottom, right) was completed by remodeling the humanoid object to resemble the wolverine character from *X-men* Comics. The scene took 11 minutes to render.



Mojo

This DeLorean is a faithful model from the *Back To The Future* films. It began with Viewpoint's DeLorean object and was surfaced over several weeks.

The image was then created entirely in LightWave 3D on a Toaster 4000 as part of an animation for Universal Studios in Hollywood. The car contains approximately 10,000 polygons.

Mojo, a frequent contributing writer to *VTU*, currently works as an animator for Foundation Imaging.

Tommy Gunn

Me and Her (right, top) was created using a still of the animator. Total rendering time was 40 minutes. *Underwaterman* (right, bottom), inspired by the movie *The Abyss*, took six minutes per frame to render. All five images were created with an Amiga 2000 with 28MHz and a '040, 450MB hard drive. Also used was a SyQuest 88 and an Amiga 4000 with 12MB of RAM with a 250MB hard drive. Both machines have Toaster 3.1 software linked with Wavelink and use Digital Processing System's Personal Animation Recorder. All animation was dumped to Betacam SP. Based in New York City, Gunn is the animation director for the Visual Animation Group. He can be reached at (212) 254-9041.



East

MAVTUG

Bill Sharer
6629 Paxton Rd.
Rockville, MD 20852-3659
Voice/Fax (301) 230-2847
BIX: bsharer
Compuserve: 76426,112

The Amiga Video Graphic Society

Roger L. Elowitz
32 Duncan Dr.
Morganville, NJ 07751-1649
(908) 536-4786
Meets on the second Friday of the month
7:30 p.m.

Pittsburgh Commodore Group No. 346

Robert W. Peach
P.O. Box 16126
Pittsburgh, PA 15242
BBS: (412) 396-5483
Meets on the third Sunday of each month at Duquesne University's Mellon Hall (except July and August)

Amuse

151 First Ave., Ste. 182
New York, NY 10003
(212) 460-8067
Fax (212) 290-6747
BBS (718) 539-3338
Meets on the first Tuesday of the month at:
NYU Main Building
32 Waverly Pl.
8:00 p.m.

Fine Art Productions User Group Society Network

Richie Suraci
Fine Art Production
67 Maple St.
Newburgh, NY 12550
Voice/Fax (914) 561-5866
Flexible meeting times, call for information

MicroWave User Group

Art Baldwin
3670 Delaware Ave.
Buffalo, NY 14217
(716) 873-1856
BBS: (716) 873-9262
Meets on the first Wednesday of the month
7-9 p.m.

Suffolk Video Club

Attn: William Pinto
15 Columbus Ave.
Brentwood, NY 11717-2506
(516) 273-4876
Meets on the second and fourth Thursday of the month (except July and August)

Toasterholics Anonymous

Armato's Pro Video
Chris Hendrick

6716 Myrtle Ave.
Glendale, NY 11385
(718) 628-6800
Meets on the second Thursday of the month
7 p.m.

LightWave User Group

System Eyes Computer Store
650 Amherst St.
Nashua, NH 03063
(603) 889-1234
Meets on the second Tuesday of the month
7 p.m.

South

Vision VT Users Group

Vision Communications
Interactive
Sam Young
4000 Piedmont Pkwy.,
Ste. 131
High Point, NC 27265
(910) 841-6988
Meets every six to eight weeks for five hours on Saturday mornings.

VA Toaster Forum

Tidewater (Norfolk, Virginia Beach, Hampton)
George Triolet
902 Tabb Lakes Dr.
Yorktown, VA 23693
(804) 867-9056
Meets the first and third Wednesdays of the month
7 p.m.

WV Video Toaster Users Group

Destiny Images
Jamie Cope
P.O. Box 4631
Charleston, WV 25364
(304) 925-4741
Meets on the second Tuesday of the month at Computers Plus in S. Charleston
7 p.m.

A-TUG Border States Amiga Group

Micro-Tronix
1614 Towson Ave.
Fort Smith, AR 72901
(501) 782-4048
Meets on the second Saturday of the month
9 a.m.

Arkansas Toaster Users Group

David Settlemoir
AG&FC Video Productions
2 Natural Resources Dr.
Little Rock, AR 72205
(501) 223-6352
BBS: (501) 223-2516
Meets on the second Thursday of the month
6:00 p.m.

West Tennessee Video Toaster Users Group

Brian Churchill
8886 Davies Plantation

Memphis, TN 38133
(901) 385-1711
Meets on the third Tuesday of the month at the Main Library at 1850 Peabody
7:00 -9:00 p.m.

Club Toaster

St.Petersburg/Clearwater
Tampa
Jeff Asbury, Allen. M. Drulia
9125 U.S. 19 North
Pinellas Park, FL 34666
(813) 576-5242
BBS: 813-527-1722
Meets on the last Thursday of the month
7 p.m.

Toast 'n Jam

Debby Willis
Computers Plus
1808 W. Int'l Speedway Blvd.
#304
Daytona Beach, FL 32114
(904) 252-6442
Meets on the second Tuesday of the month
7:30 p.m.

VLS Graphics Users

1533 Lakewood Rd.
Jacksonville, FL 32207
(904) 396-0746
9600 V42.bis
6p-9a M-TH, 6p.F-9a,M
Meets on BBS
(904) 396-0318

Southwest Florida Toaster Users Group

Jim Franke
944 Country Club Blvd.
Cape Coral, FL 33990
(813) 574-8999
Fax (813) 574-8999
Meeting times vary. Call for information.

Midwest

Channel Z Toaster User Forum

Brian Plante
492 Sheridan Rd.
Evanston, IL 60202
(708) 332-1710

Discover-Ring Video Toaster

Ring Software
726 E. State St.
Geneva, IL 60124
(708) 232-0009

Digital Arts Toaster User Forum

122 W. 6th St.
Bloomington, IN 47404
(812) 330-0124
Meets the second Saturday of the month
4 p.m.

Toast of Tulsa

Stewart Gus
Computer Consultants, Inc
P.O. Box 691810

Tulsa, OK 74169
(800) TOAST-OK
Meets the second Saturday of the month at 2:30 p.m. at Hardesty S. Regional Library, 6737 S. 85th E. Ave.

TUGSM

Toaster Users Group of Southeastern Michigan
Michael A. Greer
25109 Greenbrooke Park Dr.
Southfield, MI 48034
(313) 355-5916

Mid-West ToastMeisters

Great Plains Motion Picture Company
Brent Malnack
11011 Q St.Studio 105 C
Omaha, NE 68137
(402) 339-1001

Rockies

Rocky Mountain Amiga Users

Toasters Sig
Don James
9625 E. Arapahoe Rd.
Englewood, CO 80112
(303) 799-9733
Meets on the second Tuesday of each month at Virginia Village Public Library: 1500 S. Dahlia St. Denver, CO
7-9 p.m.

West

Inland Empire Toaster Users

Neil Abeynayake
1033 Pacific St.
San Bernardino, CA 92404
(909) 885-5259
Meets on the first Thursday of the month
6:30-9:30 p.m.

LA Video Toaster Group

Mark Stross
10330 La Tuna Canyon Rd.
Sun Valley, CA 91352
(818) 552-5024
(818) 552-5025 fax
(818) 883-8979 BBS
Meets on the second Saturday of the month from noon to 5 p.m. at the North Weddington Arts Center, 10844 Acama St., No. Hollywood, CA

Orange County Toaster Users Group

Bruce Gleason
Thumbs Up Video
1206 W. Collins
Orange, CA 92667
(714) 633-3629
Meets on the third Thursday of the month
6:30 p.m.

Sacramento Video Toaster Society

Glen Cornish
Applied Computer Systems
6108 Watt Ave.
North Highlands, CA 95660
(916) 692-0520
(916) 338-2000
BBS: (916) 338-2543
Meets on the third Wednesday of the month
6:30 p.m.

San Diego Video Toaster Users Group

Mike Amron
2334 Galahad Rd.
San Diego, CA 92123
(619) 277-5699

Silicon Valley VTU Group

HT Electronics
Andrew Timmons
2427 Hart Ave.
Santa Clara, CA 95050
(408) 243-9233
Meets on the last Thursday of the month at HT Electronics, 275 N. Mathilda Ave., Sunnyvale, CA
7 p.m.

