

VIDEO TOASTER USER

an audio publications magazine

MAY 1994 • \$3.95 US/ \$5.00 CAN

**ANNUAL
AWARDS ISSUE**

VIDEO TOASTER USER

THE TOP

20

PRODUCTS

At

NAB

VIDEO TOASTER USER

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*RetroSloping
26
Tex Map Bud
28*

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IN CABLE:
LEASE YOUR
OWN CHANNEL**

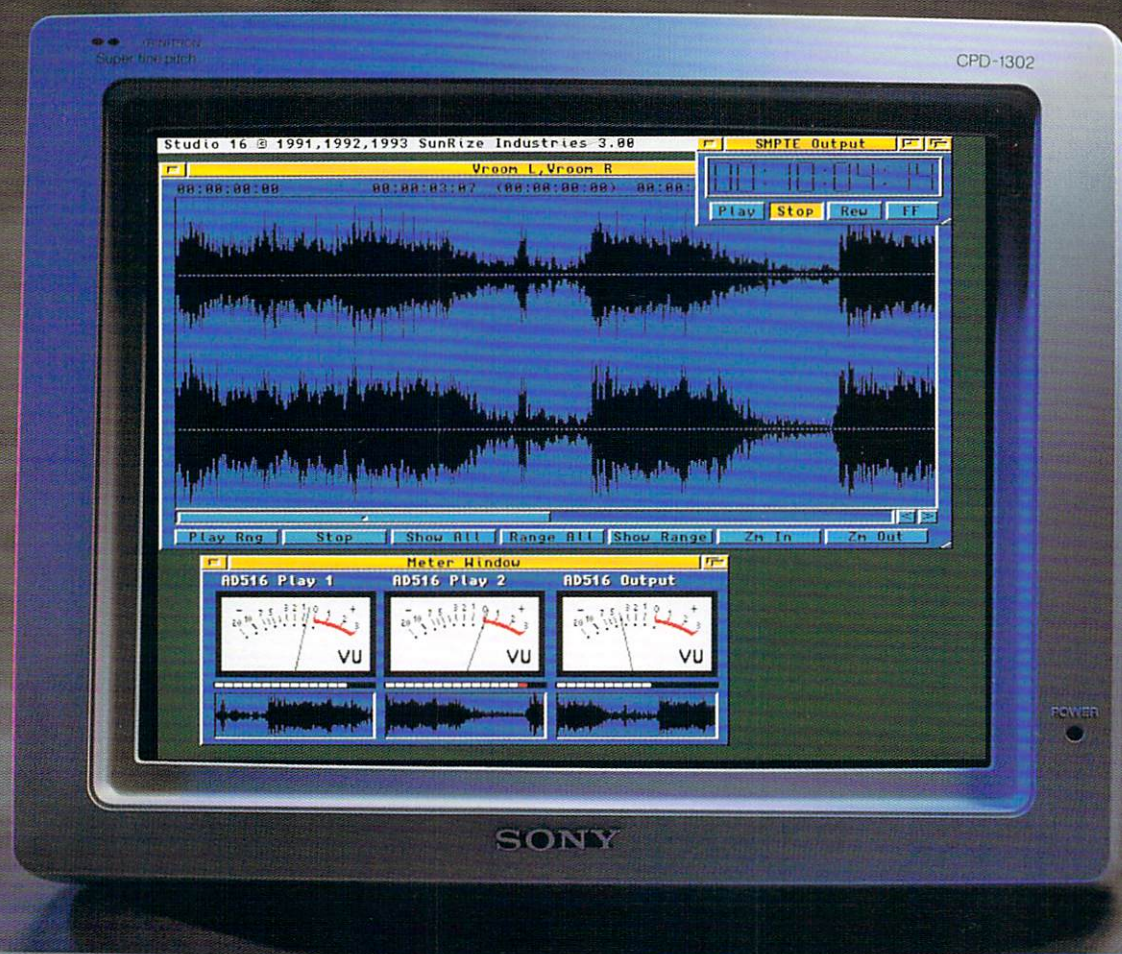
**RESOLUTION
CONFUSION:
MAKING SENSE
OF IT ALL**

**TOASTERPAINT
ALTERNATIVES**

**VTU
PICKS
THE
HITS**

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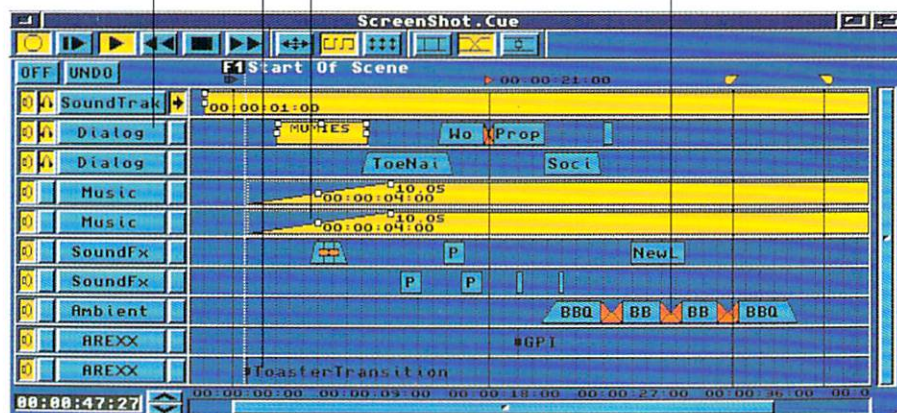
Studio 16 3.0's feature packed time-line based cue list allows you to see exactly how your production is shaping up.

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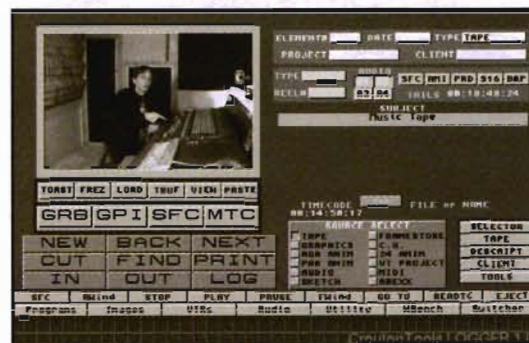
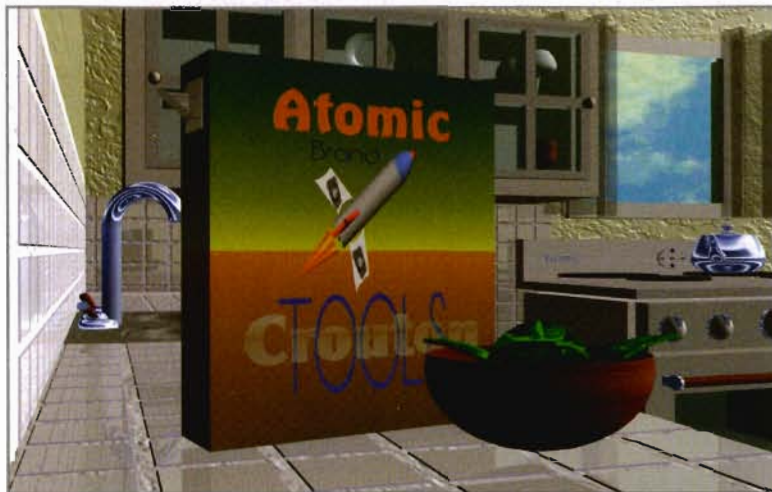
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software upgrades.*



FOR INFORMATION CIRCLE 140

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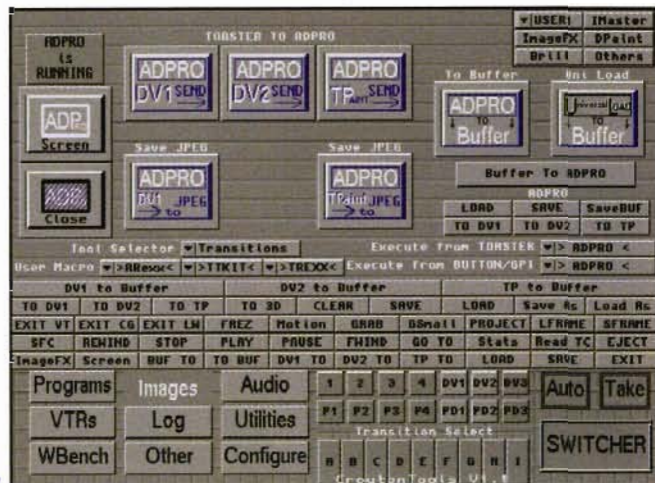
Crouton Tools Logger will catalog scenes from tape, Toaster projects, LightWave scenes, animations, Framestores...or any element for your productions!

Use our ToasterSmart™ Directory Utility to effortlessly manage all of your Toaster's resources.



Access the weapons in your Toaster arsenal with a single mouse click.

Straightforward interface simplifies all of your tasks. Easy to learn! Easy to use!



CROUTON TOOLS

The Video Operating System

Crouton Tools—The Easy to Use Video Operating System (VOS)—was created by a video professional with over 20 years of video experience. 500 Pre-defined video tools, 150 NEW synergistic functions, ToasterSmart™ Directory Utility and Visual Logging System...power at your fingertips! Crouton Tools greatly accelerates your pre- and post-production video while seamlessly integrating your applications directly within your Toaster environment.

PROGRAMS

- Easily find and launch most Toaster-related products. No more Ctrl-Alt-Alt fumbling! Launch over 60 applications instantly!

IMAGES

- Send images back and forth between Toaster DV1, DV2, ToasterPaint and any supported Image Processor.
- Send images back and forth between any supported Image Processor.
- Save and load image formats not normally supported by the Toaster automatically—through any supported Image Processor.
- Grab, send, or process images from the Toaster.

CROUTONTOOLS LOGGER

- Log any and all of the following elements: frames from tape, FrameStores, Graphic elements, Toaster Projects, Animations, CG books, LightWave scenes, Audio elements, MIDI elements and ARexx elements.
- Find elements visually (picture based!) or by name, location, subject, reel #, element type,

- format, date, project or client.
- Play, show, start and view elements directly from CTLogger.
- Load elements directly from CTLogger to other supported programs.
- Use with Personal Single Frame Controller, AmiLink or Pride 2001 to create an easy-to-use full-featured tape logging system for any editor.
- Chase and GO TO tape locations directly from CTLogger.
- Use Studio 16, Bars & Pipes Pro or SuperJam! to capture time code from external editing controllers for accurate time-code based logging!
- Can work easily with control track editing systems.
- Requires Art Department Professional to process images.

THE TOASTERSMART™ DIRECTORY UTILITY

- Easily find, rename, delete, copy or move Video Toaster files with our exclusive ToasterSmart™ Directory Utility!
- Access your Toaster-specific files instantly!
- Load found files easily into your Toaster.
- Use more than one Toaster directory location.
- Handy access to other Toaster and Amiga utilities.
- Easy 3D client/project set-up and creation.
- Works in conjunction with CTLogger and CTCanvas.

COMPLETE OPERATIONS

- True multitasking of your software for maximum productivity!
- Operate VTRs and Audio from the same interface
- Cue audio and/or animations to a Toaster edit.
- Grab images from a Toaster edit.
- Fly taped material into a Toaster edit.

AUDIO PRODUCTS SUPPORTED

- Studio 16, Bars & Pipes Professional, SuperJam!

VIDEO EDITING SYSTEMS SUPPORTED

- Single Frame Controller, AmiLink, Pride 2001

AUDIO

- Easily synchronize audio events to video!
- Control all major functions of all supported Audio products.
- Cue any supported Audio Product from a Toaster edit/GPI control.
- Record automatically from tape to Studio 16.

VIDEO EDITING SYSTEMS

- Operate major functions of all supported Video Editing Systems.
- Automatically grab, send or process images you grab from tape.

3D/ANIMATION

- Send and process images for 3D conversion in Pixel 3D Professional.
- Operate Anim Workshop, Personal Animation Recorder, Dynamic Motion Module, InterChange Plus functions.
- Use VistaPro with the Toaster much easier!

IMAGE PROCESSORS/ PAINT PROGRAMS SUPPORTED

- Art Department Professional (2.3+), Image F/x, ImageMaster R/t, TV Paint, Brilliance and DeluxePaint IV

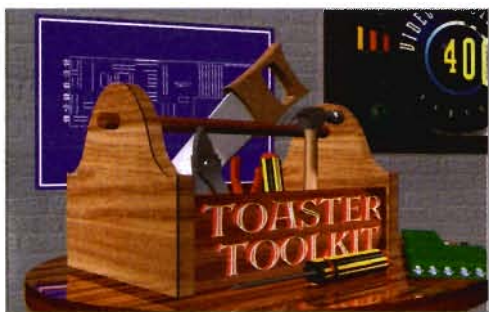
TOASTER UTILITIES SUPPORTED

- Toaster Toolkit 4000, Personal Animation Recorder, Interchange Plus, T-Rexx Professional, Pixel 3D Professional, Vista Pro, Anim Workshop, Dynamic Motion Module

CROUTON TOOLS SYSTEM REQUIREMENTS

- Video Toaster System 3.0 or above.
- AmigaDOS 2.04 or above.
- Minimum 10MB RAM.
- 68020 processor or above.

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- Color Font Converter • Toaster Project Editor •
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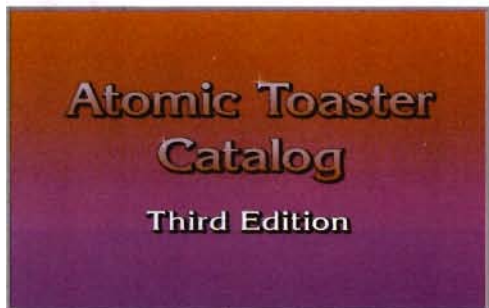


Cocoon Morph

The fastest and easiest-to-use morphing program you will find. Includes high end features found in expensive systems — without the Rolls Royce price! Cocoon is full-featured. Morphs are easy to set up with fast, accurate rendering.

MSRP \$99.95

Video Solutions.



FOR INFORMATION CIRCLE 110

The Atomic Toaster Catalog, Third Edition is the most complete reference guide available for the Video Toaster Industry. It gives you in-depth, easy-to-understand information on how to best use all third-party products with Video Toaster-based systems including tips on how to use products individually, cross-referencing charts on which products work together, information on why to invest in Video Toaster-based systems, how to integrate Video Toaster-based systems into existing video production facilities, screen shots, full product and manufacturers indexes, and much more.

On Sale May 15

MSRP \$49.95

Video Toaster System Design contact Harold Russell:

(801) 466-7330

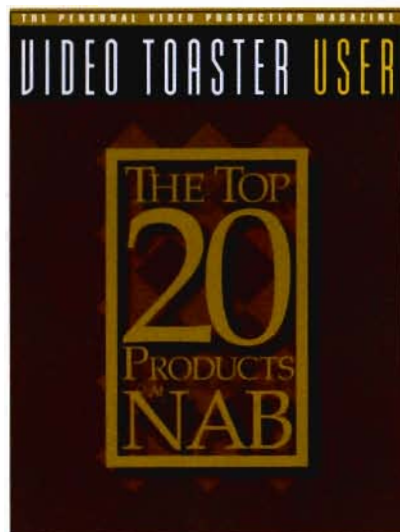
Video Software Sales contact DevWare Video:

(800) 879-0759

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MAY 1994 ISSUE NUMBER 19



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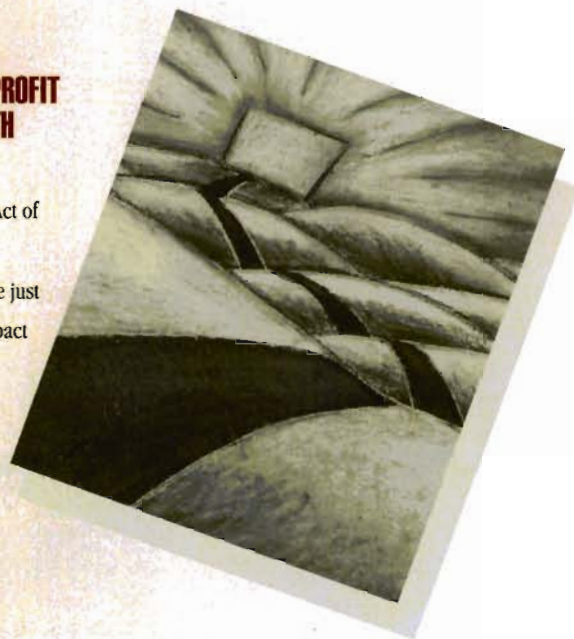
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THE BUMPY ROAD TO LEASED ACCESS: THERE'S POTENTIAL PROFIT ON THE CABLE TV PATH

by Allen Edmonds

Two years after the Cable Act of 1992 was passed, many independent producers are just beginning to realize its impact on their ability to enter the cable marketplace. Learn how two successful producers are making cable programming work for them.



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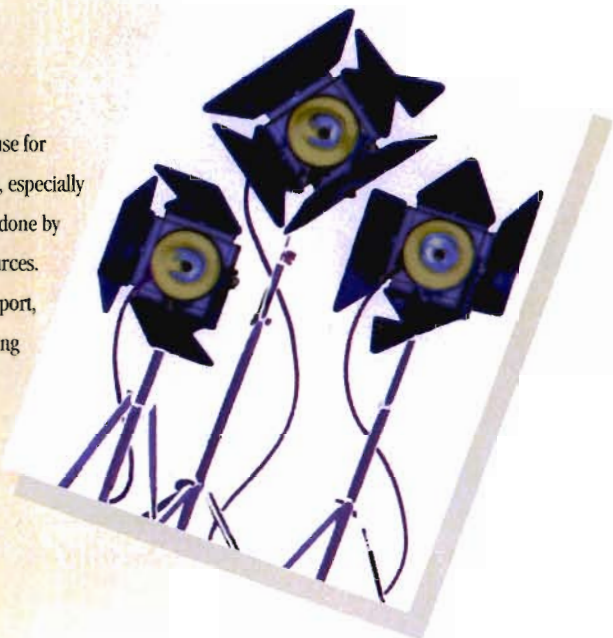
CLASSIFIED

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LIGHTING IN THE REAL WORLD

by Dick Reizner

There's simply no excuse for bad lighting these days, especially when so much can be done by maximizing your resources. In this Master Series report, learn why a basic lighting system doesn't have to limit your creativity.

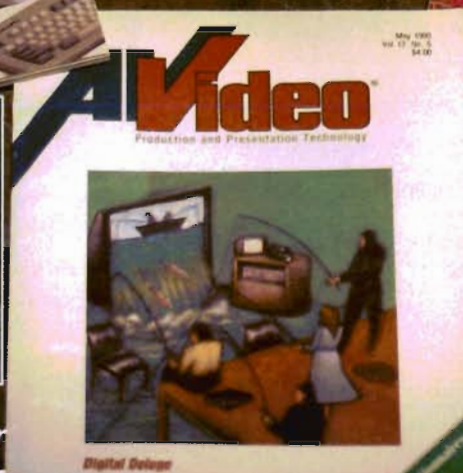


TAO... WE COULD TELL YOU HOW GOOD WE ARE BUT...WE'LL LET PRODUCT REVIEWERS DO IT FOR US



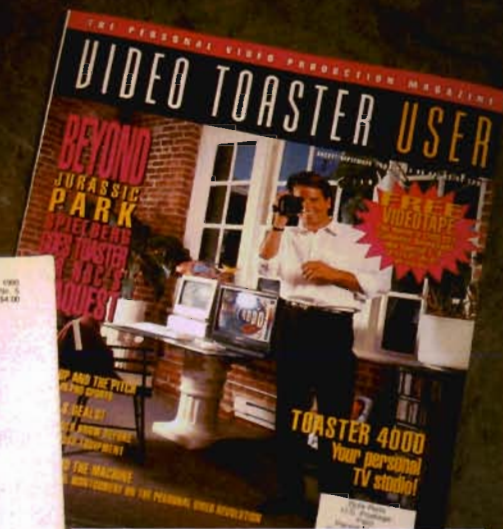
"To its credit, the Editizer spans the professional/consumer technochasm by accepting both professional interface standards (RS232 and RS422) as well as prosumer Control-M and Control-L standards... Absolute single frame control is possible with the Editizer and Frame accurate decks... When used in conjunction with frame accurate decks, even nonframe-accurate decks perform near frame accuracy..."

Staff Product Review
Desktop Video World



"...the Editizer remains the best value available in this market. With the freefall in PC compatible prices, the Editizer is a bargain."

Brent Malnack
AV Video Magazine



The "Editizer makes A/B-roll editing simple, accurate and repeatable... I would say the Editizer merits strong consideration for anyone serious about video production. It rates high in cost-to-features benefits right now, and allows for future dynamic expansion of its capabilities as new products become available."

Frank Kelly
Video Toaster User

TAO

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70 WUZZY FUZZY? HOW COULD YOU TELL?

by Cecil Smith

The definition of resolution extends beyond any dictionary explanation. In this comprehensive overview, learn about the factors that affect resolution in both computers and television.

82 VIDEO PAINT AND THE TOASTER A FULL PALETTE OF PAINT CHOICES

by Maury McCoy

While ToasterPaint artists eagerly await a newer version of the original program, a number of viable alternatives have been introduced by third-party developers. Here is a compare-and-contrast review of five top choices.



REVIEWS & TUTORIALS

90 SMOOTHALKER

by R. Shamms Mortier

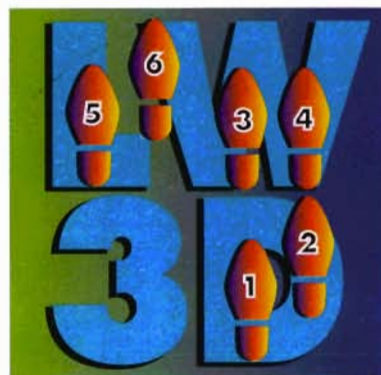
A review of the SmoothTalker systems, a teleprompter for the Amiga.