Amiga LightWave User Group

MG Software & Video
Mark Miller
6660 Reservoir Ln.
San Diego, CA 92115
(619) 463-0545
Flexible meeting times, call for information

N.A.G. Desktop Video SIG

Scott Wehba
Infinite Solutions
14780 SW Osprey Dr.,
Suite 240
Beaverton, OR 97007
(503) 579-5799
Meets on the fourth Thursday of the month
7 p.m.

Amiga Video Association, Inc.

Forrest McKinney
PO Box 550248
Dallas, TX 75355-0248
(214) 826-5113

Professional Video Toaster Forum

Omni International Trading
Monte Strohl
316 Westlake Ave. N.
Seattle, WA 98109
(206) 628-2923
Fax (206) 628-4324
Meets on the second Wednesday of the month
7 p.m.

T.U.G. 98XXX

Larry Simpson
Amiga Northwest Studio
6335 NE 159th
Bothell, WA 98011
(206) 488-1129

Meets on the third Thursday of the last month of the quarter

Washington Area User Group

Wade Nelson
Spectral Multi-Media
131 106th Ave. N.E.
Bellevue, WA 98004
(206) 451-4075
Meets on the first Saturday of the month
11:00 a.m.

Canada

B.C. Professional Video Toaster Forum

Anthony Alvaro
Castle Computer Systems
#200-4170 Still Creek Dr.
Burnaby, B.C. V5C 6C6
Canada
(604) 298-9866
Flexible meeting times, call for information

Toaster Professional Forum

Filmclips, Inc.
25C Mallard Rd.
Don Mills, Ontario M3B 1S4
Canada
(800) ON TOAST or (416) 441-1661
Flexible meeting times, call for information

Video Makers of Calgary

David Lundquist
The Computer Shop
3515 18 St. SW
Calgary, Alberta T2T 4T9
Canada
(403) 243-4356
Meets first Wednesday of the month
7:00 p.m.

Video Toaster User Group

Jean-Francois Boisclair
Maison du Logiciel
Softwarehouse
2466 Jean-Talon Est,
Montreal, Quebec H2E 1W2
Canada
(514) 374-3614
Fax (514) 722-0627
Meets on the last Tuesday of the month
7-10 p.m.

Far East

OvenRange

Katutoshi Takahashi
201 Sundecar
1-21-9 Koenji-Kita
Suginami-Ku Tokyo 166
Japan
BBS: (Orange-2)
81-3-3733-9816

Canon

RC-570

Still Video Camera



- Features:**
- 1/2" CCD with 410,000 pixels records in the frame mode razor sharp images with 450 lines of horizontal resolution
 - Built-in 3:1 continuous zoom lens. The 8-24mm lens is equivalent in 35mm format to a 43-130mm zoom. For interior shooting there is an optional wide angle lens which gives you an equivalent 28mm lens.
 - The RC-570 functions as still video player and recorder. It can record still images from any video source such as camcorders, VCR, TV and (if you have an encoder board) from a PC. It can also play back to a monitor TV or VCR.
 - If your PC is properly equipped use the RC-570 as import/export device. For eg. send your video floppy disk images into your PC for manipulation and then re-record them to floppy disk (video).
 - Optional Canon FA-C57 film adapter lets you copy slides or negatives directly to floppy disk.
 - Interval shooting with preset intervals of from 1 to 99 minutes. Interval playback lets you playback images automatically at an interval of 4 seconds per image.
 - Record in field or frame modes. Up to 50 images per disc in field mode. 25 images in frame mode when higher resolution is called for.
 - Continuous shooting of 2.5 images per second.

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- Film can be stored by recording on videotape using a VCR.
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- Replace overhead, opaque and slide projectors with enjoyable viewing on your TV.
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- Designers and painters can use FOTOVIX to create images

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- Manual 3X Power Zoom Lens
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- Exclusively for 35mm slide or negative transfer.
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Portable LCD Video Projector



The PLC200NS LCD large-screen video projector is the ultimate presentation tool. With its built-in long-throw lens system you have the ability to project a giant image up to 300" diagonally on any wall or screen from 44' away. With a viewing area 176 times larger than a typical 25" monitor you get the visual impact needed to make your audience sit up and take notice.

Features:

- Single-ens simplicity lets you project 25" to 300" diagonal images without expensive optional lenses.
- Reverse picture scanning button automatically reverses the video image for instant rear screen projection.
- High-definition image filter increases picture detail by heightening contrast and improving sharpness over every inch of the screen.
- Independent electronic zoom and focus gives you the added benefit of smooth, accurate focusing over a variety of projection distances.
- Includes 14-function, back-lit infrared remote. With the remote you can adjust the picture and sound from anywhere in the room.
- Image expand button gives you the ability to focus on important points by enlarging the center of the image a full 100%.
- On-screen menu display lets you adjust color, tint, brightness, sharpness, contrast and volume.
- Electronic keystone adjustment gives you full, square-cornered images from projection angles of up to 20°.
- Built-in audio system for up to 10 watts of crisp, clear stereo sound. Left and right audio output jack allow you to drive external speakers without additional amplifiers.
- Connects to any VCR, camcorder or laserdisc. Includes RCA composite, BNC composite, and S-Video inputs.

Canon L2

INTRODUCING THE NEW CANON L2 HI-8 CAMCORDER WITH VL MOUNT FOR INTERCHANGEABLE LENSES, RC TIME CODE AND DIGITAL EFFECT FOR UNLIMITED 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 EOS-VL 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 mean the L2 can record much more than audio and video. It will mark tapes for speedy identification, and even find recordings by their date.



- Includes wide range 15:1 zoom lens with special coating to cut flare and ghosts while providing high contrast and natural tonal gradation. The lens also has an 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/zoom microphone which lets you select the stereo angle and recording sensitivity.
- High speed Piezo 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 1/100 to 1/10,000 of a sec.
- Includes a wireless remote controller which make it a highly sophisticated edit deck. Includes a full-function shuttle dial allowing easy selection of a range of forward and reverse playback speeds for swift, precise scene location.

- Automatic exposure plus manual control lets you lock the aperture at any setting from fully stopped down to fully open.
- The L2 has a variety of special effects. Add an extra dimension to your video productions with digital image manipulation and striking scene 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** - (dissolve)
- Wipe** - this effect slides the picture off the screen while simultaneously replacing it with a new scene.
- Freeze** - freezes the picture while sound recording continues 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 solarization effects.

Nikon LS-10 Coolscan

Compact 35mm Slide Scanner

The new Nikon Coolscan 35mm Slide Scanner provides a state-of-the-art solution to digital imaging. With its combination of optical definition, color sensitivity, efficiency, economics and reliability - it sets the new standard for quality and value in desktop film scanners.

- Achieves high res. scans up to 2700 dpi (dots/inch).
- Simply insert a 35mm slide or negative, select a resolution up to 2700 dpi and Coolscan does the rest.
- The Coolscan scans any 35mm film - slides and negatives, black & white and color, producing images with amazing detail and superb image quality. These images can then be used to produce everything from color comps to true four-color separations, making the Coolscan perfect for all your desktop publishing, presentation graphics, and multimedia applications.
- Unlike traditional scanners which rely on fluorescent or tungsten illumination and generate large amounts of heat, Coolscan operates on a patented solid-state, LED illumination. LED technology has several benefits: the light source is (which means you don't have to recalibrate the scanner).
- Patented solid-state illumination technology makes it exceptionally compact and quiet with very low power consumption.
- Mounted slides pop straight into the scanner, and the Coolscan comes with a filmstrip holder for loading unmounted film. Filmstrip length is up to six frames.
- Provides real focus control, a feature lacking on many scanners. Adjust the focus with a thumbwheel on the Coolscan.

TWO MODELS AVAILABLE:

- INTERNAL unit which mounts into available half-height disk slot (specify Mac or PC)..... Call
- EXTERNAL lightweight, portable unit (specify Mac or PC)..... Call



Panasonic

AG-EP60

Color Video Printer



The AG-EP60 provides outstanding color quality using 256 gradations each of yellow, magenta and cyan to print nearly 16,780,000 different color tones. Advanced circuitry optimizes picture sharpness, and proprietary Adaptive Contrast technology enables outstanding accuracy in reproducing skin tones. Lets you make on the spot high quality color prints from your TV, VCR, computer or camcorder.

Features:

- Multipicture Print** - This function gives you prints divided into 4, 9, 16 or 25 squares - with the capability of reproducing a different image in each square.
- Strobe Print** - This function prints consecutive images to capture movement in sequence dividing the print into 4, 9, 16, or 25 squares.
- Dual Print** - The Dual Print function gives you one normal size print plus a 1/9th normal size print of a different image in the bottom right hand corner.
- Zoom Print** - Enlarge any part of an image four times and print the enlarged detail.
- Card-sized (Split) Print** - This Split Print function divides the print down the center for two duplicate card-sized prints. This can also be used to crop landscape format shots into the portrait format.
- Wireless Remote Control** - Control all basic operations - incl. print mode selection - without touching the unit.
- Parallel Control Port** - The 14-pin parallel control maintains compatibility with many existing 14-pin parallel controllers. This makes it easy to integrate the AG-EP60 into wired control type systems.
- Versatile System Connectivity** - The multiple connection facilities of the AG-EP60 include composite BNC, analog RGB and S-Video inputs for crystal-clear image reproduction from a variety of sources.
- Superimpose** - Using the AG-EP60 with the optional VW-C65 Character Generator lets you add titles to your prints.
- Adjustment controls for sharpness, brightness, tint & color.

NEW! AG-EP80

Color Video Printer



The AG-EP80 is a color video printer that creates high quality prints from a variety of video sources. It features state-of-the-art technology to deliver prints with outstanding picture sharpness, vivid colors, and accurate skin tones. In addition to its superb picture quality, the AG-EP80 has a host of special print modes that make it a valuable tool for business, security, law enforcement, and educational applications. With the addition of the optional foot pedal or thumb trigger, it is absolutely ideal for medical and dental applications.

AG-810

Still Video Player/Recorder



The AG-810 packs an enormous communications punch yet in an easy-to-use, compact video format. With the AG-810 you can record up to 50 color pictures on a single 2" floppy disk, and use any TV set or monitor to present high-resolution color stills. The metal particle formulation of the disks provides extremely detailed, high-resolution color pictures. Any standard NTSC video signal can be used to record an image on the AG-810, be it from a video camera, camcorder, VCR, or cable/broadcast TV signal.

Features:

- A video picture "frame" on your TV screen is made up of two "fields". Switchable Frame/Field recording capability lets you record each picture as a field or as a frame. This means you can record up to 25 high-quality frames, or as many as 50 sharp, clear field pictures on a single disk.
- You can mix field pictures and frame pictures on the same disk, and the AG-810 automatically plays them back in the appropriate mode.
- The AG-810 offers you the convenience of checking a picture automatically, as soon as you've recorded it.
- The AG-810 will play back your entire video "slide show" automatically, one picture at a time. Each picture will be displayed for about 4 seconds. Or, you can use the optional Wireless Remote Control Unit (AG-AB0) to set the pause time from 1 to 8 seconds.
- You can set the AG-810 to cycle through all the pictures on a disk for continuous play. To protect the disk, playback stops automatically after about 12 hours.
- Dual video outputs S-Video output let you present a picture on up to three screens at once.



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CLOSED FROM
MARCH 23 THRU APRIL 3

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 WJMX-30, WJMX-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.
- MPC Audio and MIDI support for embedding sounds and MIDI sequences in your EDL.
- DPS TBC II & III support - you can control two personal TBC cards and the Personal V-Scope from a serial port.

Software Features:

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

CALL

Sundance Technology Group Q-BASE Scene Logging Database

- Connects any Macintosh (MacPlus and up) to any source VCR with RS-422 9-pin interface. Cable and Software included.
- Machine control provided via the RS-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 reel/timecode or by alphanumeric.
- Events can be reordered with automatic renumbering by simply dragging and dropping.
- Move or delete single, contiguous or non-contiguous events.
- Print current and screen display. Log, Group or Event List.

\$499.00

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 DMG capable sources.
- Time Code Math functions: add and subtract time code values from IN, OUT, or DURATION.
- Screen monitoring of VITC, LTC, or Control Track for status (drop/non-drop and interpolated).
- Edit match, backslat, 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.

\$1499.50

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 GVO 100 Protocol.
- Includes Q-Base and all features of Q-Cut Cuts-Only.
- Includes all cables and connectors for A/B Roll editing.
- Software allows designation of any machine (from up to 15) to be the record VCR.
- Roll up to 6 sources in slave/sync mode.
- Double Play/Double Record for recording and editing two camera ISO productions.

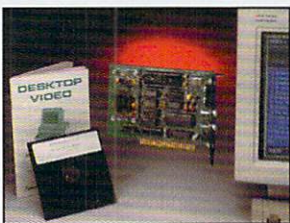
\$2995.00

- **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-assemble.

FutureVideo

EC1000 PRO Series • EditLink 2200/3300 Series

- Using low-end industrial VCRs like Panasonic AG-1960, AG-1970 an accuracy of 2 frames is achieved. With same VCRs and time code 1 frame accuracy is achieved.
- Any of Future Video's controllers can edit between any combination of VCRs equipped with Panasonic 5-pin serial remote terminal (AG-1960, AG-1970) and over 100 consumer and prosumer camcorders and VCRs equipped with Sony Control-L (LANC) serial remote terminal.
- They each perform four editing modes - quickly and precisely executing Assemble, Video Insert, Audio Dub and Audio/Video Insert editing modes.
- True E-E (Electronic - Electronic) Preview - insert edits with certain VCRs may be previewed in true E-E model allowing all edits to be "rehearsed" before they are performed) ensuring correct placement of each scene in your production.
- They provide fast and accurate editing by using both the player (source) and Record (edit) VCRs to their physical position.
- Reliability - All FutureVideo edit control products carry a full 1 year parts and labor limited warranty.



EC-1000 PRO

- EC1000 PRO is a stand-alone, cuts-only control track edit controller. Controls any two machines with Panasonic 5-pin and/or Sony Control-L serial editing terminals.
- 5-digit LED display (hours/minutes/seconds)
- Up to 9 scenes can be stored in memory and then executed automatically.
- Built-in GPI trigger fires at edit pre-roll and edit points. Can be used with any SEC (Special Effects Generator) with GPI input like the Video Toaster, WJMX-30 or WJMX-50.

EC1000 PRO MKII

- EC1000 PRO MKII has all the features of EC1000 PRO Plus.
- Can read Sony's 8mm RC time code. Sony camcorders (CCD-V801 and future models) that output RC time code can be used, resulting in 3 frame accuracy.
- 7-digit LED display (hours/minutes/seconds/frames)
- Built-in RS-232 serial control for connection to IBM or AMIGA computer and Future Video's Edit List Manager series software providing a fast intuitive means to create and manage EDL's (Edit Decision List) of 999 events.

EC1000 PRO/TC MKII

- Same as EC1000 PRO MKII except also has a built-in SMPTE time code reader totally compatible with Professional SMPTE time code. With low-end industrial VCRs like Panasonic AG-1960, AG-1970 frame accuracy is achieved repeatedly without tape slippage errors.

EditLink 2200

- EditLink 2200 is a plug-in card edit controller. A PC-based card that transforms your IBM PC/AT/386/486 compatible into a powerful videotape editing workstation.
- Has all the features of the EC1000 PRO MKII plus it also controls selected RS-232 industrial VCRs like the JVC BR-605, Sony CVD-1000 V-Deck, and Panasonic AG-5700.
- Has programmable GPI trigger for timed turn on, turn off, or pulse. So now your transitions can be set anytime and not just at the edit points.

EditLink 2200/TC & TCG

- 2200/TC • Same exact card as EditLink 2200 Plus has professional SMPTE time code reader built-in.
- 2200/TCG • Same exact card as EditLink 2200 Plus comes with as well as reads professional SMPTE time code.

EditLink 3300 & 3300TC

- With EditLink 3300 true A/B Roll (3-machine control) editing is now possible using low-end industrial, and prosumer VCRs and camcorders.
- EditLink 3300 can control a variety of machines including those with Panasonic 5-pin and Sony Control-L Protocols, as well as selected RS-232 serial VCRs.
- Provides three external programmable GPI triggers.
- EditLink 3300 connects to your computer via a built-in RS-232 serial port. It is platform independent so it will work with AMIGA, MACINTOSH or IBM.
- **3300TC** • Has same features plus SMPTE Time Code reader

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/Synchro Edit/5-pin Edit terminal/Edit switch
- Includes Panasonic metal system case

- Three 1/3" CCD image sensor system delivers over 530 lines of horizontal resolution
- New 10:1 2-speed zoom lens (see above) 6-60mm 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 VITC (Vertical Interval Time Code) time code generator gives absolute address to each frame of video for frame accurate editing (with specific edit systems)
- **Digital Mix** - for soft fade-over between memorized still and moving images
- **Digital Tracer** - to add an after-image effect to moving subjects
- **Digital Still** - lets you freeze a particular scene for as long as you like, without interrupting sound recording
- **Digital Zoom** - Thanks to digital processing, you can enjoy shots with ultra-high magnifications of up to 100:1
- **Digital Gain-Up** - delivers clear, distinct images in low-light levels, even down to 1 lux!
- **Digital Strobe & Digital Wipe** - add professional effects to your shooting.
- Audio/Video Fade-In and Fade-Out for smooth, professional scene transitions
- Automatic iris plus manual control for fine adjustment
- Variable high-speed shutter from 1/50 to 1/6000 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 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, clean, seamless edits. 5-pin edit terminal makes it easy to set up an editing system.
- Jog/shuttle Dial for varied playback from slow motion to high-speed search (shuttle) and frame-by-frame picture control in forward and reverse (jog).
- Outputs the audio track during search operations for cueing and quick confirmation of audio recording.
- Advanced dual-loading mechanism features a quick response time, exceptional tape 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.