92 LIGHTWAVE 3D TOP DOWN SEE THE LIGHT WITHOUT THE HEAVY MANUAL

by Victor & Geetha Ramamoorthy

A tutorial on LightWave 3D that brings the beginning user up to speed. It presents material that is not provided in the LightWave manual.



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by Lee Stranahan

THE SMARTEST WAY TO UPGRADE TO THE PROFESSIONAL CLASS.



INTRODUCING THE JVC EDIT-DESK SYSTEM WITH TIME CODE — IT'S FAST, FUN AND AFFORDABLE!

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Welcome to *Pro Video Made Easy 101*, where you'll learn to achieve professional editing results on a very elementary budget with the new, JVC Edit-Desk System.

To pass this class with flying colors, we'll have to study each component a little closer. Let's start with the BR-S800U editing recorder. Combining the muscle of a blazingly fast, heavy-duty tape drive with the intelligence of time code and four audio channels, the BR-S800U is a nimble editing workhorse. Its companion edit feeder, the BR-S500U incorporates the same smart features, and together they form the most economical, high-performance S-VHS editing system available today! Plus, when you're ready to

graduate to a more elaborate system, both the 800 and 500 have two expansion slots that accept a wide variety of plug-in option cards. And what better way to control it all, than with our user-friendly RM-G800U editing controller with dual GPI ports. Equipped with time code and separate audio ch1, audio ch2 and video inserts, it delivers everything you need to produce high-quality, professional-caliber editing.

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

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

QUESTIONS AND TIPS

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

NEW PRODUCTS & UPDATES (PRESS RELEASES)

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

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

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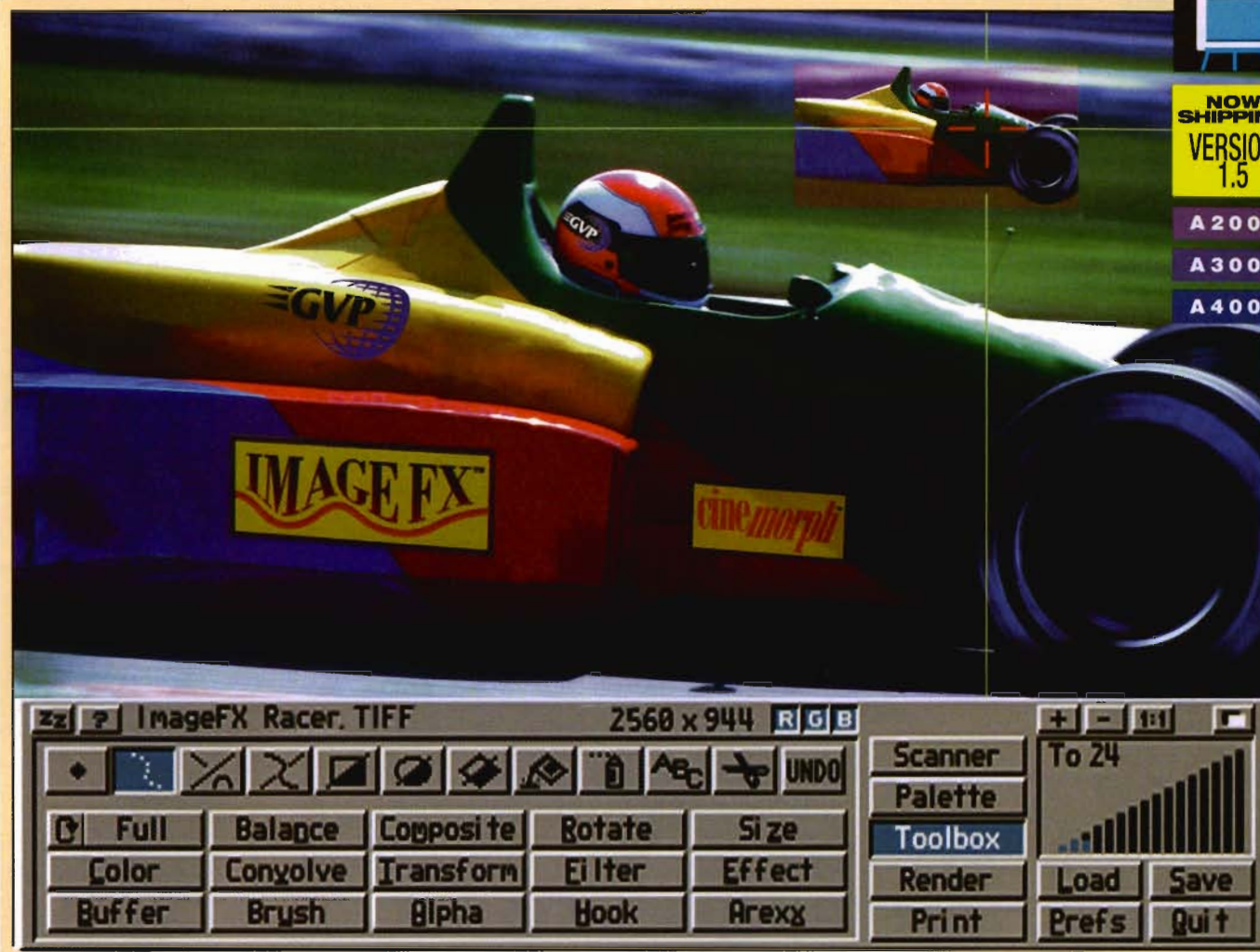
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TOASTER TALK

Zee Vacky Professor

A Strange Formula for Success



by Phil Kurz

My eyes were closed seconds after my head hit the pillow. After all, it had been a tough day: lots of copy to edit, stories to write, interviews to conduct.

As I drifted off to sleep, I couldn't help but think about the story in this issue by Allen Edmonds on leased access to cable channels. Could it be that parts of the Cable Act of 1992 were really designed to give independent video producers like you a chance to lease a cable channel?

As I thought about it, I couldn't get past the blasted formula used to determine how much you should pay for access to a cable channel. But luckily for me, the

"To arrive at zee implicit fee, subtract zee amount zee cable operator pays zee premium channel supplier from zee amount zee cable subscriber pays for that service."

Looking around the classroom, I saw dozens of wannabe cable programmers hanging on to the professor's every word. As they feverishly took notes, I realized that understanding this lesson would—sorry—would—now he's got me doing it—possibly mean to these students the difference between getting on the cable and going back to taping weddings and bar mitzvahs.

"Now," Professor Von Coax continued, "we shall explore der fee for zee basic service. Divide zee number of cable subscribers by zee number of cable channels."

At this point, my head started hurting. None of this gobbledygook made any sense. Maybe I had missed something. So I raised my hand to clear up my confusion.

"Yes, Mr. Kurtz, vhat do you vant?"

"Professor, I don't understand this formula business. After all, didn't the same Cable Act force cable companies to pay television broadcasters a fee or give the broadcaster a second channel for free for the right to carry their broadcast signal? Why would the act make cable operators do that but allow them to charge us for access to a cable channel?"

"You dummkopf," he responded. "You must pay because those are zee rules!"

Sheepishly, I raised my hand.

"Vhat is it?"

"Well, professor, I thought we lived in a country with a free-market economy. With the hundreds of channels that are right around the corner, shouldn't the cable operators and the telcos be courting us to buy our programs to put on their systems?"

I'd really done it now. Picking up his pointer, Professor Von Coax swatted it against his black leather boots and slowly approached my desk. Putting his pointer under my chin and staring at me through his wire-rimmed bifocals, he said: "Ve have vays of dealing vith people like you, Mr. Kurtz."

Then he spun toward the door on his right heel and nodded to a hall monitor. The next thing I knew, I heard the precise pounding of boots on the linoleum lining the hall. In seconds, a squad of *peacekeepers* burst through the classroom door.

As I felt them grab me by the collar to take me away, I heard the professor say, "Anyone else have any questions?"

My eyes shot open. Sweat rolled down my forehead. Whew, only a dream. That's the last time I'll have a plateful of sauerkraut and sausage right before I go to bed.

YTU

Rocket Science 101

$$E = MC^2$$

$$A = \frac{DX}{DT^2} + A \frac{DX}{DT} + C_0$$

$$\text{Premium Tier} = \text{Implicit Fee} = (CO - PC) - CS$$

$$\text{Basic Service} = \frac{\text{Subscribers}}{\text{Cable Channels}}$$

more I considered the formula, the sleepier I became. Soon I was sawing logs that would have turned a lumberjack's head.

"If you vould settle down und take your seat, ve vill get shtarted," said the professor in a thick German accent, which reminded me of my favorite uncle. "My name is Werner Von Coax, und I shall be your professor."

"I have been chosen to teach you zee formula for determining leased-access cable rates because zee FCC has made it so complex that only zee rocket scientist can undurshtund und explain its intricacies."

Holding what might have been a pointer or maybe a riding crop and snapping it down on the podium at the front of the classroom to get our attention, Professor Von Coax began his lesson. "First, ve must consider zee premium tier and zee basic tier. To undurshtund zee premium tier, ve must understund zee implicit fee, which should not be confused vith zee explicit fee, which sailors pay to enter zee go-go club."



100% DIGITAL.... 4:2:2 THROUGHPUT.... INTEGRATED PROC AMP.... UNDER \$ 1000

SATISFIED? WE WEREN'T!

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 – 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 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!



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

"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

FOR INFORMATION CIRCLE 121

LETTERS TO THE EDITOR

Correction:

Dear VTU:

Frank Kelly highlighted a 3/4-inch U-matic to 3/4U-SP modification in his article entitled "Buying Used Equipment" in the August/September 1993 issue of *Video Toaster User*.

I shipped my 3/4U VTR out to Broadcast Systems Design in San Jose, Calif., and had the modification done. I would have preferred to have had the deck modified by a company in New York or vicinity but could not find anyone who could do it. As it turned out, the deck was shipped to Maspeth, N.Y., with several other units destined for the East Coast and was mistakenly shipped back to San Jose instead of to me. The company was very cooperative and paid Federal Express to airmail it to me.

I have since bought a used 3/4U portable VTR and found a retired NBC engineer in Peekskill, N.Y., who can successfully modify this deck to 3/4U SP specifications. I think it would be beneficial for video facilities on the East Coast to be able to send their machines to Peekskill—instead of San Jose.

Here's the address:
Joe Chiappalone
c/o Telecassette Services
8 John Walsh Blvd.
Ste. 411
Peekskill, NY 10566
(914) 736-5646

Dear VTU:

There is prophesy in the air in the video biz:

"The networks are dead."

"Hollywood is dead."

"Videotape is dead."

This new form of self-serving prognostication lets the world know what a great seer the writer is. If he's right, he gets to tell all his friends in the retirement home how he

predicted the death of (fill in the blank) way back in '93 or '94. If he's wrong, nobody will remember anyway.

The first prediction is from Info World. The editor, Stewart Alsop, had just attended his first NAB show.

The second forecast is from a guest editorial in a video magazine. I can't remember for sure, but it might even be from this magazine.

The last prognosis sprang forth from the pen (word processor?) of your very own Phil Kurz ("Toaster Talk," February 1994). The problem with Phil's headline is, well, it's not true. Videotape is not dead. A lot of people would like to see it replaced. I'd like to see it replaced. Someday it will be replaced. But to paraphrase Mark Twain, "reports of the death of videotape are exaggerated."

We need a high-quality, reasonably priced, transportable, storable and instant-access media. Hopefully this will happen soon, but until we're sure we have the right stuff, let's not jump the gun.

Recently, I met a gentleman who runs a facility that uses first-generation C format—that means his tape machines are almost 15 years old! He's decided not to upgrade to Betacam or D-something because he's sure that within five years all his work will be done off massive hard drives. He may be right, but if he can't justify the investment of some Betacams over five years, then something is wrong with his business. Instead of listening to techno soothsayers, he should be looking to his customers' needs.

Maybe, just maybe, we ought to try and work out the consequences of our actions

before we make a muck of things. As a very wise friend of mine once said, "You can't think about these things too much." Unfortunately, you can think about these things too little.

If Phil was so intent on doing a "...is dead" type column, then perhaps a much more relevant topic is available. I refer to the sidebar on page 22 of the same issue: "Commodore Posts Bleak Financial Performance." I don't personally want to see Commodore go down the tubes, but if it does that will immediately impact your readers. I'd say that is a topic of real interest.

Russell Srole
Moorpark, Calif.

Editor responds:

Thank you for your interest in my editorial comment. Although you make some excellent points, I am afraid you have overstated your case. First, the full headline for the Toaster Talk editorial is: "Videotape Is Dead," with a subhead of: "Editors Look toward Non-Linear Nirvana."

I do not believe that any part of this editorial, including the full headline, is misleading. To quote: "While [the editors to whom I refer in the editorial] differed on the specifics in subtle ways, they all agreed that the sooner videotape was dead in the post-production process, the better their lives would be." There is no arguing with the fact that the panel of editors I refer to despise tape because what it has done to them and the editing process.

Videotape has served our industry well and will continue to do so. However, I believe that in the coming months and years, it will be relegated to the role of a

In VTU's August/September 1993 story, "Boys of Summer," it was incorrectly reported that Joel Tessler edits game footage for the Miami Dolphins' post-game analysis. However, Tessler's animations appear at every Dolphins game and he designed and installed the Video Toaster used at Joe Robbie Stadium.

Tessler is on the scoreboard staff at Joe Robbie Stadium for all Florida Marlins and Miami Dolphins home games.

backup or archival media.

The Video Flyer, the tapeless video editor that NewTek unveiled at the National Association of Broadcasters convention, is one of a growing contingent of editing solutions that will displace the installed base of videotape editing suites sooner than later.

As for your friend who has postponed his decision to buy "Betacam or D-something," I salute his foresight. With the speed at which digital non-linear solutions to editing are advancing, I believe his position is prudent. Yours, on the other hand, I question.

By the way, I hope when we both are sitting around in a retirement home sipping on a cold iced tea that we have something better to talk about than the death of videotape. Perhaps we can discuss the "self-serving prognostication" that has been made about how our world might be a little bit better because someone who had an important message but not a lot of money produced a first-rate show with a tapeless editor.



S E R I O U S T O O L S

Power Modeling

extensive spline tools with solid (CSG) and polygonal surfaces supported

"at last, power spline modeling on the desktop"

Photo-Realistic Rendering

selectable ray tracing with a vast array of options

"cool, clean, clear and real"

High-End Animation/Simulation

particle, collision detection, behavioral, skeletal control, inverse kinematics...

"dynamic, remarkable, a powerhouse"

Open Architecture

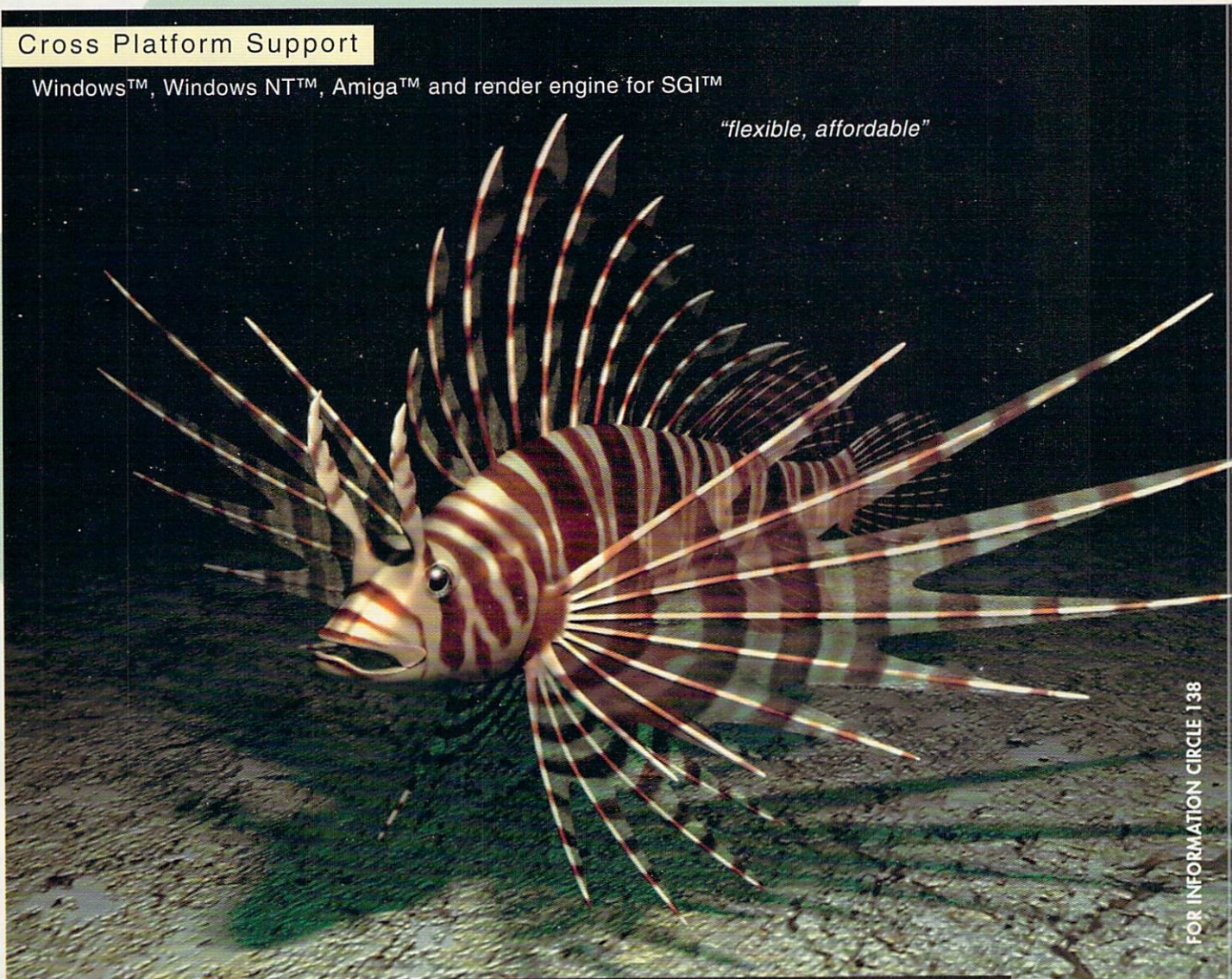
built-in language allows for third party and user expandability

"you can definitely get uncanned"

Cross Platform Support

Windows™, Windows NT™, Amiga™ and render engine for SGI™

"flexible, affordable"



FOR INFORMATION CIRCLE 138

For Information: call 1-519-436-0988 fax 1-519-436-2429 bbs 1-519-436-0140

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reflex i/o, inc.

THE TOP 20 PRODUCTS OF NAB

by PHIL KURZ & ANGELA LoSASSO

PHOTOS by CHRISSEY BORGATTA



It's the Saks Fifth Avenue, K-Mart and Walgreens of professional audio, video and computer-related video equipment rolled into one. It's the National Association of Broadcasters convention, the largest U.S. display of television technology.

But don't let the name of the convention throw you. Sure, U.S. radio and television broadcasters attend the convention, but for the past several years even more conventioners come from the non-broadcast arena: corporate video, educational environments and independent videographers.

For Video Toaster users, this year's convention (March 21-24 in Las Vegas) represents a milestone in the development of technology for personal video production. NewTek's announcement and demonstration of the Video Toaster Flyer, a \$3,995 broadcast-quality, non-linear editor, drew thousands of people to the company's pre-NAB users meeting and booth. The crowd wasn't disappointed.

However, the Flyer was only one of a host of new and

exciting personal video production products introduced at NAB. Thus, *Video Toaster User* traveled to Las Vegas with one mission in mind: choose the 20 hottest products for personal video producers.

While many of the products are directly Toaster-related, some are not. *VTU* recognizes that the Toaster exists in a sea of audio, video and computer equipment. These are the tools of our trade.

We chose these products based on one or several criteria. Among the questions we asked ourselves were: Did the product use a new technology to solve an old problem? Will the product improve the quality of the message that's being created? Did the product make a difficult task easier? Will the product make the user more creative? Did the product deliver a new level of quality for the price?

Certainly, the process of choosing these products was subjective. However, the list of 20 new products that we are presenting (in an arbitrary order) represents our best effort to identify the 20 hottest products and technology that will impact how personal video producers work.

Digital Video Effects

Product: MF-AT

Description: PC-based 3D digital effects card

Price: \$10,000 (tentatively)

Available: May

FOR-A Corp.

11095 Knott Ave.

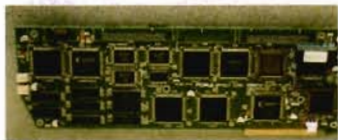
Cypress, CA 90630

(714) 894-3311

Fax (714) 894-5399

FOR INFORMATION CIRCLE 01

The *MF-AT* PC-compatible board provides real-time 3D digital video effects, such as zoom, tumble, 360-degree rotation and perspective in a Windows environment. More sophisticated effects, includ-



ing page turn and scroll, twist, zipper and accordion, are available as options.

The board comes with an external junction box that provides for composite, S-video and component video input to the board. Internally, it processes video as a 4:2:2 digital component signal; the board also provides a preview output and can produce composite, S-video and component video.

Although the board is not internally compatible with a

Toaster system, the MF-AT should be considered by those who are seeking to add 3D effects to their desktop video system.

Field Audio Mixer

Product: FP32A

Description: Portable, stereo audio mixer

Price: \$1,795

Availability: April

Shure Brothers Inc.

222 Hartrey Ave.

Evanston, IL 60202-3696

(708) 866-2200

Fax (708) 866-2279

FOR INFORMATION CIRCLE 02

Shure Brothers has introduced an updated version of its popular FP32 stereo field mixer, the *FP32A*.

The company displayed the *FP32A* in a side-by-side comparison with its predecessor. The difference was astounding: The *FP32A* is clearly less noisy than the *FP32*.

The low-noise performance of the *FP32A* makes the three-input, two-output field mixer suitable for use with



DAT and other digital recording media. The mixer weighs 3.5 pounds, is 2 1/4-inches by 6 3/8-inches by 7 1/4 inches, and operates on two 9-volt alkaline batteries that are easily inserted below the mixer's flip-up lid or any 12- to 30-volt DC source.