WJ-MX30 Digital A/V Mixer

The Panasonic WJ-MX30 A/V Digital Mixer is designed for use in producing special-effect images by utilizing the built-in frame synchronizer and other digital processing circuits. In addition to the mix effect of the conventional digital A/V mixer, the WJ-MX30 offers such features as luminance key function, digital effect, downstream key effect, wipe effect, fade control, memory and many more. With the WJ-MX30 and your imagination, there are many possible function combinations which are left to your creativity.

- Combination of 7 basic keys can create 108 different wipe patterns.
- Two-channel digital field synchronization allows special effects in each of the WJ-MX30's A/B program buses.
- Automatic Take button with adjustable transition rates.
- Wipe boundary effects: soft/border 18 matte colors available.
- Can fade to and from white, black or any of eight matte colors.
- Automatic fade button with adjustable rates.
- Picture-in-picture function allows the B-bus picture to be compressed in selectable 1/4, 1/9, 1/16 size of a full screen
- Digital effects including strobe, still, mosaic/scramble, negative/positive, paint, monochrome, and AV synchro.
- Double picture-in-picture function compresses both A and B sources. Plus every mode can be trimmed with hard/soft edges borders, shadow, shadow and border.
- Joystick positioner allows moving wipe location.
- Audio Follow allows audio mix to be synchronized to A/B rolling.
- Video, Audio and Titles can be individually or synchronously faded.
- Has eight separate memories that enable virtually instant recall of frequently used effects.
- Color corrector enables adjustment of color in images from A or B bus.
- Built-in four channel audio mixer with four audio level adjustments. Also has visible LED audio level meter.



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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 breakdown and recovery overcome inertia and friction for excellent "whip pans".
 - Consistent drag levels in both pan and tilt axes.
 - Flick on, flick off pan and tilt caliper disc brakes.
 - Greater control, precision, flexibility and "touch" than any other head on the market.
 - Touch activated, time delayed illuminated level bubble.
 - Working conditions from as low as -40° up to +60°C.
 - SD 12 weighs 6.6 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 fiber construction (Model #3523). They incorporate torque safe clamps to provide fast, safe and self-adjusting leg clamps.
- "Torque Safe" requires no adjustment. Its unique design adjusts itself as and when required, eliminating the need for manual adjustment and maintenance and making for a much more reliable clamping system.
 - New hip joint eliminates play and adds rigidity.
 - They both feature 100mm levelling bowl, fold down to a compact 28", and support 45 lbs.
 - The #3513 weighs 6.5 lbs and the #3523 CF (Carbon Fibre) weighs 5.2 lbs.

Vision 12 Systems

All Vision 12 systems include #33643 SD 12 dual 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 #33863 SD-22 dual fluid and lubricated friction drag pan/tilt head, single telescoping pan bar and clamp with dual 100mm/150mm ball base.

SD-22E System

- 3386-3 SD-22 Pan and tilt head
- 3219-2 Second telescoping pan bar and clamp
- 3516-3 Two-stage EPF tripod with 150mm bowl.
- 3314-3 Heavy-duty calibrated floor spreader

SONY

EVW-300

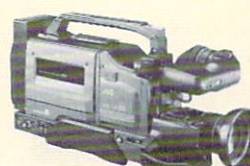
Hi-8 3-CCD CAMCORDER



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

Features:

- Equipped with three high density 1/2" IT Hyper HAD image sensors. Has an excellent sensitivity of F8.0 at 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.
- A variety of automatic adjustment functions for different lighting conditions are incorporated into the EVW-300: ATW (Auto Trace White Balance) - when ATW is turned on 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 - for situations where the lighting between subject and background is different (subject is underexposed) the Intelligent Auto Iris automatically examines the scene and 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 LUXUM 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 EEI 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



- Three 1/2" CCD chips mounted with spatial offset technology delivers superb 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, MII 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 50 to 1/2000 seconds
- 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.
- Sports very low power consumption. The TSC-200 draws only 16 watts per hour allowing 100 minutes of recording time with a single NP-18 battery.
- Camera body is made of magnesium alloy previously found only on broadcast cameras. Still, lightweight at only 13 pounds in standard configuration.



HITACHI

ZONE-C

3-CCD Dockable Camera

- Using three 2/3" CCD chips and high accuracy CCD technology the ZONE-C

- The +24dB high gain mode and new Super High Sensitivity (SHS) function provide operation down to 1.5 lux at f11.8.
- Permits contrast control for better reproduction of dark areas when shooting high contrast scenes.
- Six-memory auto white balance provides two memories for each optical filter position.
- Auto Knee circuit compresses extreme highlights preventing white clipping of those areas.
- In addition to the standard 5-stop electronic shutter, the new lockscan feature permits the continuous adjustment of the shutter speed in 1H steps to shoot a computer monitor without flicker.
- Four built-in scene files. Seven items memorized in these scene files including: white balance, master gain and detail level.
- Viewfinder display of self-diagnostics during auto white and STATUS display of operational control settings.
- Flare correction maintains black balance during changes in scene contrast.
- Very high resolution viewfinder (600 lines) allows easy, fast and accurate focusing.
- Displays "safe title" electronic markers which indicate the effective picture area of home televisions.
- Generates SMPTE color bars with ID numbers so that when recorded the camera can be later identified.
- Movable shoulder mount allows camera to be correctly balanced with different docking VCRs or portable VCRs.
- Can be genlocked even with VCR docked to it.
- Real-time auto white balance continuously adjusts white balance according to the surrounding light source.
- Directly docks to Betacam SP (BVU-S) without need for adapters.
- Docks to Betacam SP (PWL-1), Panasonic MII, Sony Hi-8 (EVW-9000) and S-VHS (JVC and Panasonic) with adaptor
- With CA-21 camera adaptor can be cabled to Betacam, MII, U-matic and S-VHS stand-alone portable VCRs.

PROFESSIONAL VIDEO TAPE



H471S S-VHS Double Coated	
ST-30	7.69
ST-60	8.49
ST-120	8.99

M221 Hi 8 Double Coated	
ST-30	7.69
ST-60	8.49
ST-120	8.99

Metal Particles	
P630HMP	4.99
P660HMP	7.19
P6120HMP	9.69

Metal Evaporated	
E630HME	8.79
E660HME	11.29
E6120HME	15.79

AMPEX

187 KCA 3/4" U-matic Broadcast (In Box)	
KCA05	6.49
KCA10	6.89
KCA15	7.29
KCA20	7.69
KCA30	8.49
KCA60	11.79

197 BCA 3/4" U-matic Master Broadcast (In Box)	
BCS10 (mini)	8.49
BCA10	8.54
BCA20	9.59
BCS20 (mini)	9.59
BCA30	10.20
BCA60	14.39

297 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
BC-90LA	30.99

398 Betacam SP Master Broadcast (In Box)	
BC-SA (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	29.95
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

P1 PLUS Expitaxial VHS	
T-30 Plus	2.29
T-60 Plus	2.59
T-90 Plus	2.69
T-120 Plus	2.79

HGX-PLUS Expitaxial VHS (Box)	
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HGXT-120 Plus	3.79

BQ Broadcast Quality Expitaxial VHS (Box)	
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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
P6-60 HMPX	8.59
P6-120HMPX	11.69
P6-30 HME	5.99
P6-60 HME	8.59
P6-120HME	11.99
P6-30 HMX	5.99
P6-60 HMX	8.59
P6-120HMX	11.99

PR 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

BRS 3/4" U-matic Broadcast Standard (In Box)	
KCS-10 BRS (mini)	7.99
KCS-20 BRS (mini)	8.69
KCA-10 BRS	7.69
KCA-20 BRS	8.39
KCA-30 BRS	9.29
KCA-60 BRS	12.99

XBR 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-S10 (mini)	9.19
KSP-20 (mini)	10.69
KSP-30	9.69
KSP-60	10.99
KSP-120	12.49
KSP-180	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-5GL	9.29
BCT-10GL	10.39
BCT-20GL	11.69
BCT-30GL	12.89
BCT-60GL	23.99
BCT-90GL	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-5ML	16.99
BCT-10ML	18.29
BCT-20ML	21.39
BCT-30ML	23.49
BCT-60ML	31.99
BCT-90ML	49.95

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**CLOSED FROM
MARCH 23 THRU APRIL 3**

LEADER

Model 5850C

Vectorscope

An ideal companion for the 5860C Waveform Monitor, the 5850C adds simultaneous side-by-side waveform and vector monitoring. Featured is an electronically-generated vector scale that precludes the need for fussy centering adjustments and eases phase adjustments from relatively long viewing distances. Provision is made for selecting the phase reference from either (A or B) inputs or a separate external timing reference.