The mixer offers a dynamic range over 100dB, 48 volt and 12 volt phantom power, pop-up pan pots, LED indicators for input levels, output peaks, limiter action and low battery, the ability to link inputs 2 and 3 into a stereo pair, a mix bus to connect two *FP32A* mixers and headphone monitoring mode and MS stereo matrix.

Camera Battery

Product: Digital TRIMPAC battery

Description: Lightweight camera battery

Price: \$385

Availability: Immediate

Anton Bauer

One Controls Dr.

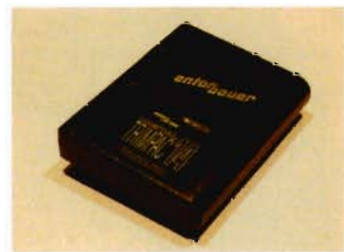
Shelton, CT 06484

(203) 929-1100

Fax (203) 929-9935

FOR INFORMATION CIRCLE 03

The first glance we had at the *TRIMPAC* digital camera battery came before the convention floor opened on Monday (March 21). Snugly mounted to the Panasonic Supercam,



the battery caught our eyes because of its low profile and LCD power gauge. After hearing the basics about the Supercam, we set off for the Anton Bauer booth to learn what we could about this new, high-tech battery.

At the company's booth, we found that the *TRIMPAC* was especially designed for use with many of the new cameras, such as the Supercam, that were being introduced at the show. The size of the battery matched the rear dimensions of these professional camcorders.

The *TRIMPAC* battery is designed with an onboard microprocessor and communication link with the camera to which it is mounted. Thus, videographers can constantly receive updated information about the remaining capacity of the battery if their cameras are equipped with interactive viewfinders that are becoming popular on many of today's cameras. The display, which takes the form of a fuel gauge, makes it easier for

a videographer to be sure that he won't be caught short on battery capacity.

Video Editing System

Product: Edit Desk system
Description: Integrated S-VHS editing system
Price: \$7,450
Availability: May
JVC Professional Products Company
41 Slater Dr.
Elmwood Park, NJ 07407
(201) 794-3900
Fax (201) 523-2077

FOR INFORMATION CIRCLE 04

At first glance, it might appear somewhat strange that VTU would choose the new S-VHS editing system from JVC, or any tape-based editing decks or equipment,



as one of the most significant products at this year's show. After all, NewTek's introduction of a non-linear editor, the Video Toaster Flyer, for less than \$4,000 at the same show flies in the face of traditional video editing. However, looking below the surface reveals some important facts: the Flyer won't be deliverable until fall 1994; many Video Toaster users will need to edit video affordably between now and then; and many currently shoot S-VHS.

Priced at \$7,450 for a cut-only system (source deck, recorder and controller), the *Edit Desk* system seems to be designed with corporate and educational video production in mind.

The system is composed of the BR-S800U editing recorder, the BR-S500U player and the RM-G800U editing controller. The BR-S800U comes with built-in, CTL time code support. Unlike other control track editors, the Edit

Desk's unique CTL time code supports frame-accurate addressability. Especially important is the deck's ability to stripe with time code tapes that have already been shot without sacrificing an audio track.

The BR-S800U and BR-S500U deliver more than 400 lines of horizontal resolution, a digital Y/C separator, three-line cross-talk cancellation and two channels of CD-quality audio with a dynamic range that is greater than 80dB. Both decks have front panel search dials that allow shuttles and searches of up to 32 times normal tape speed.

The RM-G800 editing controller offers a jog/shuttle dial, time code-referenced editing capability and a built-in control bus for connection to the Edit Desk recorder and player. The controller also has two general purpose interface trigger ports to control external devices.

Audio and Video Hard Drive

Product: AV Series & the Scorpio
Description: High-capacity computer hard drives
Price: 2210AV: \$1,385; 2217AV: \$1,920; 1936AV: \$3,410; Scorpio: \$5,995.
Availability: Immediate; Scorpio available in June
Micropolis
21211 Nordhoff St.
Chatsworth, CA 91311
(818) 709-3300
Fax (818) 709-3396

FOR INFORMATION CIRCLE 05

NewTek's introduction of the Video Toaster Flyer at this year's NAB convention is likely to bring about a reshuffling of priorities for most Video Toaster users. Eventually, concerns over video decks, SMPTE time code generators and readers, sync generators, audio mixers and a host of other ancillary products will wane.

While fewer in number, some other devices will become supremely important to edi-

tors using the new Flyer. First on that list will be computer hard drives. This is the media that will replace videotape in Flyer-based editing systems. Micropolis showed its AV series of hard drives designed with audio and video production in mind. Not all computer hard drives are suited for



non-linear video editing. Micropolis has designed its AV series—the 3GB model 1936, the 1.7GB model 2217 and the 1GB model 2210—so that necessary calibrations do not interfere with editing tasks. Furthermore, the SCSI-2 drives sustain a high-data transfer rate to ensure that enough information can be pulled off the disk quickly enough to sustain the image quality demanded by the Flyer.

However, the AV series was only part of the story at the Micropolis booth. Tucked away toward the back of the booth was the 9GB 5.25-inch Scorpio hard drive. Although it is not yet rated as an "AV" drive, such a version of the drive is likely to join the AV series before the end of the year, according to a company spokesman.

This drive is important for potential Flyer users because its 9GB size should provide enough storage to hold 54 minutes of D2-equivalent-quality compressed video. The drive costs \$5,995 and will be available in its first incarnation (not necessarily in the AV series) in June.

Toaster Operating Environment

Product: Crouton Tools
Description: Operating system for the Video Toaster

Price: \$149.95
Availability: Immediate
DevWare
4 Beth Circle
Jaffrey, NH 03452
(800) 979-0759
Fax (603) 532-4247
FOR INFORMATION CIRCLE 06

If navigating around the Toaster and between various Toaster support utilities seems confusing, *Crouton Tools* may be just the answer.

This operating system for Toaster 3.0, 3.1 and Toaster 4000 offers Toaster users a means of accessing more than 60 commonly used Video Toaster utilities. The program includes extensive support for Art Department Professional, Imagemaster R/t and ImageFX. Through the use of Crouton Tools, Toaster users can move from program to program with the click of a mouse button.



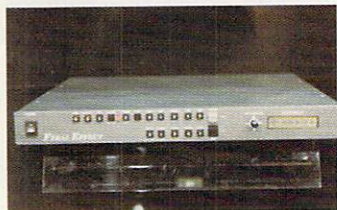
Although Crouton Tools was shown at NAB without support for the Video Flyer, DevWare plans to support the NewTek non-linear editor fully by the time the product ships. Currently, Crouton Tools comes with a visual logging module that should prove useful to Flyer users. The module provides a quick visual reference for various media elements such as video clips, MIDI music elements, Toaster Framescores, graphics, Toaster projects, animations, CG books and LightWave scenes.

Crouton Tools also comes with the ToasterSmart Directory utility, which allows users to find, rename, delete, copy and move Toaster files painlessly.

Compression Effects/TBC

Product: Feral Effects
Description: Board-level squeeze effects and TBC/synchronizer
Price: Board \$1,495; stand-alone \$1,995
Feral Industries
 5925 Beverly
 Mission, KS 66202
 (913) 831-1791
 Fax (913) 831-3427
FOR INFORMATION CIRCLE 07

Toaster users have long recognized that some of the artifacting visible in the Toaster's squeeze effects limits their use in video productions. Often to avoid problems, such effects are avoided or performed quickly. Feral Industries aims to solve that problem with the *Feral Effects TBC/synchronizer*. In addition to providing full-frame time base correction and synchronization with 8-bit, 4:2:2 component processing circuitry, Feral Effects performs smooth "picture-in-picture" effects without visible loss through interpolated video compression. As a result, Toaster users now have a means of reducing the size of a video source on the A channel and placing it over the shoulder of on-screen talent on the B channel. Among the product's other features are video standards



conversion from PAL to NTSC, an advanced digital comb filter and 6MHz bandwidth of picture output. Feral Effects is available as a PC board or a standalone device.

It accepts one composite and one S-video input and outputs composite, S-video and alpha channel. Processing amplifier controls adjust luminance level, chrominance level, hue, setup and genlock.

Image Processing Software

Product: ElasticReality
Description: Windows-based image processing
Price: Not yet set
ASDG
 925 Stewart St.
 Madison, WI 53713
 (608) 273-6585
 Fax (608) 271-9888
FOR INFORMATION CIRCLE 08

The introduction of the DeskStation Technology Raptor accelerator for LightWave 3D opens Video Toaster users to the realm of new possibilities. Because the standalone accelerator uses Windows NT as its operating system, the



range of software tools potentially available to Toaster users grew dramatically. One such tool is *ElasticReality* for Windows from ASDG. ElasticReality is the big brother to MorphPlus, a popular morphing and special-effects software package from ASDG. The program is responsible for many of the high-profile morphs created in commercial television production. In morphing applications, ElasticReality allows users to draw outlines of the features to be merged with structured drawing tools. Once the outlines have been drawn on the two corresponding images, like features are linked and the morph is calculated. This

approach to morphing eliminates the need to work with mesh, points and vectors found in previous systems. Morphing capabilities can be used with still frames and motion sequences. Output resolution is user selectable. ElasticReality also provides for automatic creation of traveling mattes, direct control over fold-over and warps within morphs.

LightWave 3D Acceleration Engine

Product: Raptor
Description: RISC-based accelerator for LightWave 3D
Price: Less than \$15,000
Availability: Immediate
DeskStation Technology
 13256 W. 98th St.
 Lenexa, KS 66215
 (913) 599-1900
 Fax (913) 599-4024
FOR INFORMATION CIRCLE 09

Those who have patiently awaited the release of the NewTek Screamer to accelerate the rendering of their LightWave animations have been rewarded with the release of the DeskStation Technology *Raptor*. At this point, it appears that NewTek will not market the Screamer. However, the Raptor fills the need for high-speed LightWave rendering that's been left unaddressed to date. Powering the Raptor are two R4400 MIPS RISC processors that deliver about 200 MIPS (million instructions per second) performance. According to DeskStation Technology, that performance means that a LightWave rendering that would have taken about 10 hours on an Amiga can now be finished in less than one hour on the Raptor. Aside from the RISC processors, the standalone Raptor includes 1MB secondary cache and 128MB of RAM. Although new to the video and animation market, DeskStation did supply the hardware around which the original Screamer was built.



Although the product supports the NewTek SoftScreamer, the software version of the Screamer, it will render animations created with LightWave 3D version 3.1. The only other equipment that is required is a Toaster 4000 and an Ethernet card for the Amiga.

CD-ROM-Based Music Catalog

Product: trakfinder and CD ROM catalog version 1
Description: Windows-based CD-ROM production music catalog
Price: \$285
Available: June
Network Music
 15150 Avenue of Science
 Ste. 100
 San Diego, CA 92128
 (800) 854-2075
 Fax (619) 451-9874
FOR INFORMATION CIRCLE 10

Video Toaster users interested in adding music beds to their videos have several options: They can illegally use existing popular music and risk being sued for copyright infringement; they can hire a composer to create an original score, which can be cost-prohibitive; or they can purchase the right to existing production music and legally add it to their videos. While choosing the latter approach makes the most sense, it's easier said than done. The catalogs of tunes these production music com-



panies publish are thick compilations. Aside from their heft, what makes them awkward are the phrases used to describe various cuts. Unless you are clued into what specific descriptive terms such as "inspirational" mean, it's difficult to connect the printed word to the aural product.

To remedy the situation, Network Music unveiled *trakfinder*, a CD-ROM catalog of its entire production music library. The Windows-based CD-ROM contains more than 1,000 29-second clips that allow a video producer and his client to preview a mono version of any clip. Each clip is a 22kHz, 4-bit mono sample.

To use *trakfinder*, users scroll through 300 descriptive words in a window on the left side of the screen and may select five words for a search. The program then searches for matches of the descriptive words and displays a list of themes that match the describer. Selections are displayed with the most recent clips at the beginning of the list. By double-clicking on the selection, the 29-second cut is played.

The search screen provides important information about the selected clip, such as a description of the theme, instrumentation, theme number, theme name, CD volume number and track number. A queue builder allows users to create a custom play list.

The Windows program requires a CD-ROM drive, Windows, a sound card and speakers. A Macintosh version is also planned.

3/4U to S-Video Converter

Product: YCP-688

Description: Converts Y-688 (dub out) from 3/4U to S-video
Price: \$549

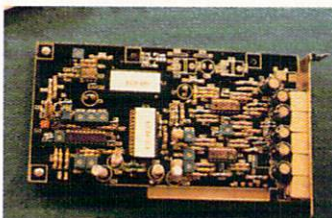
Availability: Immediate
Y/C Plus
1410 S. Kansas Ave.
Topeka, KS 66612-1335
(913) 235-3481
Fax (913) 235-3485

FOR INFORMATION CIRCLE 11

About one year ago, Sony estimated that one million 3/4-inch U-matic and 3/4U-SP decks had been sold. While many are playback-only decks, the number of edit source and record 3/4U decks in service is sizable.

Y/C Plus introduced the YCP-688 board, which is designed to convert the 7-pin dub output of 3/4U machines into S-video. The result is a picture with 5.5MHz of luminance bandwidth and more than 450 lines of resolution.

The board, which plugs into any PC slot, also uses special timing chips to match the luminance with the chrominance channel to eliminate



ringing in the picture. The YCP-688 comes with two S-video outputs and allows 3/4U users to easily integrate their decks into S-VHS and Hi8 systems.

Video Editing System

Product: Sony FXE-100 video editing system

Description: A/B-roll editing system with built-in switcher, effects and audio mixer

List Price: \$6,800

Availability: Immediate

Sony Electronics

1 Sony Dr.

Park Ridge, NJ 07656

(800) 625-7669

FOR INFORMATION CIRCLE 12

The Video Toaster is a staple for many production suites with its Switcher, more than 100 digital video effects, LightWave 3D animation, CG

and more. As the personal video production arena grows, many industrial producers choose to add on a traditional editing system to their studio. Sony is addressing the needs of the budget-minded with its introduction of the FXE-100 integrated video editing system.

With a list price of \$6,800, the FXE-100 is an A/B-roll editing system that combines basic



VTR control functions, a digital video switcher, special effects generator and an audio mixer.

Sony refers to the control panel as user-friendly. Keys and buttons are grouped by function and color-coded for quick identification. There's a push-to-change style jog-shuttle dial, push-button source selection and time counters for each VTR.

The FXE-100 has built-in frame synchronizers, eliminating the need for time base correctors. With three switchable RS-422 and RS-232C ports, the system can control two players and one recorder and accepts both composite and Y/C video signals to combine S-VHS, Hi8 and U-matic VTRs.

Editing features include assemble and insert modes, 99-edit memory (events can be saved to a floppy), a split-edit function, and the ability to save and load edit decision list data via the RS-232C port. A variety of wipe patterns, including picture scroll and slides, are preprogrammed. Borders and soft edges can be added and border colors are selectable.

For audio mixing, the FXE-100 has inputs for two-player VTRs and two-program outputs, plus two AUX input channels and a MIC input.

Image Stabilization

Product: J14axX17B KRS V

Description: Optical image stabilization lens

List Price: Not set

Availability: Immediate

Canon U.S.A. Inc.

Broadcast Equipment Division
610 Palisade Ave.

Englewood Cliffs, NJ 07632

(201) 816-2900

Fax (201) 816-2913

FOR INFORMATION CIRCLE 13

Estimated at \$9,000, Canon's new optical image stabilization technology may be cost prohibitive today, but made the NAB Top 20 list because it will most likely become an affordable feature for industrial-level lenses in the not too distant future.

For field situations where vibration is a problem, such as windy conditions, air and road vehicle mounts and handheld shoots, the J14axX17B KRS V makes steady shots possible. At the heart of the new lens is the Vari-angle Prism (VAP), which is composed of two pieces of flat glass joined by a bellows made of a special film that can expand and contract as needed. The space between the glass plates is filled with a silicon-based oil containing a



high refractive index. A prism with a variable angle is formed when the bellows expands and contracts.

When image shaking occurs, the vibration sensor sends a signal in proportion to the degree of shaking. The signal is processed by the micro-computer and passed to the prism drive actuator, which adjusts the prism angle as needed to compensate for the shaking.

The J14axX17B KRS V has a focal length of 17-238mm, a

zoom ratio of 14x and a minimum object distance of 31.5 inches.

Video Post-Production System

Product: Alladin Media Printer
Description: Windows-based video post-production system
List Price: \$9,900
Availability: Immediate
Pinnacle Systems Inc.
870 W. Maude Ave.
Sunnyvale, CA 94086
(408) 720-9669
Fax (408) 720-9674

FOR INFORMATION CIRCLE 14

The Windows-based *Alladin* system is an affordable, broadcast-quality, integrated switching, effects, CG, paint and animation system that works with virtually any editor.



Alladin has a seven-input switcher, 3D digital video effects (DVEs), still-store, luminance/chrominance keying, 3D modeling and animation with the bundled Crystal-Graphics Topas software, paint and a built-in alpha channel. It meets NTSC, PAL and S-VHS Y/C standards and offers optional analog component (RGB and Y, R-Y, B-Y) input and output.

Alladin's DVEs are truly impressive. There are more than 100 pre-created effects and graphic transitions. In addition, by using the 3D controls, it's possible to create custom effects like four-corner page peels with different video on the front and back sides with highlights and shading.

The paint package is full-screen broadcast with four separate cut buffers, variable brush types/styles and many filtering techniques. With the

provided Image North In-scriber CG, users can size, position, outline and emboss TrueType fonts.

In addition to working with conventional linear editors with the Grass Valley Group 110 Switcher and VTR control protocols, Alladin currently works with lower-cost off-line, non-linear editing software, such as Adobe Premiere, and may eventually interface with the Video Toaster Flyer.

Affordable Betacam Camcorder

Product: UVW-100
Description: Betacam SP one-piece camcorder
List Price: \$14,000 (without lens)
Availability: Immediate
Sony Electronics
1 Sony Dr.
Park Ridge, NJ 07656
(800) 625-7669

FOR INFORMATION CIRCLE 15

Sony's *UVW Betacam SP* recorder and player were first reviewed in the January issue of *VTU*. With the release of the *UVW-100* camcorder, industrial, business and educational video producers can now have Betacam SP quality from acquisition through post-production at an affordable price.

The Betacam SP component format records the image's luminance (Y) and two chrominance signals (R-Y/B-Y)



onto separate video tracks, unlike color-under formats—S-VHS, Hi8 and U-matic—which record luminance and a single chrominance signal onto just one track.

The UVW-100 weighs about 15 lbs. 3 oz. (with the viewfinder, battery, cassette and lens) and features three half-

inch HyperHAD Interline Transfer CCD chips, 60dB signal-to-noise ratio, a high F8 at 2,000 Lux sensitivity rating, and a horizontal resolution of 700 TV lines.

Camera features include a 26-pin connector to feed an external VTR, a variable speed electronic shutter, Clear Scan for shooting computer displays without showing horizontal bands across the screen, menu functions such as gain-up level settings and shutter-speed selection, and automatic adjustment functions. In addition, there's selectable master gain and warning indicators.

S-VHS Supercam

Product: AG-DP800 Supercam
Description: 3-CCD S-VHS camcorder with digital signal processing
List Price: \$7,000 (without lens)

Availability: Immediate
Panasonic Broadcast & Television Systems Co.
One Panasonic Way
Secaucus, NJ 07094
(800) 524-0864

FOR INFORMATION CIRCLE 16

The S-VHS format, long embraced by Video Toaster users and budget-minded videographers for its superior quality relative to affordability, just got better. In its ongoing development of S-VHS video recording systems, Panasonic has introduced the *AG-DP800*—a 3-CCD camcorder with digital signal processing costing a fraction of typical broadcast cameras with similar technology.

Dubbed "Supercam," the AG-DP800 uses three 1/2-inch, 380,000-pixel frame interline transfer (FIT) CCDs to achieve 700 lines of horizontal resolution, a signal-to-noise ratio better than 60dB (camera section), a minimum illumination of 2 lux and a high sensitivity of F8 at 2,000 lux.

Light enough for event, sports, education, production

and ENG applications—13.2 pounds with lens, 1.5-inch viewfinder and two-hour cassette—the Supercam is production flexible. Built-in features include vertical and longitudinal time code, a genlock input that allows it to be synchronized with other cameras or production systems, and a standard bayonet mount that is compatible with interchangeable lenses from a



host of major lens manufacturers.

The Supercam's variable scan shutter is a boon to instructional and corporate videographers because it allows the user to shoot video of computer monitors without picking up the monitors' retrace.

Other key features include four channels of audio (two Hi-Fi, two linear), 26-pin VTR connector, video Automatic Gain Control (AGC), audio AGC, a Super Iris and menu setup.

Standards Conversion

Product: Passport 4000
Description: Digital standards converter, TBC/synchronizer
List Price: \$6,750
Availability: Immediate
Prime Image Inc.
19943 Via Escuela
Saratoga, CA 95070
(408) 867-6519
Fax (408) 926-7294

FOR INFORMATION CIRCLE 17

The Video Toaster has proven its worth as a broadcast-quality video production tool. However, the Toaster has



gained little acceptance internationally because it is an NTSC device. For Toaster producers needing a standard other than the North American signal, conversion has been an expensive process. With the introduction of the *Passport 4000*, it is now possible to have affordable standards conversion inputs and outputs with the Video Toaster.

The *Passport 4000* uses a "pass through" interpolation technique that maintains signal characteristics and operates with 6+ field memory per channel. The digital, self-contained, self-powered unit converts the Video Toaster 4000 to PAL, PAL-M, PAL-N, SECAM and NTSC 4.43, making it possible to have Toaster productions ready to air in most of Europe and Asia.

In addition, there's an onboard, digital time base corrector/synchronizer which provides for transcoding of composite or Y/C into composite or Y/C out and a freeze frame/field feature.