Model 5860C

Waveform Monitor

A two-input waveform monitor, the 5860C features 1H, 1V, 2H, 2V, 1 u/div and 2V MAG time bases as well as vertical amplifier response choices of flat, IRE (low pass), chroma and DIF-STEP. The latter facilitates easy checks of luminance linearity using the staircase signal. A PIX MON output jack feeds observed (A or B) signals to a picture monitor, and the unit accepts an external sync reference. Built-in calibrator and on-off control of the DC restorer is also provided.



Model 5864A

Waveform Monitor

A fully portable waveform monitor for field use, the Model 5864A is a two-channel unit that provides 2H and 2V sweeps with MAG, FLAT and IRE response, and normal and X4 gain.

Model 5854

Vectorscope

2-channel portable vectorscope is ideal for field use and features A and B phase reference, fixed and variable gain. Both units shown with optional battery holder and NP-1 type battery.



MM-400

The MM-400 is a combination waveform and vector monitor especially configured for the cost-conscious producer. A low-cost alternative to CRT-based waveform monitoring the MM-400 produces a video picture of the input signal's waveform and displays it on any video monitor. It provides a simple, affordable and accurate way to set camera levels before a shoot, or to check time base correctors and color fidelity in editing. Problems like hue shift, smearing, muddy contrast and loss of detail are easily identified for correction.

FEATURES:

- Converts waveform or vector display information into a standard video signal which can be displayed on a video monitor or routed around a video facility, no need for additional expensive monitors. Switch between pictures and waveforms at the push of a button.
- Incorporates an advanced SC/H phase and color frame indicator that is a must for editing and post production. At a glance it tells you if a signal's subcarrier-to-horizontal phase is properly adjusted and if the signal's color frame matches the house black burst connected to the MM-400 external reference input.
- Works anywhere and with any analog video format—NTSC, PAL, Component or S-Video. It has automatic detection between NTSC and PAL formats.
- Three loop-through inputs can accept three composite signals or one component, or RGB signal.
- No complex displays or special test signals are required for component video monitoring.
- Interchannel timing and amplitude display make component analog monitoring easy, has color bar limit markings for Betacam, M-H and SMPTE formats.
- Waveform and vectorscope controls, including channel, sweep speed, position control, phase rotation are on easy-to-see dedicated pushbuttons.
- Besides instant toggling between picture and waveform, a mix mode combines waveform and picture displays for simultaneous viewing.
- The MM-400 can be readily used by even novice operators. It has easy-to-understand set-up menus for display color, interchannel timing, SC/H phase alarm.
- Usable in any video facility of any size for displaying signals. Its low cost makes it affordable by the smallest studio, while its features and performance make it ideal for monitoring in high-end facilities as well.

SONY

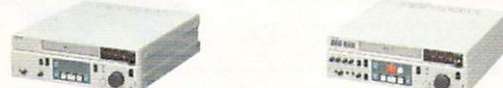
PROFESSIONAL S-VHS SYSTEM

SVP-9000

S-VHS Player

SVO-9600

S-VHS Player/Recorder



The SVP-9000 S-VHS player and SVO-9600 recorder 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 SVO-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 either machine to be configured into any professional system.
- SVBK-150 Digital Noise Reducer board reduces jitter, noise and Y/C delay and provides clear, crisp still frames.
- SVBK-160 SMPTE Time Code interface board (can only be used with SVBK-140 board).

EVO-9720

Hi8 Dual Desktop Editing Machine

BUILT-IN EDITING CAPABILITIES

- The EVO-9720 provides two ways for assemble editing when using the supplied RM-E 9720.
- Quick-Edit - By simply pressing the EDIT button at the desired point on the source tape, pressing END at the output and repeating the process, a program is easily assembled, segment-by-segment on the master tape.
- Program Edit - Assemble video segments that are not adjacent to one another on the original source tape. The EVO-9720 can memorize up to 99 program events and realizes automatic sequential editing of pre-assigned scenes. To change an event in the program, simply recall it and modify as desired. 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 - The EVO-9720 provides separate editing of the video and audio signals.
- Using the video insertion function, video and AFM audio segments can be edited into an existing PCM (Pulse Code Modification) digital sound track. A simulated edit can be monitored by pressing the PREV button.
- The EVO-9720 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.
- Has a 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 (Rewritable Consumer) time code.

SUPERIOR PICTURE QUALITY

- The player portion of the EVO-9720 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.
- The EVO-9720 incorporates both PCM (Pulse Code Modification) stereo and AFM (Audio Frequency Modification) stereo recording for superb sound quality. PCM audio can be inserted or re-recorded for audio only edits in the Audio Insert mode.

BTS

Broadcast Television Systems

Betacam SP-2000 PRO Series

PBC 2600 Player

- Superior picture quality to any other professional system.
- Brings virtual Betacam SP quality within the budgets of professional users.
- More than 90 minutes of playback time using L-size Metal or Oxide cassettes.
- High-speed picture search provides recognizable color pictures at up to 10 times normal speed in forward and reverse (24 times normal speed in monochrome).
- Two longitudinal audio channels with Dolby C-type NR (Noise Reduction) system.
- Equipped with RS-422 9-pin serial interface which is broadcast standard protocol.
- Built-in Time Base Corrector with advanced high quality digital dropout compensator.
- Optional BVR-50 provides remote control of the TBC.
- Built-in LTC/VITC/User Bits reader, and character generator.
- User friendly dual menu operation, enhanced serviceability with built-in self diagnostics.
- Y/R - Y/B-Y component signal outputs via BNC or 12-pin Betacam DUB connectors. Also has S-Video output.
- Optional BKW-2020 provides U-matic DUB output capability.

PBC 2650 Player with Dynamic Tracking (DT)

Same as PBC-2600 plus-

- Dynamic Tracking (DT) provides broadcast quality noiseless playback within -1 to +3 times normal speed.

PBC 2800 Player/Recorder

Same as PBC-2600 plus-

- Built-in comprehensive editing facilities.
- Dynamic Motion Control with memory provides slow motion editing capability (when used with a player VTR equipped with DT function).
- More than 90 minutes of recording/playback time using L-size Metal (for both recording and playback) or Oxide (for playback only) cassettes.
- Built-in LTC/VITC/User Bits generator and reader, also built-in character generator.
- Y/R - Y/B-Y component signal inputs and outputs via BNC or 12-pin Betacam DUB connectors. Also has S-Video input and output.



Quick-Draw Professional

FOR CAMCORDERS OR STAND ALONE CAMERAS



- Designed for working from the back of a van or the trunk of your car. The top loading case has a wide open fold back top that stays neatly out of the way. It's lighter and more compact than shipping cases, thus saving valuable storage space. With other equipment provided around it the sturdy built-in frame provides added protection.
- Heavy duty shoulder strap & comfortable leather hand grip.
- Carry it in crowds - crush proof aluminum guard protects viewfinder.
- Fits into back seat and fastens securely with seat belt.
- Holds camera with on-board battery attached.
- Lid closes with Velcro for quick-opening or secure with full-length zippers.
- Two trim exterior pockets and clip board pocket.
- Dual purpose rear pouch is an expandable battery chamber or all-purpose pocket.

SONY

COLOR MONITORS

PVM-8041Q

- AC and DC operation (with NP-1A or 1B batteries)
- Underscan, Pulse Cross, Blue only mode
- Comb filter improves luminance/chrominance separation
- Analogue RGB inputs plus component input
- NTSC/PAL/SECAM/NTSC 4.43 multi system playback
- External sync input also sync on green
- S-Video input minimizes cross color/dot interference
- Built-in speaker for sound monitoring
- High durability and rack mountable
- Features built-in carrying handle

PVM-1390 (13")

- Fine pitch picture tube, 0.37mm aperture grill for superlative resolution.
- Equipped with a fine pitch Trinitron CRT, it delivers sharp, clear pictures with precise details. It provides outstanding resolution of 450 horizontal lines.
- Also displays 2000 characters (80 lines x 25 columns) accurately without missing a line or a character.
- S-Video input separates luminance and chrominance video signals eliminating cross color and dot interference.
- Equipped with comb filter which extracts maximum picture detail and eliminates color spill.
- Accepts both analog and digital RGB signals, allowing it to be used as a CGA display monitor (640 x 200 pixels).
- Sleek cabinet with angled screen for desktop monitoring.
- Built-in speaker provides for audio monitoring.
- Features multiple inputs, including BNC composite video, S-Video, 8-pin VTR, and 25-pin computer input.

PVM-1340 (13")

- Dynamic Picture circuitry adjusts gain to achieve better contrast in bright highlights and dark shadows.
- Auto white balance uses beam feedback circuit to maintain stable and accurate white balance.
- Line A or B VTR (8-pin) analog RGB and Y/C inputs.
- Better than 450 lines horizontal resolution
- Switchable color temperature - 6500° K for broadcast standard, 9300° K for the most pleasing picture.
- Blue only mode switch for ultra-precise color adjustment
- Built-in speaker for audio monitoring (4 audio inputs)
- Standard EIA 19" rack mount capability.

PVM-1341 (13")

- Similar to PVM-1340 with beam current feedback circuit, color temperature selection, blue only mode, comb filter, dark tint CRT. Same audio/video inputs Plus -
- Underscan - Shrinks the scanned area of the picture tube approximately 5% enabling you to review the entire image area.
- HV delay or 'pulse cross' displays horizontal and vertical blanking interval information, sync timing and skew error.
- Choice of internal or external sync via front panel switch
- Accepts digital RGB with D-sub 9-pin input

PVM-1344 Q (13")

Has all the features of the PVM-1341 Plus -

- Super Fine Pitch delivers over 600 lines horizontal resolution via video inputs, better than 900 x 200 pixels via RGB inputs
- SMPTE Type C color phosphors permitting the most critical evaluation of any color subject.
- Accepts PAL, SECAM, NTSC and HTSC 4.43 video signals - automatically senses and adjusts for each color system.

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HOTRONIC AP41

STAND ALONE TBC/ FRAME SYNCHRONIZER

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

AP41-SF

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

AP41-SP

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



DIGITAL TBC/FRAME SYNCHRONIZER

- Will time base correct & transcode inputs from Hi-8, S-VHS, VHS-DUB, 3/4", 3/4" VCR-DUB and composite video
- Use as a frame synchronizer, synchronizing outside satellite, microwave and camera feeds with studio signals
- 3-5 dB chrominance and luminance noise reduction
- Full Proc amp controls, drop out compensator
- V/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

1699.00

The Kitchen Sync

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

1279.00

RGB COMPUTER

AMILINK CIP

with Amilink VT-4000 Software

Amilink CIP is an Amiga-based A/B roll edit controller. It is a combination of hardware and software (VT-4000) that provides flawless control of three VCRs. It is also the most complete personal video editor for the Amiga. It controls low cost industrial VCRs like the Panasonic AG-1960 and AG-1970 machines with RS-232 Control (AG-5700, CVD-1000 Vdeck), and models with the Sony Control L Protocol like the Sony EVS-3000 and SLV-R1000. You can use three of the same or in any combination. Best of all, Amilink CIP is upgradeable for professional machine control. To upgrade, you buy an upgrade kit that includes new software and professional level control cards. The system includes a new version of Amilink software designed especially for the Toaster 4000. With the new Amilink VT-4000 software, the Video Toaster is seamlessly integrated into your editing suite.

Machine Control

- Choice of joystick, 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 event number
- Import/Export of CMX 3600 edit list on MS-DOS and Amiga-DOS
- Automatic edit list back-up
- Edit list cleaning, list ripping, multi-field sorting
- Optimized edit auto assembly with special integration

Editing Control

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

Edit Modes

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

Toaster Control

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

SUNRISE INDUSTRIES

AD 516 and Studio 16

The Complete Digital Audio Solution

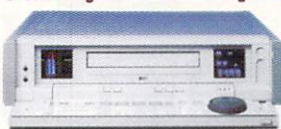


The AD 516 is a professional quality 16-bit high fidelity sound board and hard disk recording system for the Amiga. It includes the feature packed Studio 16 software that allows you to perform all traditional audio post-production tasks. You can create sound effects, edit and replace dialog, and build multichannel soundtracks in the digital domain.

- Record, edit and playback directly off hard disk
- Play up to 8 simultaneous tracks off one or multiple hard disks in real time.
- Use a mouse to slice up and rearrange sound quickly
- Mix tracks with no generation loss
- Synchronize background music with your productions
- Fade, cross fade, or eliminate sections of audio
- Create unlimited variations of echoes, flanges, and choruses
- Optional Video Toaster Handler expansion module lets you play audio during many of the Toaster's digital video effects.

SANYO GVR-S950

S-VHS Single Frame Recording VCR



- Single-Frame Animation Controller eliminates the need for separate or computer plug-in animation controllers. Uses industry-standard protocols, making it compatible with most popular graphic and animation software packages.
- SMPTE Time Code Generator and Reader with Built-in Drop and Non-Drop Frame Read/Write is fully programmable from an external computer and resettable from the front panel.
- Video and Audio Switcher with Two independent Video and Audio Channels. Each video channel contains both composite and S-Video inputs. Each audio channel contains two linear and two Hi-Fi inputs. Switching can be performed either manually, or under RS-232 or RS-422 control. Video and audio channels are switched independently giving the GVR-S950 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.

NEWTEK

VIDEO TOASTER 4000



Production Switcher

The Video Toaster Switcher is a broadcast quality production switcher which lets you perform cuts, fades, dissolves, advanced digital effects, key and color effects between any of 7 sources including 4 video inputs, two true-color high resolution frame buffers and a background matte generator. A separate overlay channel gives you the ability to key 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 drag 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 inputs from hard drive. These frames can also be used as seconds to the switcher for transitions and digital effects.

ChromaFX Color Processor

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

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 | Tumble | Zoom | Cube Mapping |
| Fire | Smoke | Pour | Sphere Mapping |
| Push Off | Push On | Stats | Trajectories |
| Slide | Shatter | Puzzle | Analog Trails |
| Dissolve | 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 250 PostScript fonts
- Can size fonts from 10 lines to 400 lines tall
- Variable outline and shadows
- Variable-speed crawling and scrolling of text
- Easily adjust color, shadow type, outline style and font selection on a line, word, or character-by-character basis

ToasterPaint

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

Dual Frame Buffers/Genlock

These are 24 bit (16.8 million colors) frame buffers with composite output that meets the most stringent requirements for broadcast video. Because there are two frame buffers, one can be loading while the other is shown on screen for seamless live presentations. Toaster effects can be done between live video and either buffer, as well as 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 camcorder, VCR or laser disk player to production switchers or computer video systems like the Video Toaster.
- Special features include Rock Solid Freeze (both field and frame), GPI Freeze, Variable Strobe, Forced Monochrome and Advanced Sync.
- Film Effect Strobe Mode - Simulates the 3-2 pull down conversion technique from a 24 frame per second film standard, to a 30 frame per second video standard.
- Can be installed in any Amiga or PC-compatible computers. Includes Amiga and MS-DOS software.
- Exclusive feature of the TBC IV is the 50-pin CVE (Component Video Exchange) port. When this port is connected to a DPS Personal Animation Recorder you can capture and record real-time video from the animator's dedicated hard drive. This combination is ideal for rotoscoping and other video capture processes.
- Fully compatible with TBC II, III and Personal V-Scope. The TBC IV is operated via software, or by using an optional DPS RC-2000 multi-channel desktop controller.