Non-Linear Toaster Editing

Product: Video Toaster Flyer
Description: D2-quality non-linear editor

List Price: \$3,995

Availability: Fall 1994

NewTek Inc.

1200 S.W. Executive Dr.

Topeka, KS 66615

(913) 228-8000

Fax (913) 231-0101

FOR INFORMATION CIRCLE 18

Users have long known what it takes to build an A/B-roll editing suite around the Video Toaster: cash, TBCs, recorders, editing decks and controllers, sync generators, audio mixers and more. As detailed in *VTU's* special report in the April issue, NewTek has buzzed the industry once again by introducing its \$3,995 solution to complete the Video Toaster production system: the *Video Toaster Flyer Tapeless Editor*. With a single compression

board inserted into an Amiga 2000, 3000 or 4000 and integrating two SCSI-2 magnetic hard drives (see *Micropolis* in this report), the Flyer is a sim-



ple addition to the Video Toaster. Using a proprietary compression algorithm, Video Toaster Adaptive Statistical Coding (VTASC), the Flyer's digital video is expected to surpass other compression standards, such as MPEG, MPEG 2, JPEG and Wavelet, and sustain broadcast quality. Here's how it works: Audio and time base-corrected video are brought into the Flyer; the video is digitized, compressed and stored in real time on one hard drive, while the audio is sampled and stored separately uncompressed. Each clip is represented by a color crouton taken from one of its video frames. In and out points are selected and audio is fine-tuned until the clips are ready for editing.

Next, a crouton is dragged into position, an effect crouton is chosen and placed after the first video clip, then another video crouton is selected. The first video transition is completed. If graphics or titles are needed, related croutons are dragged and dropped. Then push the play button. It's simple—the Flyer will roll the clips, effects and graphics. The entire production can be recorded to a tape machine in real-time.

With the release of the Flyer and when integrated with the Video Toaster's Switcher, effects, LightWave 3D animation program, CG, ChromaFX

and ToasterPaint, NewTek will fulfill its vision of a complete desktop production studio.

Audio Mixer

Product: SunRize Eight Channel Audio Mixer

Description: External, computer controllable-automated mixer

List Price: \$349

Availability: June 1994

SunRize Industries

2959 S. Winchester Blvd.

Ste. 204

Campbell, CA 95008

(408) 374-4962

Fax (408) 374-4963

FOR INFORMATION CIRCLE 19

SunRize Industries, makers of the high-quality audio editing system Studio 16, have introduced another affordable audio product aimed at personal video producers.

The *Eight Channel Audio Mixer*, listing at \$349, has four sets of stereo inputs, one set of stereo outputs and balanced and unbalanced signals connecting via phone jacks. Balanced connections, most common in professional mixers and high-end VCRs, have two signal and one ground wire and a -4dB level. Unbalanced signals use one signal and one ground wire transmitting a -10dB signal



(or line level) and are mostly used with consumer audio equipment and lower-end video decks.

The mixer has a built-in microcomputer that allows users to mix audio while switching video, will follow video switches with audio cross fades and synchronize automated mixing to Amilink through internal SMPTE time code. Two software modules brought over from Studio 16

control the meters and mixers. The Eight Channel Audio Mixer stands alone—no slot or serial port is needed.

Affordable MII

Product: MII "W" PoWerSeries VTRs

Description: Lower-priced MII line of recorders/players

List Price: See below

Availability: Immediate

Panasonic Broadcast

& Television Systems Co.

One Panasonic Way

Secaucus, NJ 07094

(800) 524-0864

FOR INFORMATION CIRCLE 20

Further recognizing the emergence of desktop video producers, Panasonic has developed a new lower-cost line of MII component VTRs.



The "PoWer" or "W" series includes one recorder and two studio players with full NTSC bandwidth and 1/2-inch component video. The AU-W35H MII recorder (\$10,400 list) and the AU-W32H MII studio player (\$8,800 list) both feature three dimensional-type TBC with full-field memory for dropout compensation, built-in time code generator and reader, and freeze-picture function for noiseless stills with AutoTracking. They are equipped with four-channel audio output, an auto head cleaning mechanism, built-in TBC level control and a tiltable control panel.

The AU-W33H MII studio player (\$10,400 list) offers all of the features of its companion units plus an Auto-Tracking capability for full control of noiseless slow motion and still playback.

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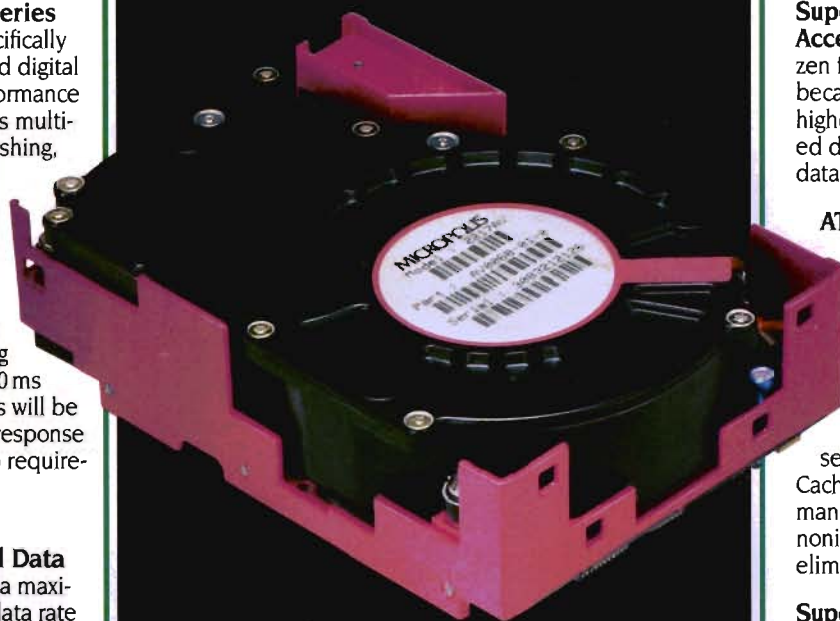
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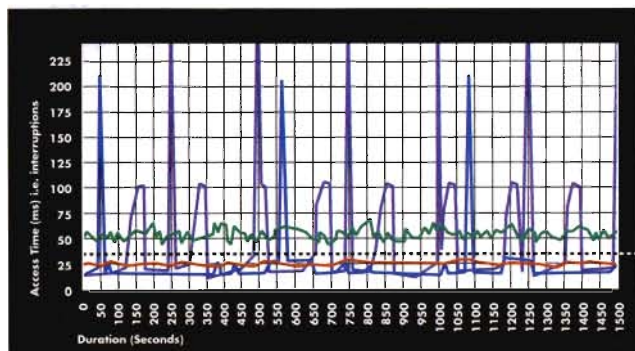
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TOASTER TIMES

Deliverable LightWave Raptor Debuts at NAB Convention

Phil Kurz

It might not look like a blood-thirsty dinosaur, but it will devour LightWave rendering chores like its namesake consumed a bovine banquet in *Jurassic Park*: fast and with brute force.

Called the Raptor, this new LightWave rendering engine delivers 200MIPS (million instruction per second) performance for \$13,950. The Raptor is a standalone computer that comes with LightWave 3D (an additional \$1,900) already loaded on its hard drive. It should render LightWave

scenes in one-twentieth of the time it takes to render the same scene on an accelerated Toaster system.

The Raptor, built by DeskStation Technology in Lenexa, Kan., is driven by two MIPS R4400 RISC (reduced instruction set computing) processors. The company unveiled the product at the National Association of Broadcasters convention in March and planned to begin shipping the rendering engine by mid-April.

Although the Raptor is the

company's first product designed specifically for the video and animation markets, DeskStation Technology provided the RISC-processor boards that drove the NewTek Screamer.

During the convention, the company displayed the Raptor networked to a Toaster system via Ethernet using Commodore's I-Net software and running LightWave 3.1.

The shipping Raptor will be a two RISC-processor design, said company presi-

dent Don Peterson. However, he added that the Raptor is designed to be a modular system with a planned migration path that won't obsolete the current product. "Migration is what we do," he said. "Anybody who thinks that we'll have something better in a few months won't have to wait. They don't have to wait because the Raptor will run as a node on a network."

Relying on the Windows NT operating system, the Raptor should be able to run other applications. "We currently are investigating what other software packages may run on the Raptor," Peterson said.

DeskStation Technology (913-599-1900) in suburban Kansas City, Kan., has been building high-performance, RISC-based personal computer boards for several years. Founded in 1989, the company is privately held.

VTU

Toaster Enters a New Ballgame at IDEA Conference

Douglas Carey

In a surprising twist, several Major League Baseball officials gathered in a Salt Lake City conference room last February to voluntarily share their most successful techniques.

Alas, the purpose of their meeting dispelled any rumors of collusion. In fact, swapping secrets was a vital part of the 12th annual Information Display and Entertainment Association (IDEA) Conference, which drew nearly 150 representatives of the electronic display industry.

In addition to baseball officials, the association consists of individuals who operate and manufacture large-screen display systems across the country, including many college and professional sports arenas.

For Rod Murray, entertainment production manager of the California Angels, the conference capped a tumultuous new year. In January, an earthquake centered in Northridge (about 50 miles north of Anaheim Stadium) rendered the Angels' Sony Jumbotron scoreboard virtually useless.

Although the Angels were forced to begin the new season with an auxiliary scoreboard, Murray said the situation



The Philadelphia Phillies' Scoreboard and Phanavision Operations team received rave reviews at the IDEA Conference for their World Series animation opening.

Pride Integrated Services to Stop Production of PIV-2001

Josh Moscov

Pride Integrated Services Inc. agreed to cease manufacturing and selling their PIV-2001 editing system or from infringing on RGB Computer & Video Inc.'s copyrighted AmiLink computer program as a result of a preliminary injunction issued on March 11 by the U.S. District Court, Southern District of Florida.

The AmiLink maker along with fellow defendant Rodion Molina halted proceedings during testimony by consenting to the injunction, which also states that they are barred from using RGB's AmiLink source code "in the creation, distribution, promotion and sale of any other software".

As previously reported in the January 1994 issue of *Video Toaster User*, the legal battle began when RGB filed suit

in Federal Court in October 1993, alleging that Molina misappropriated AmiLink's source code for its computer-based video editing system when he left RGB in 1989. At that time, RGB sought injunctive relief as well as actual and punitive damages.

According to RGB president Steven Crane, Pride and Molina began discussions with his attorneys on a potential settlement prior to their consenting to the injunction. Since then, Crane said there have been additional settlement negotiations.

"We have held initial discussions with some of the principals of Pride... (but) I have not had a chance to work out any specific settlement terms or conditions since Friday (March 11). We

have plenty of time to discuss those issues," Crane said.

A permanent injunction as well as the rewarding of any punitive damages will be decided in a formal court hearing, which at the time of this report had not been set.

After waiting almost six months to obtain a hearing date, Crane noted that both he and RGB were encouraged with their success in court.

"We are very excited and happy thus far. I don't see that anybody wins in any litigation matter. It only detracts from the operations of the business. I will be truly relieved if the case is settled and goes away in its entirety," he said.

Crane also believes that the preliminary injunction could create some confusion within the desktop video industry.

"In terms of the decision, I would imagine that there are some dealers and distributors who are pondering what their next move is. They must be in limbo. I have no idea how (the injunction) will affect end users.

Pride was not available for comment at press time.

VTU

improved when he learned that a 1994 Sony Jumbotron would be installed this August. The newer version features improved picture quality and luminance, an added plus during Angels' day games.

"The new (scoreboard) will be far superior to the 1988 Sony Jumbotron we had," Murray said. "It's an overwhelming board that's going to be second in size in North America. Only the board in Toronto's Skydome is larger."

Murray's good fortune continued at the IDEA Conference, where the Angels were honored with Golden Matrix Awards for Best Video Board Display and Best Season Long Feature. Murray was also elected president of IDEA at the conference.

Even before taking on IDEA's presidency, Murray played an important role in the organization. Fresh from his first full season with the Video Toaster, Murray led a discussion at last February's conference focusing on the future of desktop video in the industry.

One of the discussion's most eager participants was John Franzone, the New York Yankees' director of video operations, who added the Toaster to his repertoire this season. Franzone said the Toaster brings a much-needed flair to the ordinary graphics Yankee fans are used to watching.

"It certainly jazzes our show up, because unfortunately, we're saddled with an 11-year old board and no immediate plans to replace it," Franzone said. "As a graphics tool, the Toaster definitely improves our show and makes it much more dynamic."

While many IDEA members are just beginning to realize the potential of desktop video, others are building on last season's accomplishments. The Florida Marlins used the Toaster on-line with two Sony Jumbotrons throughout last year's inaugural season, and the team has greater plans in store for this year.

And like the team they watch every homestand, Anthony

continued on page 24



The Phillies' animation (above) was just one of many on display at the IDEA Conference, held each year for representatives of the electronic display industry.

Innovision Technology to Introduce 36-bit Paint Program

Josh Moscov

Adding to a growing list of third-party paint programs for the Video Toaster, Innovision Technology will soon release Alpha Paint, the first fully-integrated, 36-bit paint program, according to Innovision marketing director Tom Patrick.

Taking advantage of the Toaster's hardware capabilities, Alpha Paint will feature real-time, 24-bit painting and full-screen WYSIWYG painting directly on the program output for all Toaster systems.

The application also provides a full, 12-bit Alpha Channel which, according to a press release, "makes image texturing, blending and compositing easy." The alpha channel also allows for painting directly into the Toaster's hardware mixing channel.

"The alpha channel lets the user do unique live video transparencies and software-edge feathering effects on video—those are Alpha Paint exclusives. It also has an interesting proprietary display of 16-level alpha channel key pages over live video," Patrick said.

In addition to providing standard image enhancement tools such as oil painting, filters, sharpening, air brushing and gamma correction, Alpha Paint offers the ability to do 3D perspective rotation while maintaining a proper aspect ratio.

Like Montage—Innovision's character generator for the Toaster—Alpha Paint was designed to be an all-in-one applica-

tion that doesn't require any additional utilities, programs or chip RAM in order to operate.

Innovision plans to position Alpha Paint in the market to deliver high-end paint system performance to the Video Toaster.

"This program was made to create Discovery Channel-type graphics," Patrick said. "It's for video painting. We see a real need in the marketplace for a product like Alpha Paint."

Patrick noted that Innovision is confident the product will provide Toaster users with helpful features even if NewTek introduces a new ToasterPaint in the future.

"Alpha Paint will still be a viable product because of its proprietary features like being able to paint directly into the Toaster's hardware mixing channel with those 12 bits. And the fact that it can paint in real time in 24 bits directly on the Toaster's display is something that

to our knowledge has never been done," he said.

Though a fully-integrated application for the Toaster, Patrick said certain details, such as whether Alpha Paint would be launchable from the Toaster's Switcher or another icon, were still being worked out by the company's software engineers.

Alpha Paint will be released to the marketplace by early summer and list for \$699. Founded in 1987, Innovision Technology (510-638-0800) is based in San Leandro, Calif.

VTV



Innovision Technology has slated Alpha Paint for a summer release.

IDEA continued from page 23

Fanticola and his colleagues with the Philadelphia Phillies entered this year's season just months after a successful post-season. Entering their second full season with the Toaster, the Phillies' Scoreboard and Phanavision Operations unit is looking to improve on last year's stellar performance.

"We're moving forward," said Fanticola. "We're going to be adapting the opening we did for the playoffs and the World Series to be a opening for each game this season. There's probably going to be five 60-second openings done from the Toaster to start the show."

Of course, entertainment is merely one aspect of any scoreboard operator's job description. Fans expect a scoreboard to provide everything from batting averages to dot races.

"The goal," Murray said, "is for the scoreboard to present a steady flow of both entertainment and information."

That objective is shared by officials in other fields, includ-

ing the gaming industry, where electronic display systems explode along the Las Vegas strip.

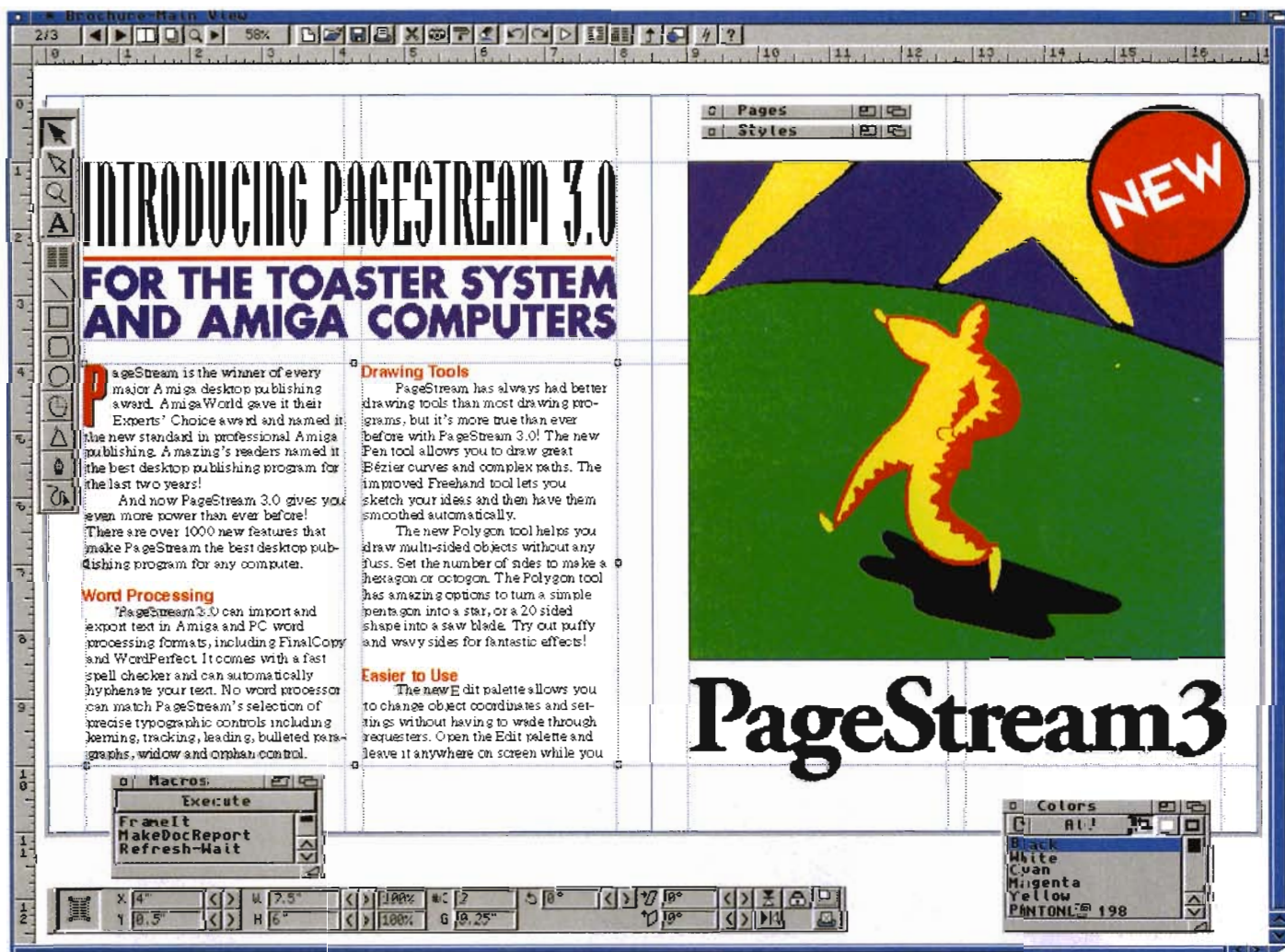
"The casinos is another area where I can see the Toaster taking off," Franzzone said. "You're dealing with one-or two-person operations with no real crew. As a production station, I can really see the Toaster making some headway there."

Like their counterparts from the sports environment, several gaming representatives attended the IDEA Conference in hopes of learning from their peers. The participants didn't leave disappointed.

"I got some ideas from the Marlins and Angels at the conference; it was a neat way to share," said the Phillies' Steve Kay. "There are really no limits to what you can do with the Toaster. It's up to the imagination, and I'd like to use someone else's imagination for a change."

VTV

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FOR INFORMATION CIRCLE 139

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DEAR JOHN

Rotoscoping Realities

Fast Accelerators to the Rescue

by John Gross



T

his month's column answers Toaster-related questions from the VTU mailbag and on-line services.

If your questions for Dear John are answered in print, *Video Toaster User* will extend your subscription for one year and send you a *Video Toaster User* T-shirt. Send your questions to the on-line address at the end of this column or to VTU.

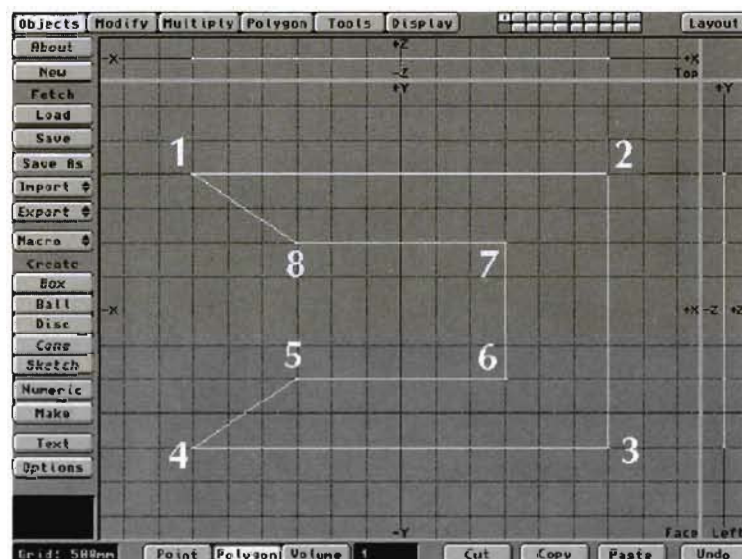


Figure 1

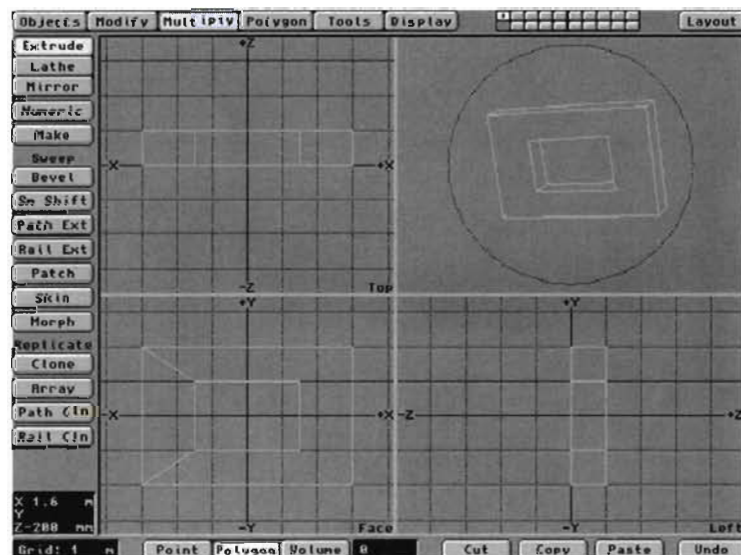


Figure 2

Q: I am very interested in rotoscoping and would like to know what some of my options are.