DPS DR-2150

Personal Animation Recorder

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

- Combines custom ICs and a proprietary implementation of the LSI chip set enabling component 4:2:2 digital recording to a dedicated hard drive.
- Variable speed playback lets you play back 24-bit (16.7 million colors) animation in real-time 30 frames per second, or you can choose a lower frame rate to play back animations in slow motion.
- Has composite, S-Video and component (Betacam/MII) outputs. Also has a genlock input enabling it to be easily integrated with virtually any video production system.
- Supports direct rendering of all common image formats including 24-bit IFF and Video Toaster frame store files and is fully compatible with all popular animation packages including Morph Plus, Lightwave 3-D, Fracture Pro, Imagine, Vista Pro, and Cinema4D.
- Real-time video capture for rotoscoping and other video capture applications is possible when used in combination with a DPS TBC IV card.



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-232 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 NovaTrol which has enhanced operation with dedicated function controls and LCD status display.

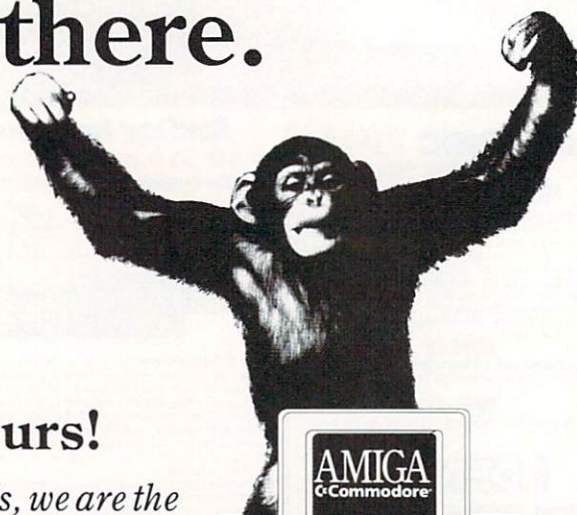


NOVAMATE TBC/Frame Synchronizer

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.

WE CARRY ALL OTHER NOVACARDS:
ENCODERS, DECODERS, TRANSCODERS,
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It's a Jungle out there.



Don't "Monkey" with amateurs!

When it comes to your total desktop video needs, we are the "top bananas" in the business. Here are some reasons why:

- ☒ We furnish complete Video Toaster packages.
- ☒ Our staff are both trained & certified by NewTek.
- ☒ We have a fully staffed service department.
- ☒ We provide on and off-site service & training.
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This is a Toaster system



This is a Toaster system without support

Any Questions?

HT Electronics #1 Priority is Customer Support

- Complete Video Toaster 4000 Solutions
- AmiLink CI-P available for Panasonic AG-1960, AG-1970, Sony Ctrl, Ctrl S and Visca Decks and more.
- DPS Personal Animation Recorder
- Audio for Video Solutions
- Video Toaster 3.0 Upgrades
- Personal Video Production Solutions for Amiga, PC or Mac.

HT

ELECTRONICS

computer systems

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MacroSystemUS Retina

Documentation

As mentioned, the documentation for the Retina is inadequate. While most of the information needed to use the board is provided, the manual lacks detailed explanations. For example, the following is a one-line excerpt explaining a feature called Rashness: "The rashness value sets the maximum time that an animation may outrun the true timing of 1/x of a second." There isn't a clue as to what the ideal setting is.

The manual could be expanded without much effort, thereby decreasing the need for technical support calls. Also, it would be helpful to include some tutorials. And because the board is being marketed to the Toaster audience, there's a need to explain how to use the two products together.

Likewise, much of the software utilities such as MakeRACE and RView could be given a more consistent, intuitive interface..

The Bottom Line

Manual problems aside, I have found the Retina board to be a strong addition to a Toaster system. The higher-resolution display fares well against any personal computer and is more in line with that of a workstation. With the excellent TVPaint 2.0 and the Retina, the Amiga becomes competitive with dedicated paint systems.

With the imminent release of a new ToasterPaint, this solution is harder to recommend to Amiga 4000 users because the new version will likely only run on AGA machines. However, the Retina will remain a great choice for Amiga 2000 users.

If NewTek adds support for RTG boards such as the Retina, this may be a good choice for a higher resolution LightWave and Modeler display.

MacroSystemUS has clearly released a high-quality product with a very reasonable price tag. If third-party support for the board continues to grow, there may be even more reasons to consider purchasing a Retina in the near future.



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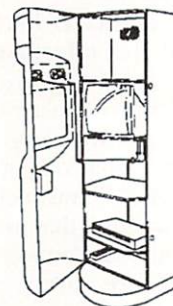


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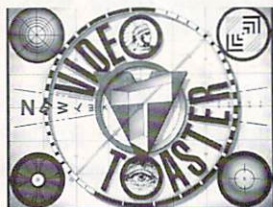


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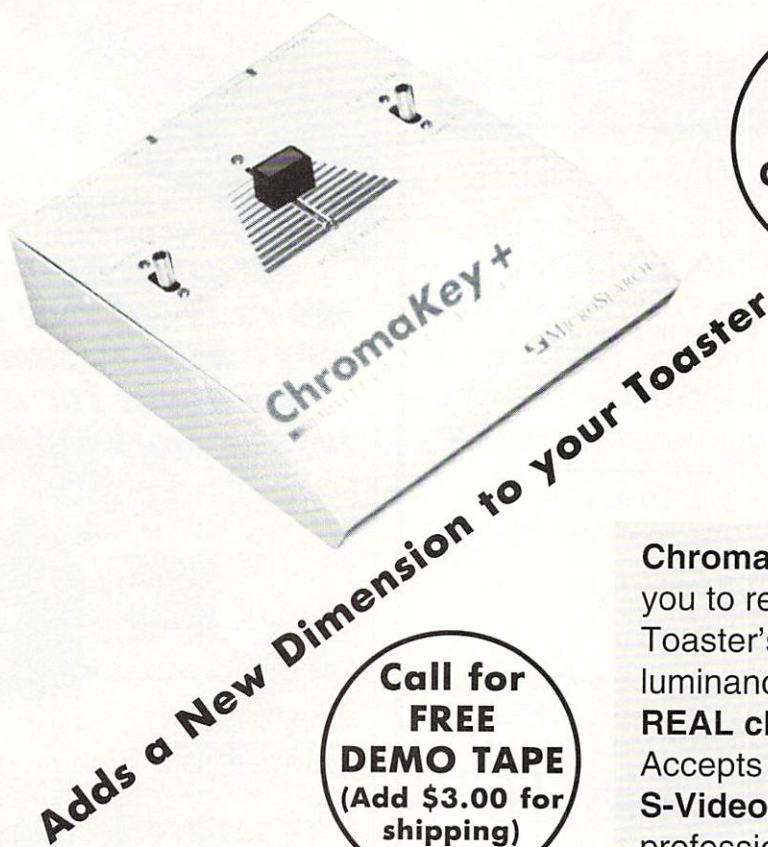
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Issues & Insights

continued from page 63

success of *Jurassic Park*. The movie has convinced Hollywood that the future of special effects lies within the digital realm, and everyone is jumping on the CGI bandwagon. New facilities are opening up that need to be staffed, and existing shops are expanding.

"Business is going really well for us, so we're always looking for new people," said Datz. "We have a lot of work." Swallow said that PDI is also growing. "Right now is a great time because there are enough companies hiring people," he said. "There is so much going on with Digital Domain, Boss Films, ILM and us. All these people are out there hiring like crazy. We have 43 people in this (Los Angeles) office, and I'll be expanding that. It's a good time for people."

Aside from the usual process of sending in reels, trade shows are a great place to make contacts and introduce yourself to prospective employers. "I talk to a lot of people during SIGGRAPH," said Swallow. "We set up interviews afterwards for people who can stay. I spent three or four days in Anaheim last year interviewing people."

Anyone who attended last year's SIGGRAPH show can attest to the fact that many companies were actively recruiting people. Some animators actually felt as if they were being begged to go to work for a particular digital effects house.

If you've got a desire to do this sort of work for a living, now is the time to start sending out reels or burn that midnight oil and perfect your skills. We truly are in the middle of a computer graphics revolution, and there's no reason why you can't be a part of it.

VU

[Editor's note: The author wishes to thank Shannon Casey for her assistance in preparing this article.]

About the Author:

Mojo is an animator and technical director on the series *Babylon 5*. He secretly attributes his monumental success to Elvis Presley and feels others should not dismiss the powers of *The King*. He notes that one of the last things Elvis did in the days before he died was to try to get a print of *Star Wars* to show his daughter. Mojo's hunch about the Big E was proven during a recent earthquake in which everything in his home fell to the floor with the exception of his many Elvis pictures. Questions and/or Elvis memorabilia may be sent to him in care of this magazine.