Kent Nelson

AVR-College Vet Med
Manhattan, Kan.

A: For those readers unaware of what rotoscoping is, let me first offer a definition. The process of rotoscoping involves taking a sequence of images and painting something on top of each. [Editor's note: For a tutorial, see "Rotoscoping: Manipulating Your Video Toaster Frames," page 116, in the March 1994 issue of VTU.] You can add or remove something (or both) from the image. For instance, let's say that you wish to add trails of sparks around a newspaper as it is being thrown onto a lawn. You would first shoot the footage of the newspaper being thrown. Next, you would break the footage into individual frames and load each frame, one at a time, into a paint program and add the sparks to each image.

As you can see, this can be a daunting task, especially when rotoscoping more than a second or two of footage. So what are your options?

If you want to get serious about rotoscoping, you need money to buy large hard drives to hold your images, RAM, fast accelerators and possibly for a faster computer than an Amiga. You see, if you are going to really get serious about rotoscoping, the Amiga may not be the machine for you. You probably want to move up to something with the speed to handle the large number of images that you have to load and manipulate.

Have I scared you yet? OK, so what if you want to use your Amiga and your Toaster system? I didn't say it couldn't be done, just that it was a formidable task. First of all, I wouldn't say that ToasterPaint would be the paint program of choice for this job. It doesn't yet have the interface and the tools you would want to use. At this point, your best option would be to get a fast accelerator and a 24-bit card. A good choice is GVP's EGS 110/24 system. It combines a 24-bit graphics card with a fast accelerator, but the unit can be an expensive proposition.

What if you want to use your Toaster as it currently is? I would suggest using LightWave; I've used it for rotoscoping images many times in the past. It just depends on what you need to add. Using LightWave's Show Background Image option, you can load a sequence of images (your captured footage) and generate a wireframe preview. A preview of this type looks remarkably good, and you can use it to figure out where to place objects to enhance the scene.

For instance, let's say you had footage of a person blowing air out of his mouth, and you wanted to add smoke blowing out. You could design some fractal noise

smoke that is wrapped onto an object and use a Front Projection-mapped plane with the same background sequence to hide the smoke object until you push it out of the mouth and through the plane. This gives the illusion of smoke leaving the mouth.

Of course, this technique won't work with all kinds of rotoscoping applications, but it can for many. In *seaQuest*, we often use LightWave to add to filmed shots. As an example, a shot can be filmed so the lower half of the frame contains live footage and the upper half is black. Once we get the images, we add the objects through LightWave that are necessary to finish the shot, such as a mountain, the inside of a facility or a long tunnel. If you plan the shot to be used with LightWave, it is fairly easy to add the elements later.

Q: I know that there are legal and practical limits to the intensity of colors that can be broadcast. As I understand it, these limitations exist primarily to minimize chroma crawl. What is the best way to keep my LightWave animations within these limits? Or, should I just not worry about it and assume that any inadvertent, high-screen colors can be cheaply eliminated in post-production?

Bill Cobb
Indialantic, Fla.

A: It depends on how your images are saved and laid to tape (or disc).

If you are saving your images as framestores, realize that the Toaster has built-in NTSC filters that won't send out an image that is too hot.

If you are saving your images as RGB, it depends on the software/hardware that you are using to get those images to tape or disc; some have built-in filters and others do not. It definitely helps to have access to a waveform monitor/vectoroscope because these instruments would tell you if your images were hot or not.

In any case, I recommend keeping your color values in LightWave at or below the 220 range. It's important to remember that when using the default ambient light setting (25 percent), that this value is added to the RGB value of the surface (25 percent of the RGB values). Of course, LightWave will stop adding to the RGB values of a surface when they reach 255,255,255. You wouldn't want to use this value often as nothing in nature is truly white. Also, with this brightness

value, you can't have a brighter hotspot (assuming you are using a white light as well) visible on the object.

Remember that with LightWave the color of your surface can only equal the fully assigned RGB value if it is placed perfectly perpendicular to a 255,255,255 light source that is set at 100 percent intensity and if the surface is 100 percent Diffuse with no ambient light. Lowering this same light to 50 percent can give you 50 percent of the RGB values. Of course, adding ambient light, more light sources or changing Luminosity/Diffuse levels all give different RGB values than selected.

In closing, I should state that it isn't necessarily hot images that produce chroma crawl. Chroma crawl occurs whenever you have two contrasting colors next to each other in an NTSC signal. Red and yellow are good examples.

Q: As a novice user of the Toaster 2000, I have several questions.

1. First, I want to model an antique tin box. It has artwork printed on its exterior. I tried to capture the texture by framestoring the sides of the box and cutting brushes of the images I need in ToasterPaint. When I view the RGB of the brush, there is always more of the image than I cut. How do I isolate the portion of the image that I want to use?
 2. Second, how do I model a box with a hole in the center? When I try, I always change the shape of the box.
- P.S. Is Toaster 3.1 worth the upgrade without an Amiga 4000?
- Wesley Helms
via CompuServe

A: 1. TPaint has a problem when you try to use brushes as image maps. You often get some unwanted black on the edges. If you have an image processor, such as ImageFX or Art Department Professional, I would recommend saving the framestore as an RGB file from TPaint, loading it into the image processor and cropping the part of the image you wish to use. This works perfectly on the box.

2. A box with a hole in the center? If you use 3.1 (yes, upgrading is a good idea, especially if you use LightWave), you can just use a Boolean operation and let Modeler do all the work. With LightWave 2.0, you have to build the box face with the hole and then extrude it to the required depth.

Basically, the best way to understand how to model this is to look at a similar object. Load the Capital A object (or B, D, O, P, Q or R) from the Fonts/Common directory. This should give you an idea of how to model an object with a hole. The key is to model the face with the hole and then extrude the entire thing.

Figures 1 and 2 show examples of how the box could be modeled. Basically, you need to place all of the points for the outside and the hole of the box and then connect them in the numbered manner. After connecting, make a polygon (Figure 1) and attach the remaining four points to create a second polygon and the hole.

Once the two polygons are created, make sure they are both selected and pointed in the same direction (-Z). Then extrude them. Figure 2 shows the completed box.

Q: I have a 486 PC and an Amiga 4000. I would like to get a parallel-port tape drive in the 250-500MB class that can work with both machines. I don't want to deal with SCSI on my PC, and I would like the drive to be maximally portable, thus the use of the parallel port. There are a number of such products available for the PC, but I have to imagine Amiga drivers for these drives are not abundant. Any suggestions?

Lance Charnes
Wombat Group
Sherman Oaks, Calif.

A: I would have to imagine that you are correct. I have not heard of any products for the Amiga, but let's open it up to the readers: If any of you manufacture or know of such a product, please write and let me know.

VTU

John Gross is an animator for Amblin Imaging and the editor of LightWavePRO.

Questions can be sent to:

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Los Angeles, CA 90035

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EDITORIAL EVALUATION

Circle number on Reader Service Card

I found this article:

Very Useful
Circle 021

Useful
Circle 022

Not Useful
Circle 023

TIPS & TECHNIQUES

Mapping Mania

Liberating Your Textures

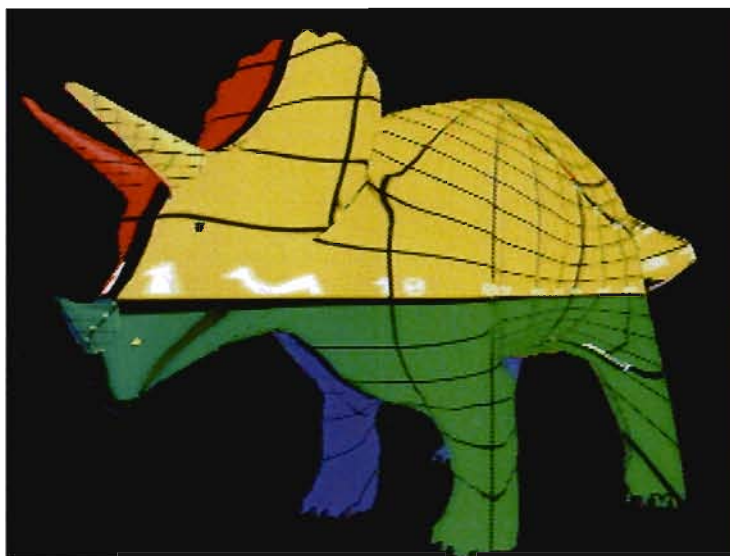
by Brent Malnack



How many times has this happened to you? You slave in your paint program to make the perfect texture map only to have it stretched and distorted when placed on the object and finally rendered.

It has to me, and I was a texture prisoner, limiting myself to planar mapping. Cylindrical and spherical maps left me at the mercy of the computer.

Well, no more. The answer is a grid (see Texture Grid RGB) that you will find invaluable to understanding how the different image-mapping commands function.



Texture Grid RGB: an invaluable tool to understanding image-mapping commands.

Follow these steps to make a grid, known as a 12-field chart:

- Step 1: Open your favorite paint program and set the resolution to 763x482. Choose eight colors.
- Step 2: Using the straight-line tool, make a grid spacing the lines every 31 pixels wide by 20 pixels high and set your grid color to black.
- Step 3: With the stencil tool, isolate the black. In the upper-left quadrant, make a color box (mine is yellow) and follow around the other three quadrants with three other colors (going clockwise, mine are yellow, red, green and blue).
- Step 4: Choose a thicker line and create an x from corner to corner (these lines should intersect at the center, 0).
- Step 5: Draw a box perimeter at the halfway mark; put wide lines at the horizontal 0 plane and the 0 vertical plane.

Step 6: Go to the font gadget and select an appropriate font (not too overbearing). Make its color white and label the x line and the plane lines from 0 center to 12 outside.

Step 7: Finally, cut the grid out as a brush and save it as a 12-field chart.

You are not limited to the 12-field grid, and you can make it as big or small as detail requires.

Now for some experimentation using the grid. The following applications do not reflect all of its' uses—just experiment and conquer your textures.

Planar Mapping

Planar mapping usually offers the least distortion, but grid plotting is still a valuable tool to control the exact placement of a hatch or access panel.

First, set your camera lens to 250mm and place the camera perpendicular to your object. Load the grid into Images, then choose a planar image map, y axis and automatic sizing. Set luminosity to 100 percent and diffuse to 0 percent. Render and save as an RGB. You now have a reference grid stenciled onto your object.

Next, load your RGB image into the paint program used to create the grid. Be sure to use the same resolution that was used to make the grid. You now can plot in precise locations.

Change your background color to one not in the grid and make a stencil of it. You can fix the background so if a mistake is made, the grid will not be lost.

What I like to do is open DeluxePaint IV, load the grid into layer 1, make a copy of layer 1 to layer 2, change the background color, make a stencil of the background color and make a brush. Using the right mouse button, I remove the tile grid leaving a hole in the layer at which the onionskin feature shows the grid from layer 1 in layer 2. Now, you can position your hatches and panels on the object exactly where desired.

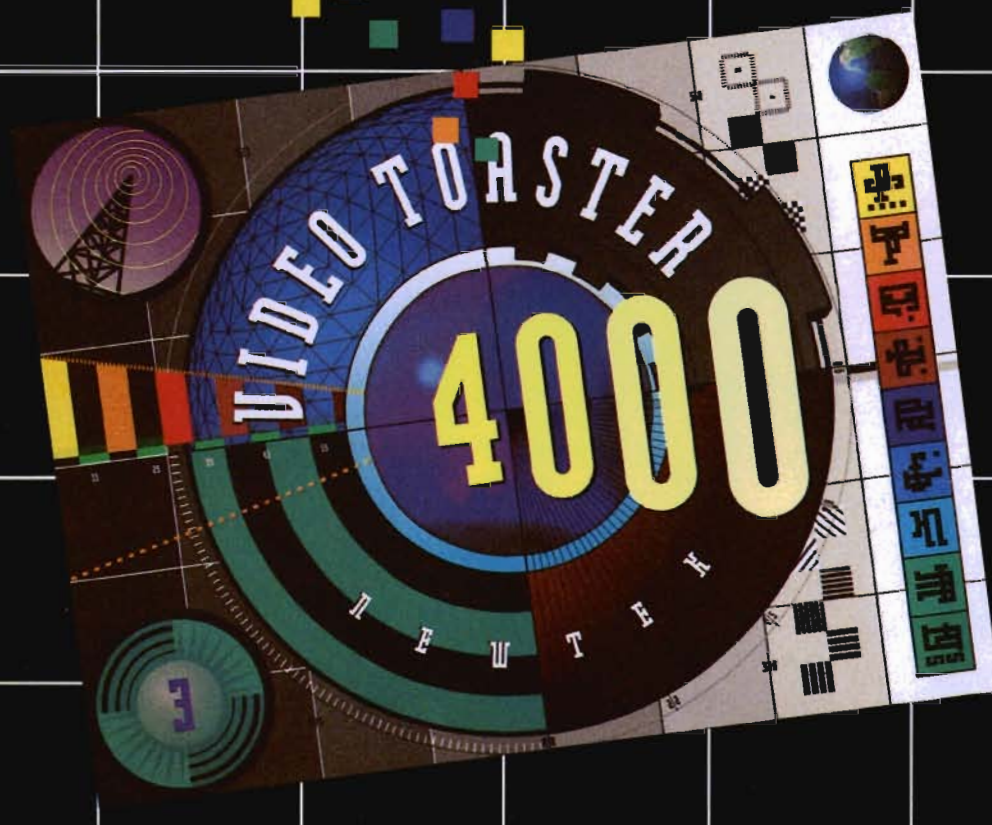
A different twist: Try a different axis with the grid so you can see exactly what the computer is doing. Knowing where it squashes and stretches leaves only your imagination.

Cylindrical Mapping

What happens when I tell the program to map 24 tiles in the x axis? Just map the grid on the object—numbers and colors give you the answer.

Spherical Mapping

The spherical map on a non-spherical object is like a vacuum sealing your object in a texture, but taking a



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Centennial's Spanish Toaster workstations are now powered by NewTek's Toaster 4000 and Commodore's A4000. They include Spanish keyboards and fonts with optional Spanish manuals. Call Florida's number one Toaster dealer and Video Systems integrator for your ideal desktop video system. Latin American dealer inquiries welcomed.



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TIPS & TECHNIQUES

flat plane and mapping it spherically to an object can be a nightmare. However, it is the only texture-mapping technique that can create those *Jurassic* dinosaurs. The grid enables you to place small scales growing into large scales exactly where you want them. Let's try it.

First, map your grid on a dinosaur head and notice that the grid squashes and stretches to match the hills and valleys of the object. Next, create three to six views (top, left, front, etc.) of the head.

Load your views into the paint program's swap screen. By flipping back and forth between the screens, you can see that you want the small scales in the area around the creature's mouth.

Examine the distortion on the grid, and you'll find that when this texture map is mapped on the head, there is horizontal distortion. When this occurs, you should compress the scales on the flat map because the mapping of the texture can expand the scales when spherically mapped on your object.

I guarantee the grid will open up your imagination and give a complete control of mapping.

James Gorman

Owner and chief animator

Visual Concepts Computer Artistry
Santa Maria, Calif.

No Bones about It

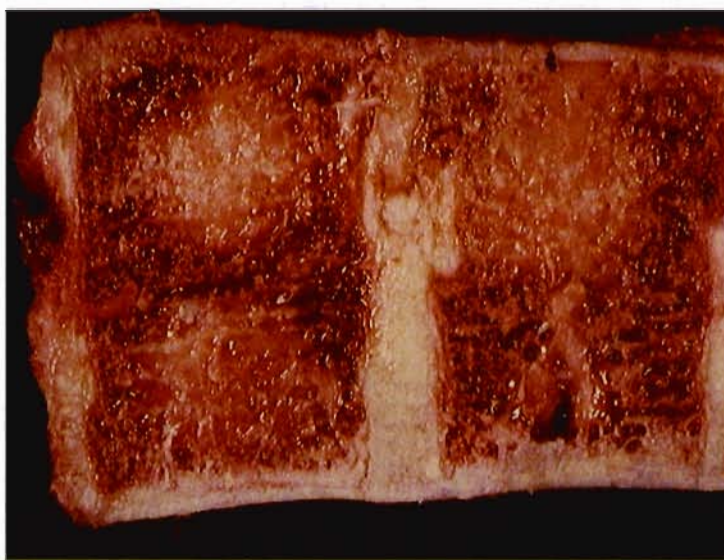
As a pathologist at Providence Medical Center in Kansas City, Kan., I have long been interested in computer applications in the field of pathology. My experience with video digitizers ranges from DigiView, Framegrabber and more recently DCTV and the Video Toaster. The Toaster was purchased solely to provide high-quality framegrabs quickly.

We have a video-microscope setup to show microscopic images of cancer on video monitors as part of the weekly multi-disciplinary cancer conference. I have been able to use the Video Toaster or SCALA during those conferences and both have been excellent presentation tools. The setup

works fine for microscopic images.

However, I had been struggling for affordable ways to input my many macroscopic transparencies, but the cost of the flatbed scanners with transparency options or the newer direct-slide scanners, such as the Nikon Cool Scan, were out of range at a cost of about \$2,000.

I found a device called the Tamron Fotovix III-S that fits my needs perfectly. This device was purchased mail-order for approximately \$850 and allows any 2-inch-by-2-inch transparencies or film negatives to serve as



Dr. Peter Shireman uses Toaster framestores like this one for weekly cancer conferences.

sources for video output. It has both composite and S-video outputs and a few simple controls that allow for slight magnification, light level, joystick adjustments for red, green and blue and a positive/negative switch.

I have found the output of this device, as seen ultimately in the framestores produced, to be of very high quality and quite usable for medical teaching. Two other pathologists and I have a free tumor BBS (PC-Tumor BBS, 407-234-1287) that we stock with JPEG images of cancer. Many of these images were derived as described above.

The image above is a framestore image of a bony metastasis from lung cancer in the vertebral column from an autopsy.

It would seem to me that many other readers of *Video Toaster User* could find potential uses for the Tamron Fotovix III-S, as any photo-

graphic negative or transparency becomes a quality framestore to be used for many different applications.

Peter K. Shireman, M.D.

Providence Medical Center
Kansas City, Kan.

The Background on No-Background

This technique is related to your January 1994 column on cutting out clean, no-background brushes. It concerns creating embossed logos or text in ToasterPaint.

First, you need to cut out a no-background brush of the desired text or logo. Save the brush or make it the swap brush.

Next, load or create the background that you wish to emboss.

Then, recall your brush and go to the And mode. Select black as your color and set Transparency between 60 to 70 percent.

Now stamp down your brush in the desired location.

Finally, change to the Or mode and select white as your color, keeping the same transparency level.

Stamp down the brush offset above and to the left of the first one. This is a very simple technique that looks good.

It would make a good starting point for a discussion of the And, Or and XOR modes.

Peter E. Clouston

KMCI-TV

Lawrence, Kan.

VTU

Send Us Your Tip

If your submission is selected by Brent Malnack to be the most useful, we will renew your subscription to *Video Toaster User* for one year, and you'll get a free copy of *Mastering Toaster Technology*. Send tips to: Brent Malnack, Positron Publishing, 1915 N. 121st. St., D, Omaha, NE 68154.

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WARP ENGINE

The only Expansion Device you need for your Video Toaster/4000 that provides High-Speed 040 Acceleration, up to 128 MegaBytes of Local 040 Burst Memory and the Fastest SCSI-II Controller Available! Why? Because all of this expansion is on a single board that installs into the CPU slot - NOT a Zorro III Slot!

The Warp Engine Series of Accelerators is a breakthrough in Amiga Expansion design. The Warp Engine comes in three versions for the Amiga/Video Toaster 4000 and three versions for the Amiga 3000.

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.
- **Warp Engine 33** \$1599.95 suggested list.
- **Warp Engine 40** \$1899.95 suggested list.

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	?