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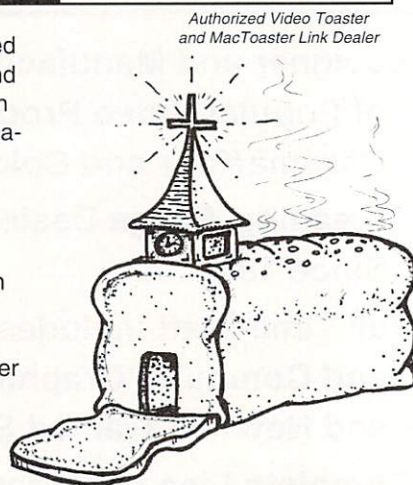
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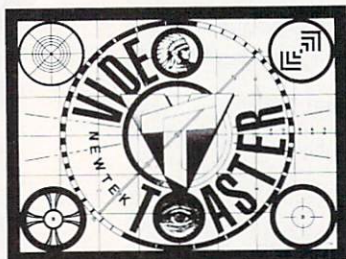


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LAST WORD

The More Things Change...

NewTek Enters a New Chapter with a Familiar Face

by Lee Stranahan



If it's my job to comment on the Toaster universe, then there's no way I can avoid talking about the recent (and as rumor has it, not entirely friendly) send-off of NewTek's second in command, Paul Montgomery. It's simply too big a story not to cover, and it's one that will ultimately affect every Toaster owner.

However, it's a thorny issue. Whatever I say, I'm not likely to thrill either side. My writing about a controversy is one thing, but it's compounded by the fact that I know the players well. I've eaten dinner at NewTek President Tim Jenison's house, and Paul Montgomery let me drive his NSX once (not twice, by the way, because I'm very bad with manual transmissions).

There's more to this issue than gossip and rumor, however. Like Steve Wozniak (or Steven Jobs or John Sculley) leaving Apple, Montgomery's departure marks the beginning of a new chapter in NewTek's history. To understand the future, we need to update the story so far.

NewTek has largely been a company without job titles, so Montgomery's actual position has always been hard to pin down. He was considered the head of marketing. But Toaster hardware designer Brad Carvey has described him as more of a promoter than a traditional marketer, which I think is accurate.

Speaking personally, my relationship with Montgomery has been complex. He was, at various times, a business associate, mental sparring partner, friend, mentor and adversary. I've written in this column that he was the person who inspired the Toaster dream of personal video production. That will always be true. Montgomery was the first Toaster visionary.

In the last year or so, however, that vision began to blur. NewTek made a number of marketing moves that left many people, myself included, shaking their heads. Some advertising and promotion seemed deliberately designed to turn people off, and new products such as the Toaster 4000 were never marketed properly. NewTek's once mighty marketing machine was showing signs of breakdown.

To many, NewTek seemed to lack the direction and focus it once had. People both inside and outside of the company knew that something was wrong, but the solutions sometimes just made problems worse. Montgomery became removed from the personal video market he helped create. He picked the wrong friends and saw enemies in places where there weren't any.

In the end, most of the people I know who are close to NewTek think that Montgomery's departure is probably for the best. He just wasn't enjoying himself very much in the last year, and it was affecting the company. In his

absence, there's room for a new visionary: Tim Jenison.

That's right, I said new visionary. So, you're saying, how can Jenison, who invented the Toaster and owns NewTek, be new? Hasn't he always been there, even through the confusion of 1993? What's new about him?

Well, it's probably too early to say for sure, but Jenison seems to have caught his second wind. A lot of my high-level sources are saying that this is not your father's Tim Jenison. Word is that he's back with something more to prove.

With the right stuff, he's been able to take NewTek and the Toaster to wild levels of success despite long odds and a chorus of voices telling him it was impossible. As a person, he's a straight shooter. He's got that low-key Midwestern honesty thing going. Not a lot of flash and flare, just the facts, ma'am.

That straight-talking style is one quality that's long been missing at NewTek. In the past, the company seemed to be more interested in the sizzle than the meat. Marketing that's long on style and short on substance, flashy displays of wealth—that's not Jenison. We'll see how much of that translates into the new NewTek.

Consider me cautiously optimistic. I'm rooting for NewTek, of course, but the road ahead won't be an easy one. NewTek has a lot of challenges to face, but I think the company's team is strong. They're as aware as anybody about what needs fixing and seem to be eager to get the job done.

When will the evidence be in? Well, at least some of the jury should be in by the time you read this. I wrote this column as events were breaking in early February, but by the time this hits the newsstands, the big National Association of Broadcasters (NAB) convention will have come and gone.

Last year's NAB was controversial for NewTek, and it sent the Toaster 4000 on the wrong foot. I don't have a crystal ball, so I don't know what will happen this year, but I hope we are treated to a stronger, more focused NewTek. It would be great to see a Toaster message that reaches both the professional market as well as those just getting into video. A couple of new product announcements wouldn't hurt either.

I leave you this month with a cliché: Only time will tell. One has to assume that part of the reason for this split was a difference in vision about the kind of company NewTek should be. In the coming months, we'll see what Jenison's vision is all about. He and his NewTek team have brought the Toaster this far, but there are other worlds to conquer, and the road ahead is clear.

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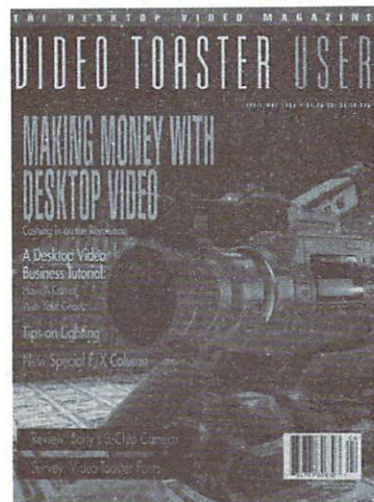
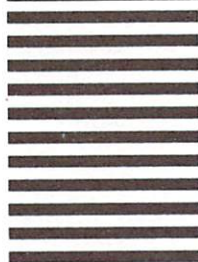
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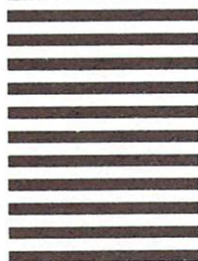
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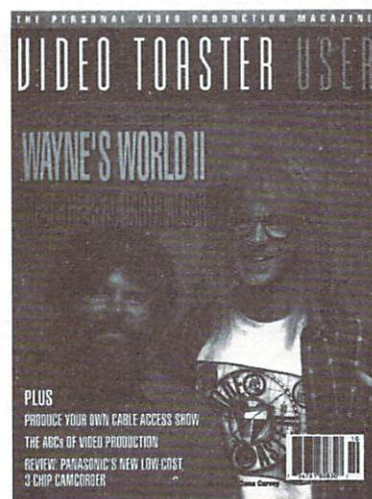
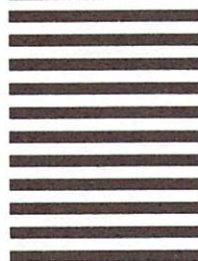
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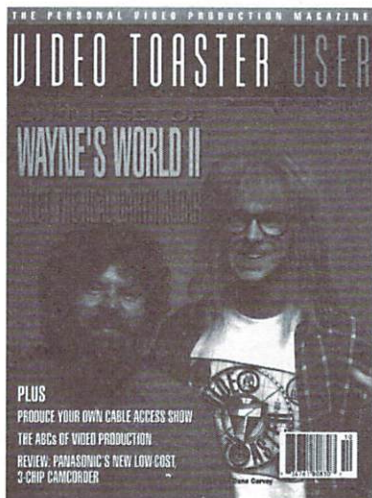


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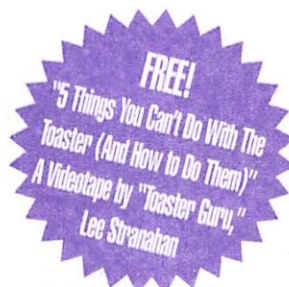
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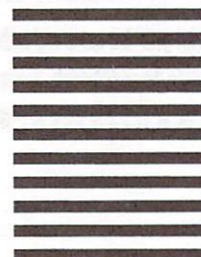
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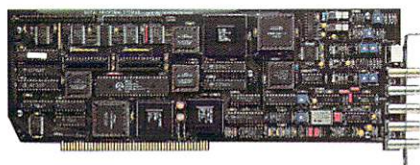
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