MacroSystem Development

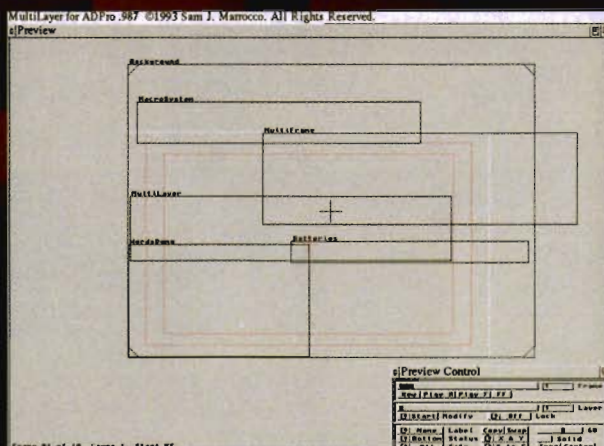
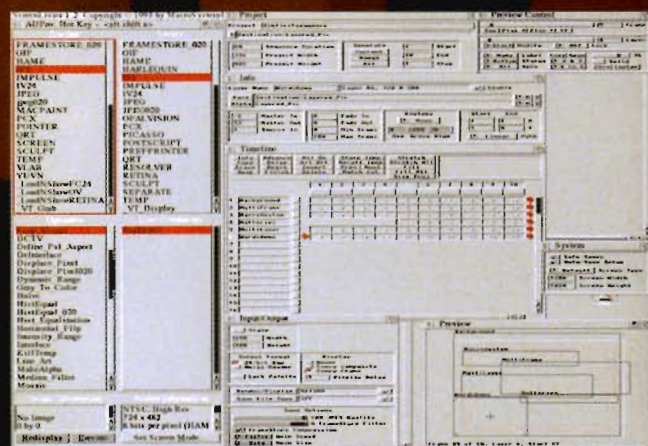
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FOR INFORMATION CIRCLE 1

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 ASD'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.

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



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LightWave
users have
been waiting
for!

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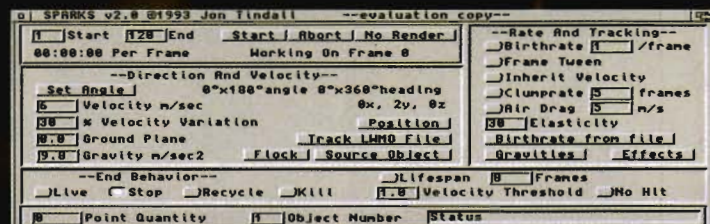
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- Spacing - user-defined birthrate
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Standard Particle and Real World
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Image from Robo Jr. by Dale Myers made using Sparks

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RETINA

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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.



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TVPaint 2.0 - Suggested List \$349.95



Features:

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VLab Y/C™

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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.
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- 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.
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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
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- Dual 16bit delta-sigma A/D converters
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DR. VIDEO

Crazy from the Heat

Keeping Equipment Cool Helps in Production

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: I produce local documentaries with VHS as the final product. I shoot on Hi8 and wonder which is the best format to edit on before dubbing down to VHS: Hi8, S-VHS or 3/4-inch U-matic?

W.S.
Ketchikan, Ark.

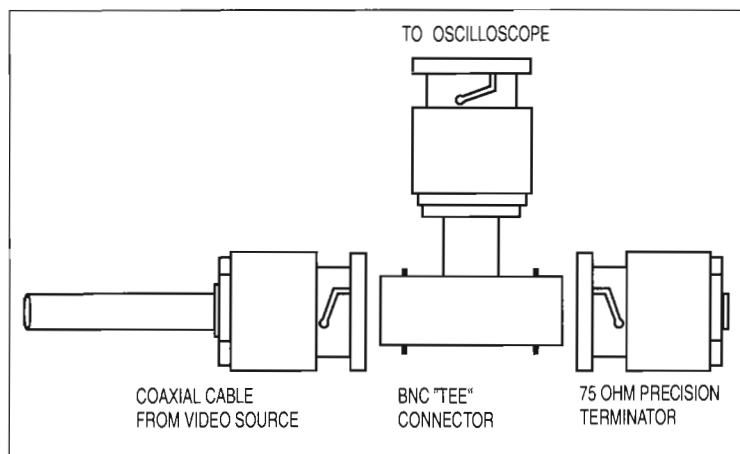


Figure 1: Connect the scope to the video source via a Tee connector with a terminator. This ensures that the signal is properly terminated, which helps keep the levels accurate.

R_x: I advocate two rules for editing: First, edit directly from the acquisition tapes to the record VTR. Second, use a high-quality record VTR. Do these things, and you'll eliminate most problems before they occur.

Every time a signal enters or leaves a VTR, it loses a little bit of its quality. This is called generation loss. The amount of noise in the video signal increases, and snow and grain appear. Too many people transfer to an editing format, then edit and make dubs. It's really best to edit directly from the field tape, not a dubbed copy, if at all possible. Of course, sometimes this requires specialized equipment, and it's not always feasible.

As to which format is best for recording of the choices you gave, I'd choose (in descending order): 3/4-inch U-Matic SP, 3/4U (if the deck is new, not some grizzled vet-

eran), S-VHS and Hi8. If your 3/4U deck is hammered, use S-VHS.

Of course, if I could choose any format, I'd prefer to edit to Betacam SP or M-II, or better yet D3 or digital Betacam. These formats hold up to multi-generational editing far better, and you will see the difference.

Q: My system shuts down frequently. I believe it has something to do with heat, because I installed a second fan in my computer, and now it happens less frequently. Short of working in a refrigerator, do you have any suggestions on how my computer and I can get along in the same room?

T.C.
Spencer, Wis.

R_x: Heat is definitely a problem, although I'm not sure it is the only source of your difficulties. My simple rule is that people can wear sweaters, but equipment cannot. If a human operator is comfortable, or better yet, just a little cold, the temperature is fine—providing all cooling fans are working and reasonably free of dust and grime.

Installing a second fan was probably the right thing to do. Remember that the fans should blow cool air into the computer rather than blow hot air out. Make sure that there is a path for the warm air to escape. If one chip is extremely hot, it needs extra air.

You mentioned you had a lot of extra hardware in your system, including an accelerator card. Have you overburdened your power supply? You also said that you couldn't find a tech support person at the company that made your accelerator. I called them, and they should have contacted you by now.

Q: Can an oscilloscope be used as a waveform monitor? I have a digital storage scope that is doing less than nothing (I'm too busy with my Toaster 4000), and I thought it might be useful in my video suite.

A.H.
Richmond, B.C.

R_x: You can. In fact, a waveform monitor is little more than an oscilloscope with some specialized triggering circuitry and a fancy graticule that's calibrated in IRE. Connect the video to the scope with a terminator and a Tee as in Figure 1.

Set your oscilloscope on two-tenths volt per division, so a complete waveform is seven divisions high. Set the sweep to 100 microseconds and trigger on the source being measured. Or, you can look at a number of TV lines—each one is 65 microseconds long. Pick the one you

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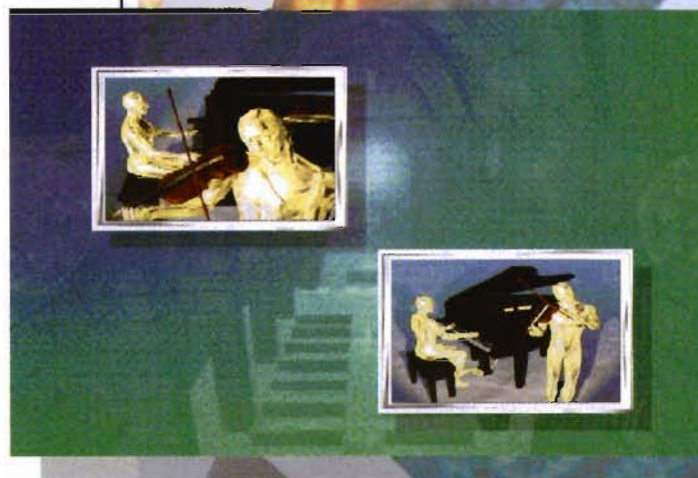
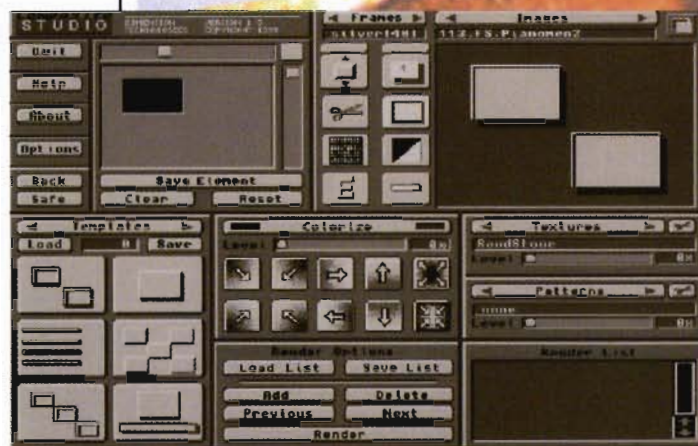
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DR. VIDEO

like, set the cursor and expand the scale. Because you are using a digital scope, update frequently (every second or so).

You will have to practice at reading it this way, but if you set the baseline two or three divisions below center, the 40 IRE of sync will take two divisions, and the video level will take five at 20 IRE per division (Figure 2). The measurements are also in the flat mode. If you want an IRE mode, you have to build a low-pass filter and stick it in the line.

Q: Assuming one is artistically inclined and becomes proficient in using the equipment, how does one go about obtaining work, besides word of mouth, placing ads in various graphics/animation magazines, sending samples of one's work to magazines such as yours and placing ads in trade papers such as *Variety*?

T.M.
Mesa, Ariz.

Rx: I'm not sure I'd depend on any of those methods except the word of mouth part. An ad that's any larger

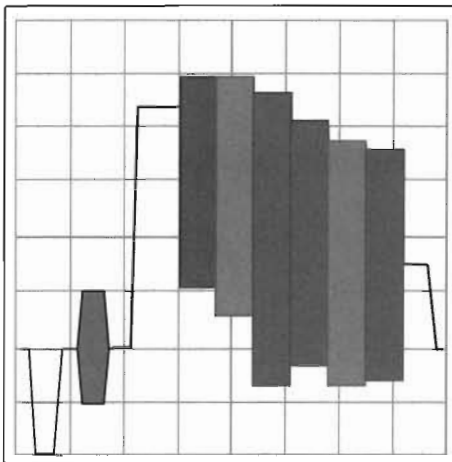


Figure 2: The color bars video signal as viewed on an oscilloscope. Although usable, a waveform monitor is far easier to read.

than the business card is probably a waste. Here is where I'd head:

Develop a short demo reel of your best work. If you have finished animations that have been included in programs or commercials, start by tying three or four of those together. Then include some of your best "non-pub-

lished" work laid over a jazzy music bed appropriate to your personality and the style of your work.

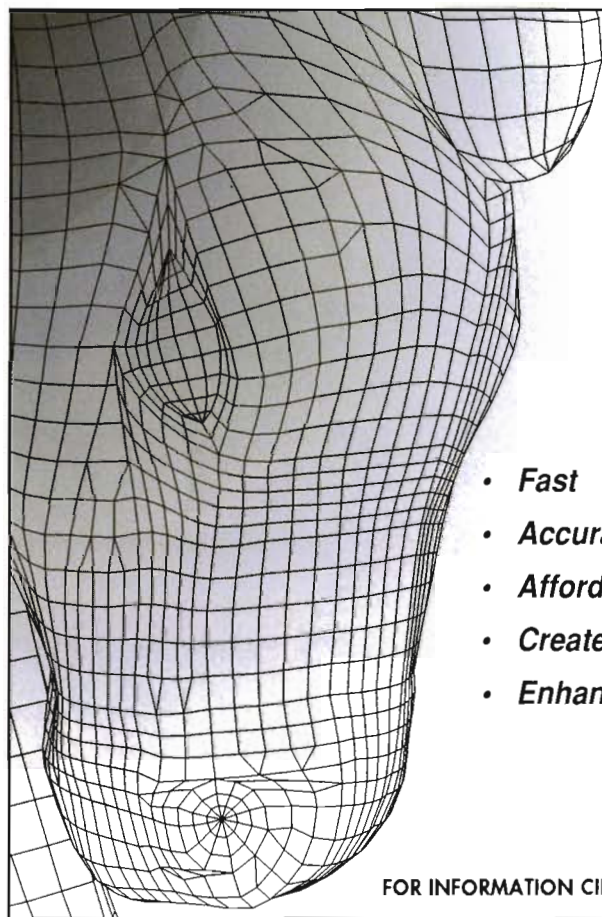
Prepare professional business cards and get a second phone line with an answering machine.

Meet with the production manager of every production facility within one hour's drive of your base. (In your case, you might even include Tucson or Flagstaff.) Leave them their own copies of the reel.

Get to know every producer at every ad agency within the same area. Give them copies of your reel if you feel it's possible they might use you someday.

Get to know the sales staff of all the TV stations. Buy them a cup of coffee and for 20 minutes show them some still photos of your work. Give them a tape if you feel good about it. Many times, a client will need a logo or special effect, and the sales person will likely refer you if your work is impressive. In many TV markets, local production is actually a loss leader to close ad sales.

Hang around the local access cable channels. Remember, there may be



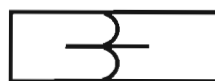
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more than one cable company in your town. Let people know what you can do. Use these opportunities to develop your demo reel but don't be a cable groupie. To paraphrase Hamlet: "Be familiar, but by no means common..."

Haunt associations of television producers, advertising executives, broadcast engineers and videographers, as appropriate, to network. Ask the people you meet in steps three through six for the times and places these associations meet. When you show up, look clean but not slick.

Always do more than you are paid for but never go off your normal rates. Instead, charge a fair price but offer to do their tenth job for free.

Some of your best gigs are going to be in the corporate arena. Investigate the market to learn who uses corporate video and politely introduce yourself to these people.

Communicate frequently with your clients to stay in sync. Get everything you can written down on a storyboard or notepad. This attention to detail is to protect you from make-goods that arise from misunderstandings.

Be businesslike and friendly, return phone calls and invoice promptly. Above all, never miss a deadline.

Q: Why does the Video Toaster need reference to come in on input one? Doesn't this force me to put a sync signal on an input? What if I want to use all four inputs?

J.R.
Columbus, Ohio

Rx: The Video Toaster follows the convention of many other devices and uses input one as the system reference. This could be any video signal that is absolutely time stable. Color black from a sync generator is convenient, but if you'd prefer, PreVue Technologies makes a Washboard generator that lets you create pretty graduated backgrounds. Alternatively, a genlocked TBC or camera would do.

It also is imperative that the reference signal be in place during the Toaster's booting operation. The Toaster might not function if the reference is disturbed during this time.

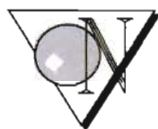
Q: I do not know how to hook up my equipment. All of the manuals say different and conflicting things. The technical support people always put me on hold and even disconnect me. Where can I get good information?

D.R.
Grand Rapids, Mich.

Rx: A surprising number of readers have their equipment miswired. Some send me diagrams, others send me plaintive letters. Both in this column and in certain features, I have tried to impart enough of the basics so you can hook up your own gear. Look over some of your old issues and feel free to write in specific questions.

I cordially invite VTU readers to make a sketch of how their systems are wired and explain what troubles they are experiencing. List each piece of equipment by brand and model number. Include a note authorizing me to print your drawing. (I'll use only your initials and city unless you indicate otherwise.) In turn, I'll discuss your system step by

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CIRCLE 105

DR. VIDEO

step so others can learn from your growing pains.

Q: I have purchased three issues of *VTU* and have found it to be extremely helpful and informative. I don't have access to any video equipment, nor do I understand much of the lingo. How does one go about learning from scratch about video and video equipment? I have looked at libraries and bookstores and video stores. Nobody can help me. Can you?

R.B.

Overland Park, Kan.

Rx: There has long been a critical need for technical training books in this field. For years, the market was so small that most publishers didn't care about it. The best titles were by Harold Ennes, now long out of print.

Desktop video, championed by the Video Toaster, changed the face of video production faster than anyone could have predicted. Suddenly, there was a dearth of titles. The Doctor himself has two in the works, but they aren't ready yet. For now, you might try *Mastering Television Technology*, by C. Cecil Smith (available from Positron Publishing, the same folks who brought you *Mastering Toaster Technology*, [800] 365-1002). Dr. Peter Utz has also written extensively on the topic. His works are offered by Knowledge Industry Publications Inc. ([800] 800-5474). For weightier reading, try *Television Engineering Handbook* by Blair Benson, and *Television and Audio Handbook*, by Jerry Whitaker and Blair Benson, both published by McGraw Hill.

Q: What exactly is "broadcast-quality video?" What technical parameters do I need to follow for my videos to appear on national TV?

K.S.

Oakland, Calif.

Rx: By now, you have discovered that fast-talking sales people have totally muddled this phrase. Broadcast quality is a moving target, and it consists of several components. First, a tape must conform to RS-170A, a technical specification that refers to the length of horizontal blanking, the relationship of subcarrier to sync and so forth.

The best way to stay close on this spec is to use good gear. A Betacam SP deck with a TBC easily makes RS-170A.

A camcorder from the drugstore on the corner probably won't. Most computer systems before the Video Toaster didn't have a prayer, and yet the manufacturers advertised extensively that they did. This was the source of most of the confusion about broadcast quality today.

The next step is to make sure you have a good clean video signal. One spec that ensures this is RS-250B, but that is more often used for fiber optic links and studio-grade signal transmission. The common person's estimate is color purity and lack of snow. If the image looks better than anything you can rent at the movie store (except perhaps a laser disk) and it meets RS-170A, it's probably broadcast quality.

Finally, there is the notion of air worthiness. Videography is an art, and you have to conform to the rules of the art or else break them in exciting and appealing ways. Just doing something lousy (bad lighting, no tripods, poor sound) is enough to make some stations reject your tape.

The original reason for a minimum-quality standard was to keep early TV transmitters from shutting down when they had to plow through non-standard signals. The next reason was to give the home TV receiver an adequate image to work with. Today, it is a matter of technical adequacy; non-standard signals cause transmitter hiccups and alarms.

A hint: When dealing with TV stations and networks, if they use only Betacam, do not waste one breath telling them how good S-VHS is. Go get a dub and hand them a Betacam tape. Stick with the coin of the realm.

VTU

Special Thanks:

Reader Henry Ruh was kind enough to comment on the history of the BNC connector (Dr. Video, June/July 1993). He said that in his memory, the term means "Bayoneted N Connector," which was the official way of designating an N, or "normal" impedance connector, done in a half twist and lock (bayonet) configuration.

Send your video-related questions to Dr. Video, 273 N. Mathilda Ave., Sunnyvale, CA 94086. If your question is published, your subscription to Video Toaster User will be extended one year, and you will receive a Video Toaster User T-Shirt.

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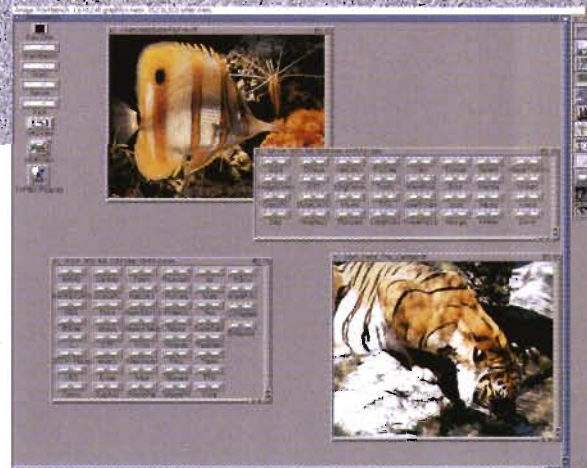
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Picasso II RTG means Hi-Performance.

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

1280 x 1024
256 color
Workbench screen
displayed on an
A3000 with the
Picasso II.



Picasso II RTG means No More 'Chip Ram Blues'

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

Picasso II RTG means Maximum Compatibility.

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

Picasso II AutoSwitch means One Monitor.

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

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

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

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SOUND REASONING

Angle Your Walls

Designing a Home Studio for Audio

by Cliff Roth



W

hen video producers on a low budget start thinking about turning a spare room or basement into a studio, visions of live multi-camera switching start swirling through their heads. But in creating a studio, you'll usually find that audio considerations dominate the construction more than video.

After all, a given space has a defined size that inherently limits your picture capabilities. The bigger the room, the larger your sets can be, or the more sets you can leave standing. The higher the ceiling, the better off you'll be for setting up lights.

However, from an audio perspective, it's unwise to just accept the acoustics of whatever room size you're working with. Small rooms with bare walls, such as a bath-

dies, infomercials, etc. There are also many audio-only applications where you won't need to shoot any pictures, but you have to record good, clean sound. These include recording announcer voice-overs (an announcer's booth, a staple of film and professional video production, is a shower-stall-sized recording studio), recording original, live musical scores and Foley-style sound effects (see last month's column).

If your studio has good acoustics, it can serve double duty as a semi-professional recording studio for laying tracks and mixing 8-track or 16-track demo tapes for local bands.

Acoustics 101

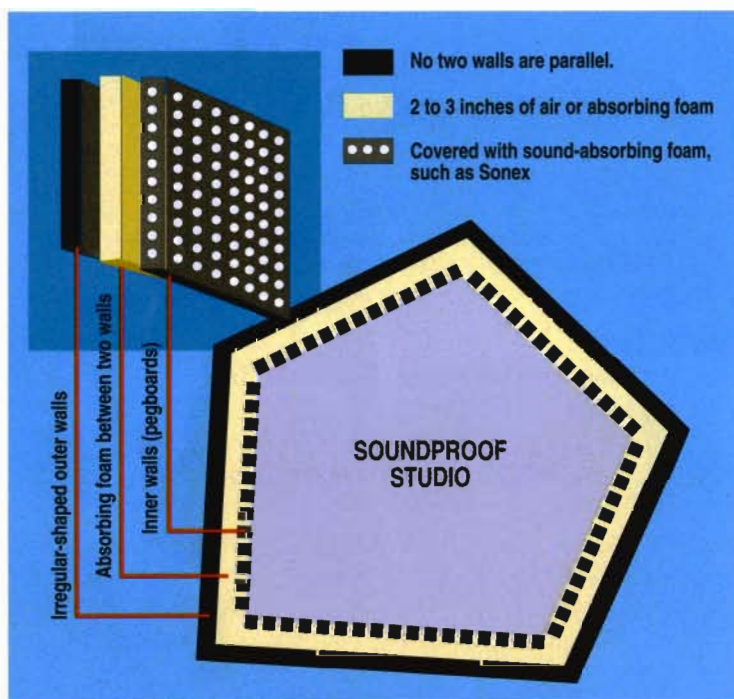
Sound waves reflect off walls and other surfaces in a room, which creates echoes. A room's acoustic characteristics are basically defined by the pattern of reflections that result from a sound emanating from any given position in a room.

Due to multiple reflections from wall to wall to ceiling to floor, acoustics is a fantastically complex field of study. In fact, the exact pattern of multiple reflections will be different for every pitch in the audio spectrum (20 to 20,000 cycles per second) and for every location within the three-dimensional space. Some frequencies are reinforced by the reflections (in some cases, creating standing waves that seem to have the entire room vibrating at the resonant frequency), while others are dampened by out-of-phase reflections (that is, reflections that are mathematically the opposite of the original pattern, thus canceling it out). Even the air temperature in the room can affect its acoustics. But by observing a few basic principles, you can design a room that minimizes the overall amount of acoustic reflection.

Cheap Soundproofing

In acoustical jargon, a room with lots of reflections is called *live*, while a room that dampens reflections is *dead*. There is something unnatural about completely dead acoustics—except when you're outdoors in a wide open space, which is an *open field* in acoustics lingo. Most indoor environments have some inherent acoustic qualities, and different spaces have contrasting patterns of reflections. In attempting to simulate these patterns, digital audio reverbs offer a choice of simulated spaces, such as a large concert hall, an intimate jazz club or a gymnasium.

There's a certain sterility to building a studio with the goal of it being acoustically dead but also plenty of good reasons for it. The space you're recording in isn't necessarily the space that you want your audience to think exists—usually, you're working in a cramped area but



Using sound-absorbing material in studio construction can reduce acoustic reflection.

room, can be the worst offenders; but just about any size room can impart an acoustical stamp on sounds recorded within it, unless you take special measures to dampen room reverberations.

A recording studio, by definition, is a room that has been specially designed acoustically to minimize the colorations of sound caused by reflections off walls, floors and ceilings.

There are zillions of uses for small, low-budget TV studios for creating music videos, talk shows, situation come-



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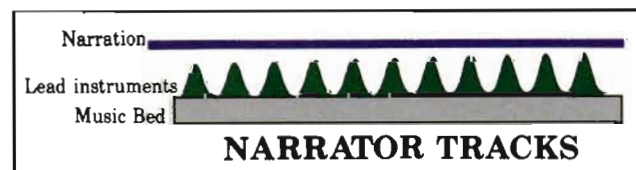
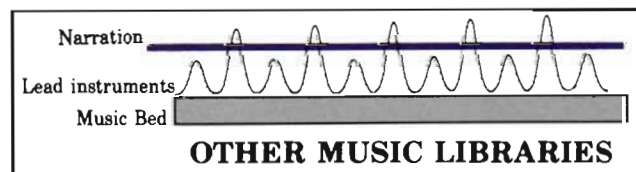
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SOUND REASONING

want it to sound larger (meaning, echoes timed farther apart from each other). Using audio effects, you can add exactly the reverb you want.

Even if you like a room's acoustics, you'll find that slight changes in the distance between the microphone and the sound source can make a dramatic difference in the amount of natural reverb that gets recorded. By eliminating all reflections and mixing in the desired amount later, the sound of the acoustic

environment becomes more consistent.

However, if you are on a low budget, it's unlikely that you'll be 100 percent successful in deadening the room. Most likely, you'll dampen the echoes moderately, and the room can still exhibit some reverberant life. So, don't worry about making it completely dead until you've eliminated the lion's share of the liveness.

Although the actual implementation can get quite complex and expensive,

there are really only two underlying principles to minimizing acoustic reflections within a given space: Have the walls absorb (rather than reflect) sound and angle the walls to prevent reinforced reflections (acoustic resonance). These principles apply to the floor and ceiling as well.

Sound Absorption

The degree to which a surface reflects sound is measured by what's called the sound absorption coefficient (the higher the number, the more diminished the reflections off the surface). Here are some typical sound absorption coefficients (measured at 1kHz):

Material Absorption Coefficient

Brick, unglazed:	.04
Brick, unglazed, painted:	.02
Carpet, 1/8 inch pile height:	.20
Carpet, 1/4 inch pile height:	.30
Carpet, 5/16 inch pile and foam:	.40
Fabric light velour, draped:	.17
Medium velour, layered:	.75
Floors, concrete:	.02
Linoleum, asphalt:	.03
Wood:	.07
Glass 1/4 inch, sealed:	.02
Gypsum board, 1/2 inch painted:	.03
Hardwood paneling, 1/4 inch:	.04
Marble or glazed tile:	.01
Sonex 2-inch foam tiles:	.92
Sonex 3-inch foam tiles:	1.03

(Source: *The Master Handbook of Acoustics*, by F. Alton Everest, Tab Books, Summit PA; and Markertek Video Supply.)

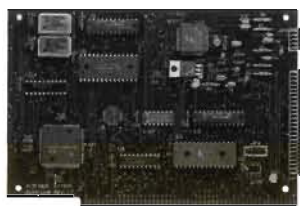
The least expensive ways to insulate a wall are to hang thick carpets on it or attach open cardboard egg cartons (a tedious process, but potentially the cheapest route to acoustic dampening). Hanging thick blankets is another effective, low-budget technique. On a slightly higher budget, try draping layers of medium-to-heavy velour fabric with overlapping upper and lower drapes.

Specially designed sound-absorbing foam tiles are available from professional video accessory suppliers such as Markertek Video Supply. The Sonex 3-inch tiles, for example, measure 4 feet x 4 feet are 3 inches thick, and cost about \$45 each in quantities of six or more. Covering the walls and ceiling of a room measuring 10 feet x 10 feet x 10 feet costs about \$1,400.

More expensive studio construction involves building a second wall in front

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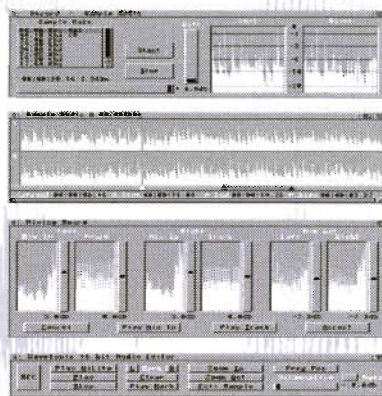
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of the existing wall, using sound absorbing material between the two layers and rough-textured sound absorbing pegboard for the new wall. The pegboard allows some of the sound to pass through and get absorbed. Foam tiles are then attached to the new walls' surfaces.

Studio floors should have thick carpeting, and ceilings should have sound-absorbing acoustic tiles. In congested urban areas, where vibrations from vehicles, subways, and other loud noises can wreak havoc with recording, professional studios are built on raised floors with vibration absorbing material insulating the studio's floor from the building's floor.

Seeing Infinity, Hearing Mud

If you've ever stood between two mirrors and stared into the infinite universe of reflections, then you understand the problem of parallel-reflecting surfaces.

That's why most professional recording studios have irregularly shaped and angled walls. A square or rectangular box, with four parallel and perpendicular walls, is the worst shape for minimizing reverberations.

If you're really serious about building a studio and have a rectangular room as your starting point, consider sacrificing some space to gain some acoustical advantages. Building out angled walls along two of the four walls may result in an angle of 10 degrees (making a wall 80 degrees and 100 degrees from the adjacent walls), which significantly reduces repeat reflections.

In the worst-case scenario, two opposite walls angled 180 degrees (parallel) resonate with a particular frequency so that just the slightest hint of that pitch makes the room reverberate (or ring) for a much longer period of time.

When such standing waves are created, the location of the microphone vastly affects the quality of the recording. The room may become filled with nodes or locations where the sound seems alternately stronger and weaker. Thus, the angling of walls makes it almost impossible for standing waves to occur.

The Control Room

The recording studio is where you'll gather your raw materials—the sounds (and pictures). Most studios are set up

with a separate control room—a place where these signals are manipulated and recorded.

Ideally, the control room is visually connected but acoustically separated from the studio. This is usually accomplished by the use of double windows—conceptually similar to airplane windows. Two thick sheets of glass are mounted parallel to each other but about three inches apart with air in between.

The thicker the layer of air insulation and glass windows, the more acoustically isolated the two rooms can be. The perimeter of the window should be a sealed frame, and the windows should be carefully caulked with silicone to minimize acoustic leaks.

Of course, on a lower budget you may choose to skip the window and just put the control room next door to the studio or on the other side of a room divider. The less isolation between the

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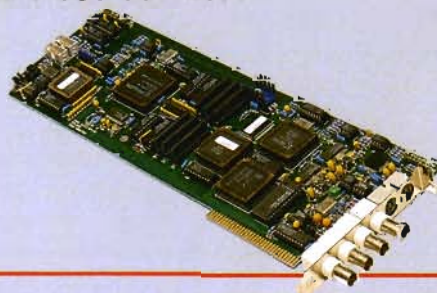
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SOUND REASONING

studio and the control room, the quieter you and your crew will have to be during recording. Obviously, a studio television director can't be yelling commands to the camera operators and technical director if he is in the same room where talent is recording with open microphones.

Interconnecting the studio and control room should be high-quality, balanced line XLR connector microphone cables. The control room should be equipped

with a microphone mixer capable of receiving at least four XLR microphone cables (also called Canon connectors) to accommodate multiple microphones.

Ideally, you should have separate heating and cooling controls for the control room and studio. During recording sessions, you may need to turn all fans off in the studio to keep noise to a minimum, but having air conditioning or heating in the control room may be crucial to your comfort.

Additionally, your videocassettes and equipment will last longer and have fewer problems if stored at consistent temperatures.

Marketing Opportunities

If you equip your control room with an 8-track (or more) audio recorder (tape or digital), and it has SMPTE chase-lock capability (meaning that it can synchronize itself to a SMPTE striped videocassette), then voila—you have got an audio-for-video post production facility.

Such a facility provides the perfect place for independent producers to come and record musical scores for edited video productions or add voice-overs or sound effects. And it's the perfect place for bands to record a demo tape and produce a music video.

Add some onboard effects such as noise gates, parametric equalizers, compressors and a sound effects library, and you have got a full-fledged audio sweetening setup. With some SMPTE-equipped DAT audio recording gear, you can work on film as well as video soundtracks.

Formats for audio and video recording are destined to change in time, of course, and the sophistication of signal processing can only advance. But the basic principles of room acoustics are going to stay with us far into the foreseeable future. So even if you don't yet have such advanced, multi-track audio recording capabilities, soundproofing your studio is a long-term investment that won't become obsolete.

VTU

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

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THE DOMINO THEORY.

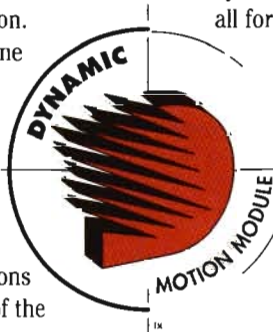


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CYBERSPACE

Animation Update

Programmers, Take Note

by Geoffrey Williams



Last year I discussed animation players for the Amiga (see "Cyberspace," February/March 1993, *VTU*). A lot has happened since, most notably the fact that the Video Toaster 4000 can now play animations in full AGA glory. Of course, the playback mode is uncompressed in memory, so unless you have very large amounts of memory you are limited to very short animations. The advantage of the way the Toaster plays animations is that they always play at a full 30 frames per second, a condition that can't always be guaranteed when playing compressed animations. In compressed animation,

to find Anim-7 compilers. The latest version of ViewTek includes both a player and an Anim-7 converter. Christer Sundin's BuildAnim compiles and splits Anim-5 and Anim-7 animations, and can convert an Anim-5 format animation into Anim-7. It requires Workbench 2.0.

Animation Formats on Other Platforms

It's a big world out there, and as much as we love the Toaster, non-video people tend to use Macintosh and PC machines. In other words, you may need to incorporate animations created on other platforms.

Most image processors can convert a variety of formats from the Mac and PC into images that can be loaded into the Toaster or other Amiga software. Oddly enough, I know of no commercial program that offers the same type of capability with animations. There is a huge number of animations available on the other platforms. The most popular format is QuickTime, a standard on both the Mac and the PC which plays back animations with synchronized sound. I have looked high and low for anything in the world of PD that might convert QuickTime animations into something that could be viewed on the Amiga, or convert an Amiga animation into QuickTime format. Amazingly, I have not found a thing. For the programmers out there, please look into this. We really need it.

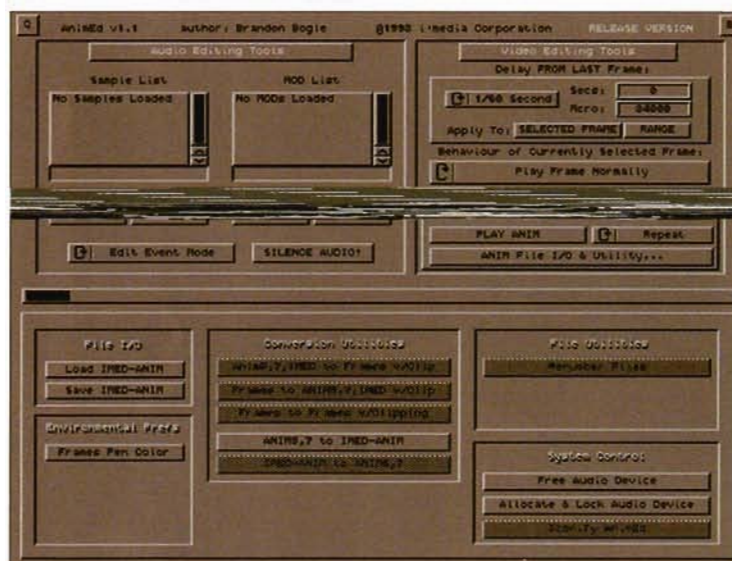
There are PD programs available for other PC animation formats, though. If you have FLICK animations (with the extension .FLI or .FLC), GRASP animations (with the extension .GL) or MPEG animations (with the extension .MPG), you can convert them over to the Amiga.

Flick Animations

AutoDesk Animator was the first program on the PC to popularize animation, and their FLI animation file format has become a standard. It first appeared on the ST as CyberPaint, evolved into Zoetrope on the Amiga, and finally reappeared in modified form on the PC as AutoDesk Animator. It has improved a lot since its first release on the PC, but I don't think you'll be throwing away your Amiga animation tools just yet. There are a lot of animations out there in this format, however, and you just might find it handy to be able to convert them into something usable with your Toaster.

If you want to convert an FLI or FLC file into an Amiga animation, AmiFlick by Garrick Meeker not only plays them but also converts them into individual IFF images. While it can play them back as HAM images, the quality is not all that great. You can also play back in 16-color grayscale, but to see them as they should be seen you really need an AGA machine that displays 256 colors.

When converting to individual IFF images, FLI or FLC



AnimEd is a slick animation editor that can also synchronize sound to specific frames.

a large difference from one frame to the next can cause a significant decrease in the speed of the animation.

To help this problem, two new compressed animation formats have been introduced, Anim-8 and Anim-7. Both offer significant speed increases and take better advantage of the power of the 68030 and 68040 processors. The original Anim format was written for the 68000 and was becoming quite dated.

How do you choose between them? Anim-8 is the official Commodore-approved format, and is the standard for most software. Anim-7 is a renegade format that many Amiga users feel offers superior performance, but its support is found primarily in public domain (PD) programs. In most cases, you are better off using the approved standard, but if an animation seems a little sluggish, you can convert it to Anim-7 and see if that increases the speed.

Most current commercial anim creators support Anim-8, but you have to look around in the world of Cyberspace

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FOR INFORMATION CIRCLE 136



CYBERSPACE

files are converted as 256-color IFF images that can be loaded into an animation program such as Brilliance or DeluxePaint (DPaint) to compile them into an animation on an AGA machine. You can also convert them into a DCTV animation or use an image processing program to render as a HAM or other resolution animation, depending upon the original resolution of the file. A dithered 16-color animation would look sharp, but might not animate very fast.

I look forward to the next version, which may have already been released. The author plans direct writing of Anim-7 and Anim-5 files, much faster playback, and maybe even a way to compile IFF images into an FLI animation.

The advantage of John Bickers' UnFLIT is that you can control the color depth of the converted IFF images. Since not all FLI and FLC files have 256 colors, you can save time and space in the conversion process by converting them at

their original color depth. It does not have playback capabilities, but it does make a text file of all the file names, which can then be used in anim compilers such as MKAnim that require a file list. It requires Workbench 2.0.

FLIcasso is an animation player written by Reinhard Haslbeck for both FLI and FLC files. It uses the Picasso graphics board for video output. FLItina does the same thing using the Retina graphics board. Both of these are available as demo versions (FLItinaDemo and FLIcassoDemo) which play the animation files. The registered version adds the ability to control the number of times the animation loops, the playback speed and resolution.

GRASP Animations

GRASP is a PC animation package from Microtex Industries. The animation files have the extension .GL (GL stands for Graphics Library). GRASP is a graphics programming language for creating and playing animated graphics demonstrations, tutorials and presentations. The closest analogy might be the Director, an Amiga script-based programming language. GRASP files are actually archives of many separate files, including pictures, fonts and text. The images can be in a variety of formats, including Pictor (PIC and CLP), GIFs and PCX formats. The included text is a script file that defines how the pictures are played as an animation. Some of the effects in the animation are created using direct calls to built-in capabilities of the GRASP language, such as dissolves. As you can imagine, the conversion process for use on the Amiga is quite complex.

The earliest Amiga GL players played PC GL files directly, but besides a rather slow playback speed, there were problems with controlling the display size and image quality. Their conversion ability also had a limited range—only certain picture types could be converted. Bickers, in his AmigaGRASP collection of utilities, provides a better solution. The first utility, GLib, is a GL librarian that can extract the GL PIC files and convert them into an Amiga format GL file. It can also add and delete GL picture files from within a GL file. This works much like an archiver, such as LHArc, in that it allows you to add and remove files.

The first step is to separate the original files from the GL archive. The text

file doesn't need to be converted, but the pictures do. Once the individual elements from the original PC GL file have been extracted, the next step is to convert them into something the Amiga can use. Standard Amiga image processors such as Art Department Professional and ImageFX should be able to load and convert most of these files. Bickers has included PIC2HL, a HAMLab filter to convert the .PIC and .CLP files into IFF files, and it can also be used with Wasp. (See March's column on image format translation for more information on these two programs).

The final step is to convert the individual elements into an Amiga GL file. This lets you see what the original archive should look like, even if you only plan to use the individual pictures. GLib is used to compile a new Amiga compatible GL file. The program GL plays the Amiga GL file, using a subset of the original GRASP language. Text and sound have not been implemented.

MPEG

This is the true cross platform standard for compressed video and animations, and continues to become increasingly important. Michael van Elst's MP not only plays MPEG animations on non-AGA Amigas using a variety of dithering options, but also on AGA machines and through a number of 24-bit display boards such as the MacroSystemUS Retina (a Toaster compatible board) as well as full support for all EGS boards. [Editor's note: For more information about 24-bit display boards, please refer to Brent Malnack's Retina review page 88 in the April issue of VTU.] MPEG really needs hardware assistance to get full speed, but MP plays back as fast as any of the Amiga MPEG players I've seen. It isn't blinding, but it lets you see what the images look like.

Most importantly, MP lets you make separate IFF24 files from each frame so they can be compiled into another animation format. These files are much larger, but any native Amiga format plays back much faster than an MPEG file.

Animation Editing

Brandon Bogle's AnimEd is a slick piece of work. It is an anim editor and much more, including the ability to synchronize sound to specific frames in an animation. It saves the files in a custom format that plays back the animations,

including the sampled sounds and added pauses and interactive delays on specific frames. It uses a filmstrip icon method to let you see the flow of the animation in miniature and easily manipulate the frames.

Players

When you want to dump an animation to tape, playing it directly from the hard drive lets you not only play animations larger than memory, but also play them

instantly. The current leader is BigAnim, from Christer Sundin, which is quite fast. He also plans to add sound support and internal looping, as well as color cycling. These may already be available.

The easiest to use and most versatile player is still ViewTek, by Thomas Krehbiel. Since last year, he's added full AGA support, Anim-7 playback, support for the XPK libraries to read crunched files, anim brush support, better JPEG and GIF reading, and much more.

continued on page 100



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The Bumpy Road

Admit it. You've imagined yourself cruising that palm-lined stretch of Hollywood's Sunset Boulevard. It's a perfect 65-degree morning, the top is down and the 30-minute commute from your Santa Monica bungalow to your Hollywood backlot office gives you just enough time to go over the day's agenda.

For you, it all began with the 40-hour grind that stifled your creative urge while you struggled to meet daily deadlines with cardboard-cutout production work. Evenings and weekends gave you the chance to play, though. You poured your imagination and talent into the specialty videos that new technology, such as the Video Toaster and lower-cost, high-quality equipment, allowed you to produce at home. And it paid off.

They found you. Now you're putting together the programming that's being carried into millions of homes at night. No mail order, no tape duplication. Just pure TV for money. And it's your product.

Yeah, it's a nice dream. Most of us also dream of starting Game 7 of the World Series on the pitcher's mound for the Yankees, the Dodgers or some other hometown favorite. They've yet to address the

varied and numerous reasons we'll never take the mound some brisk October night. But government—that's right, the federal government—has taken its first halting steps toward making a broadcast video producer out of you.

It's all contained in the Cable Act of 1992, a piece of legislation most people thought dealt almost exclusively with their monthly cable bill. While rate structure was the most widely debated facet of this second revision of the original Communications Act of 1934, the concept of commercially leased access was more clearly defined in the '92 law. The new language by no means ensures a gold mine for independent video producers on every cable system in communities across America, but it would appear that Congress had you in mind this time.

In the Interest of Diversity

The 1984 forerunner of the Cable Act of 1992 was the first to require cable systems with more than 36 channels to set aside a certain percentage of their channels for lease to independent programmers (Section 612). The House Report on the 1984 Act provided the reasoning:



to Leased Access

There's Potential Profit on
the Cable TV Path

by Allen Edmonds

"An important concept in assuring that cable systems provide the public with a true diversity of programming sources is leased access. Leased access is aimed at assuring that cable channels are available to enable suppliers to furnish programming when the cable operator may elect not to provide that service as part of the program offerings he makes available to subscribers. Thus, Section 612 establishes a scheme to assure access to cable systems to third parties unaffiliated with the cable operator and thereby promotes and encourages an increase in the sources of programming available to the public."

This provision hardly has been used. The marketplace of independent and diverse programming never emerged, and in designing the 1992 Act, the Senate vowed to find out why. The cable industry argued in the Senate Report on the 1992 Act that it had been successful "in meeting the diverse range of viewing needs" on its own, and that leased-access programmers cannot guarantee "enough local advertising revenue to cover the costs of paying for a network without separate subscriber fees," nor do they "have enough money left over to pay the operator for carriage on the leased-access channel and still earn a profit."

Much of the problem, the Senate concluded, was rooted in the fact that language in the 1984 Act precluded court examination of rate comparisons or terms for access to channels designated for lease by independent programmers. This was in contrast to the rates arrived at in deals between a cable operator and an affiliate.

The provision exclusively delegated to cable operators the task of establishing rates, terms and conditions for leased access. While programmers could seek relief from unreasonable cable operator demands with the Federal Communications Commission (FCC) and in the courts, "it does not take much understanding of the incentives of the parties and the nature of the programming market to understand that such an approach has fundamental problems," the Senate Report concluded.

The '92 Act required that the FCC establish maximum reasonable rates for access to leasable channels as well as for billing and collections. The operator and programmer can then bargain for a lower rate under the new law. The FCC is also required to involve itself in establishing reasonable terms and conditions for carriage, such as time of day, minimum quantity of time leased, channel location and tier placement, the Act stated.

"By involving the FCC before leases are negotiated, programmers will know the parameters of an agreement, increasing certainty and the use of these channels," the Senate Report said.

Implementing the Law

Faced with the significant challenge of implementing the law's requirements, the FCC has established a Cable Service Bureau to assist programmers and cable operators in interpreting and taking advantage of the new provisions.

Although many of the specifics concerning benchmark rates and minimum lease quantities are still very much in flux, the law itself is on the books, and cable operators are compelled to work with independent programmers.

"One of the biggest problems we're running into right now," said JoAnn Lucanik, an attorney and advisor with the FCC's Cable Service Bureau, "is that many programmers want to lease for an hour, or just a couple of days. What they're getting from the cable operator is that you have to lease for a month."

Even at favorable rates, the cost of leasing a full channel by the month can run into the tens of thousands of

dollars, or even more, depending upon the subscriber base. That would rule all but the most heavily capitalized programmers out of the race before it begins.

"Throughout the FCC's latest order," Lucanik said, "they've never said, 'Yes, the cable operator has to give you a time slot for an individual program,' but there's so much language in here that implies that there would be that kind of availability."

"I can see where it

would really hurt a lot of people that aren't able to come up with that kind of money."

Much of the early public comment to the FCC, Lucanik said, has been centered on the establishment of benchmark rates. The commission has developed a complex formula to set rates cable operators may charge independent video producers and programmers for access to a channel. Subject to negotiation between the two parties, the rates can be based on something called the "implicit fee" of a premium channel, which is the difference between the fee the cable company pays an existing commercial programmer, such as HBO, and the amount it charges its subscribers, or the fee for basic tier channels. That formula divides the rate charged to consumers by the number of basic channels offered. The programmer or independent producer is then charged a monthly fee for access based on that figure. Again, Lucanik said, "the language does suggest there should be some pro-rating for a quantity of less than a month [of leased access]."

The commission has delayed addressing this specific issue for a number of reasons, she said. First, the Cable Service Bureau was only created in December 1993. Since then, "we've grown to the point where there are probably 50 people on staff, and we now have the resources to work on more issues."



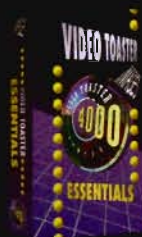
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A step-by-step guide to the Video Toaster's digital video effects, set-up functions, ChromaFX and luminance keyer.

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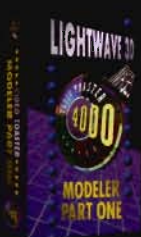
Complete instruction to ToasterCG's powerful text capabilities including font sizing, color brush loading, background & layering options.

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

120 minutes



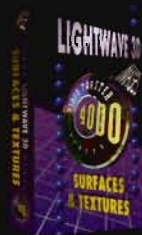
Create & modify basic shapes, making polygons with the freehand draw tool, using layers, creating text objects and assigning surfaces.

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FOR INFORMATION CIRCLE 108

Secondly, "there's simply not a big record (of public comment) on this issue," she said.

"As a regulatory agency, you do your best not to manage a company—not to get involved with the day-to-day decision making as it affects the bottom line," Lucanik said. "But in this case, the intent of the law was that diversity is the number one goal. Voices need to be heard and leased access promotes that."

"While I would certainly shy away from saying that anyone could make a clear case in front of the FCC, I think that the language the FCC has supplied so far would tend to indicate that you could get channels on an hourly basis," she said.

She expects the Commission to address the leased-access provisions of the Cable Act more fully in the near future, "but in the meantime, I think it's important that we hear from

programmers out there that have questions or experience to relate," she said.

Success May Still Take a Bankroll

Jim Kartes, owner of the Paradise Television Network on the Hawaiian tourist haven of Maui, sold his company on the mainland several years ago to chase his dream of supplying cable programming. Leased access, he felt, would be the perfect tool to make his wish a reality.

After all, what better setting for a local programmer than Maui? What better message than where to go and what to do in such a geographically limited, yet diverse market? And what better audience than the thousands of tourists who visit the island monthly with money to spend?

It's panned out for Kartes, but it has been a challenge. "It cost me a bundle to get started. We've been at it four years, and it's profitable now, but the whole picture isn't as rosy as you might think," he said.

The formula for Kartes' success is twofold: the ability to produce good programming that people want to watch and having enough cash flow to stay in business.

"It's really important to understand that you can start a little commercial leased-access station, but it won't fly unless you are willing to put several million dollars into it. You've got to have the cash to stay with it. I lost a lot of money in three years before I started to turn a profit."

He maintains that it doesn't have to be such a financial challenge, but will take legislative foresight and a concerted lobbying effort by would-be producers to make it work.

"Leased access will work if the lease rate is affordable," he said. "The whole intent of the law was to lease the time inexpensively enough to local programmers so that (the marketplace) could develop. I maintain that it can because I'm living proof—as long as the cable companies don't try to stick it to people."

Kartes has fought his way onto cable "every inch of the way, in court and everywhere," he said. "The problem is that even the FCC doesn't understand. They wrote a formula they thought would be fairly inexpensive. But when the cable companies got a hold of it with their first-tier and second-tier pro-

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gramming, they found a way to equate it all to about one dollar per subscriber.

"So, when you go into a city like Indianapolis or Honolulu that may have 200,000 subscribers, does that mean you have to pay \$200,000 to lease a channel for a month? The FCC has shot itself in the foot with regard to rates, the way we see it. And they have to get a better understanding of it, or the concept simply won't work," he said.

Kartes suggests a rate in the range of 15 cents per subscriber to lease a channel on a monthly basis. "You go to a market with 200,000 subscribers, that's \$30,000 a month. That's still a lot of money," he said.

But he also noted that it doesn't take an idyllic setting to be successful—if the legislative bugs can be worked out of leased access.

"I think it's important to emphasize the need to get local programming on. The networks are carrying national programming, and I think with a little imagination, somebody can go out and really do a good job. This is a fun business. I'm having a great time with it," he said.

The Paradise Television Network produces and airs high-quality visitor programs. "It's not like the visitor programs you usually see in hotel rooms when you travel. This is programming PBS would be jealous of," said Kartes.

Beginning in October 1989, it took Kartes and his six-man production staff several years to build up enough footage and programming to meet his standards; after achieving that, his advertising base started to increase.

The foundation of his operation is a four-hour program that consists of a variety of different topics. "It's a modular-type program so that we can change it as we find new things to shoot. Generally, the modules run about five minutes apiece, and then we run a couple of minutes of commercials," he said.

The programming is changed once per month, and the staff is constantly shooting new material. "We shoot it all with Betacam SP, cut it to D2 and put it on the air. The cable company has run a fiber optic cable right into our studio, so we feed straight out of here. I don't have a transmitter, but I have all the advantages of a regular television station," he said.

As with any independent programmer, Kartes ran into his share of naysayers. "You know, [comments like] it's a local

channel, the quality's going to be bad, how do we know there's an audience. It's one of those Catch-22 situations where you just have to hang on long enough to prove you can do it," he said.

His operation truly went over the top, he said, "when we started to review restaurants. Our audience shot up all over the place. It got major results for the restaurants and all of a sudden, they were willing to pay whatever I wanted."

The surprise for Kartes, who was counting on an audience in all the resort hotels and condos, has been the response from the local permanent community.

"Here on Maui, you don't get television unless you're on cable. I have a total of about 50,000 hookups, and it's amazing to me the number of local residents that watch us almost religiously," he said. "I really think this kind of thing can be done almost anywhere in the country. You charge each restaurant a couple of grand a month and run their spot 12 to 15 times a day.

"The secret is in finding a way to compete for the same commercial advertising the networks are getting, and that is possible if you can make it something people want to watch. But if a cable company comes along and wants to charge too much money to lease the access, then it just can't happen."

A Way around the Rate Debate

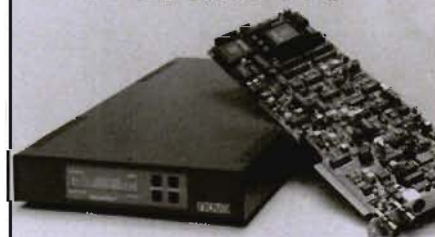
Even without a major bankroll, a diligent programmer need not wait until the FCC irons out all of the questions regarding benchmark rates and minimum lease periods. Dan Reynolds is prime evidence that not all cable operators are adversarial moguls.

His venture, Video Vision Inc., is such a close partner with Cable TV of Harrison, Ark., that neither entity wants to consider life without the other.

His method has been so successful that he now markets a newsletter advising would-be video producers on the ins and outs of negotiating an effective win-win partnership with cable firms.

"That's the only way it's going to work, and it works so well for us that we don't even have to pay. That's a miracle," Reynolds said. Compounding that is the fact that Cable TV of Harrison is not required by the leased-access provisions of the cable law to make channels

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FOR INFORMATION CIRCLE 100

available to independent programmers because it doesn't have the required minimum of 36 channels.

"The deal we worked out and what I always recommend is to offer your service for promotional spots, live city council coverage and a lot of other public service to them in exchange for access to the channel and the opportunity to go out and get sponsorships and advertising," said Reynolds.

The idea works well, especially in smaller communities, he said, "because most cable companies aren't really set up to do video production work. It's a great formula for us to be able to come in and produce these local shows for them."

Cable companies are eager for programming that can set them apart from over-the-air network programming, he said. They also need to begin to insulate themselves from anticipated competition associated with direct broadcast satellite and other delivery methods that may soon be introduced.

"We're probably considered one of the classic rural cable systems," said Cable TV of Harrison manager Mike Ederington. "The population of Harrison is about 10,000, and we have about 6,000 customers. When I arrived here, I was very interested in having some local programming that was 'Cable TV of Harrison-exclusive.'"

Reynolds was able to provide the partnership needed to make that programming happen.

"He had the production equipment and cameras," Ederington said. "We were able to supply a lot of help. He was wanting to sell ads and make some money at it, and we were interested in local programming without having to invest in the equipment and expertise."

As with most cable systems, Cable TV of Harrison had one character-generated channel that it preempted to supply coverage of the city council meetings and high school football games that Ederington wanted to feature.

At the same time, Reynolds found himself able to sell sponsorships and 3-to 5-minute infomercials focusing on various local businesses.

Ederington loves the arrangement. "We have programming we ask them to do for us, and as long as they do that, they're able to make money on it. We also have a monetary value formula where if [Video Vision] reaches a certain level of revenue, they share some of it with us.

"I don't know what's going on nationwide, but there can be arrangements where it benefits the producer as well as the cable company. The producer makes money, and the cable company can provide high-quality programming that the customer can only get through your company—not through satellite or any other method," Ederington said.

Reynolds' operation can't provide original programming 24 hours a day, so the programs are shown on a rotational basis. His business spotlight infomercial idea is easily the most profitable program, Reynolds said.

"We threw out the idea of a produced commercial," said Reynolds. "Instead, we go into the business and put together this short infomercial where we talk to the owner, we talk about some of his specials, his products and his services.

"For our local sporting events, we're finding that we draw immediate sponsorships as well."

Cable companies, Reynolds said, first entered the business with aspirations of producing local news and programming out of their own studios. "But the technology was such that when they'd go to do a football game, the equipment would weigh tons, and they'd have to struggle with it in the rain. As a result, they came to the conclusion that their real business was based on receiving satellite feeds and collecting money for it."

Since technology now allows a producer to shoot broadcast-quality video with a small, inexpensive camera and to edit the video affordably with desktop editors and tools like the Video Toaster, locally produced programming is a much more reasonable aspiration.

"But nobody's gone after it in the cable industry," said Reynolds. "It's not that it can't be done. It's just that they

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"And best of all, the solution to the DBS threat has to be local programming," he said.

Get after It

The leased-cable access route to success for an independent producer currently is far from a money farm. Though positive partnerships with cable firms can happen if the right company is cultivated correctly, there are just as many environments where that type of relationship is impossible to achieve.

Money always talks, as Jim Kartes proved. But he also invaded the right market with just the right type of programming. He's also still facing challenges in attempting to expand to other Hawaiian-island markets.

But there are solid indications from the Clinton administration that this legislation has its firm backing and commitment.

The administration's platform on the National Information Infrastructure (the superhighway we've heard so much about) calls specifically for non-discriminatory access to cable channels.

Vice President Al Gore referred specifically to many of the problems independent producers face. "Preserving the free flow of information requires open access," he

said in a recent speech. "How can you sell your ideas, your information, your programs, if an intermediary who is also your competitor has the means to unfairly block your access to customers? We can't subject the free flow of content to artificial constraints at the hands of either government regulators or would-be monopolists."

But regulators aren't in the field trying to apply the craft and make a buck. They need to hear from those who are.

VTU

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

[Editor's note: If you wish to sound off to the Federal Communications Commission, you can reach the Cable Service Bureau at (202) 416-0856. To find 36-channel cable systems in your area, consult Broadcasting and Cable Marketplace, the Industry Source for Radio, Television and Cable in the reference section of your local or college library. Dan Reynolds, who runs Video Vision, publishes a newsletter describing how to build and benefit from a relationship with local cable operators. He also offers two instructional videotapes and a workbook on the subject. He can be reached at Outback Productions, 305 W. Stephenson, Harrison, AR 72601; (501) 741-2566.]

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This amazing program lets you actually RUN MS-DOS software on your Amiga! PC-Task runs as a task on its own screen-leaving your other Amiga applications free to multitask. It is a software-based emulator and, as such, is not as quick as a hardware bridge-board, but it is also hundreds of dollars less! Perfect for your occasional MS-DOS needs. The faster your Amiga, the faster the emulator will run. T5072 **\$39.95**

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Lighting

in the Real World

by Dick Reizner

“

work by myself and can only carry a small light kit. How can you expect me to do any fancy lighting?”

I can't count the number of times I have heard that excuse from students in my professional lighting classes. The answer is simple. First, learn the rules, then when to break them. Second, learn not only how to work with lighting instruments, but how and why the instruments work. Third, gather a kit of accessories and gadgets that can make the most of those instruments.

Knowing how and why they function doesn't simply mean understanding the dictionary difference between a key and a fill, a hard light and a soft light, but why a soft light is soft and a hard light hard.

The great artist Picasso could produce a pencil drawing that looked like a photograph. Once capable of doing that, he was free to break the rules and create his masterpieces. But I am jumping ahead of myself.

First we need to learn about our basic gadget, light. The word light really refers to a variety of electromagnetic wavelengths that fall within the spectral reception range of our eyes and produce different phenomena when they impinge upon electronic media. (That's the last time I'll use words like that. Typing them hurts my fingers.)

What that really means is that true white light can be described as an equal mixture of red and green light. But not all light that appears white to our eyes appears that way to a film or video camera.

For example, a paper seen by a properly adjusted camera under quartz lights from a kit may appear white. But unless we change the adjustment, the same paper shot under daylight appears blue, under fluorescence looks green and seems orange under normal incandescent lights.

These different types of light, which can be distinguished by different red-blue-green mixtures, are identified by the term color temperature. Light with more red in the mix has the lowest color temperature and blue the highest. Normal daylight is usually rated at 5,200 to 6,000 degrees and a normal quartz light at 3,200 degrees Kelvin.

All this scientific information is important because the cameras can only render colors properly under one type of light at a time. That's why when we use quartz lights to photograph a person sitting next to a window, the part of their face hit by daylight may appear blue.

So how do we solve the problem? Since we have to present the lens with only one type of light, we must either change the daylight to look like the quartz light or vice versa.

Usually it's easier to put a blue gel on the quartz light and raise its color temperature to match that of daylight.

It is also possible to put an orange-colored gel such as Roscosun 85 over the window to lower the daylight's rating to that of the quartz light. Several companies make gels of various colors to handle most lighting situations that are encountered.

At this point the camera's white balance takes over and adjusts to the type of light you are presenting to the lens. Now that we have the color of the lens under control, let's start working on the type of shadow the lights will cast—what I call a light's quality. The type of shadow a light casts is directly related to the size of the source and its distance from the subject. The farther away a source is, the smaller it appears and the harder the shadow it casts.

Think about the sun, huge in size, but so far away that it appears to be a point source. Thus, sunlight falling on an object will cast a shadow with a hard edge. Now imagine an overcast day. The source is the entire cloud-filled sky and the shadows, if any are to be found, are very soft-edged.

Let's apply the same thinking to our kit lights. When an open-faced quartz light shines on a subject, the source is actually the small filament, and the shadows are hard. If we shine that same instrument on a reflective umbrella, the large umbrella becomes the source and the shadows are soft.

The same thing happens when we shine the light through a piece of translucent material called diffusion. The source is enlarged to the size of the light beam as it strikes the diffusion. And the result is lighter shadows.

The traditional setup for illuminating an object is called three-point lighting. The three points are referred to as the key, fill and back (Figure 1).

It is the job of the key to imitate the sun and provide the main illumination for the scene. In doing so, the key can create some dark shadows, so we bring in source

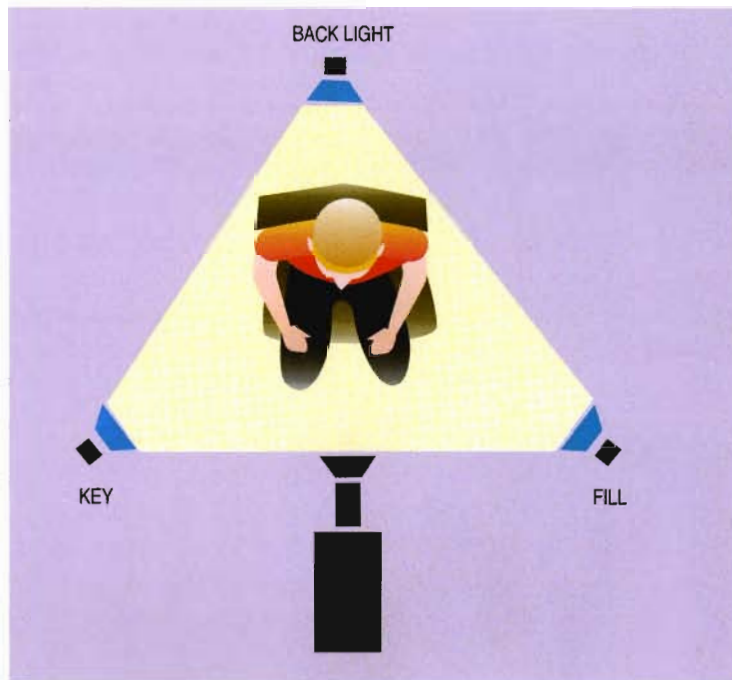


Figure 1

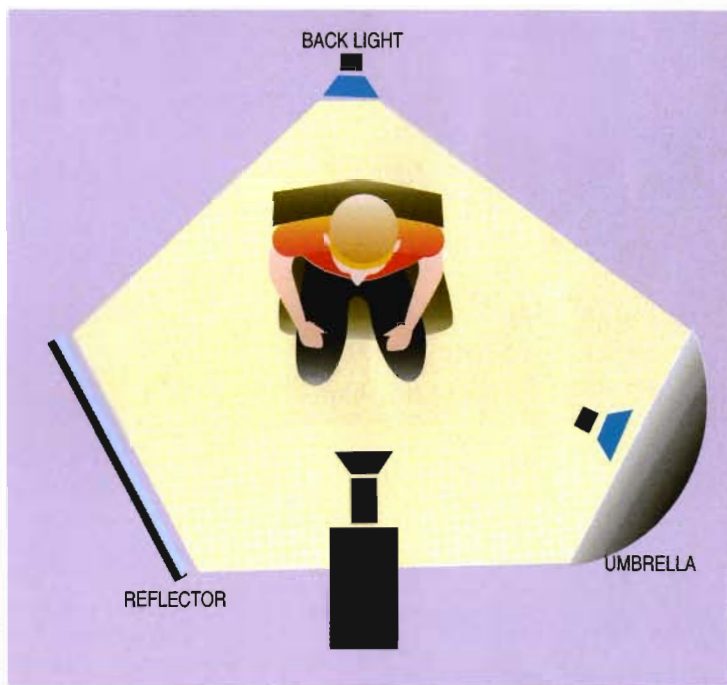


Figure 2

"It is the job of the key to imitate the sun and provide the main illumination for the scene."



Using direct, noon-time sunlight causes hard-edged shadows.



Adding a key light lightens most of the shadows but not all.



Using a fill light or umbrella rounds out the subject.

"There is no law that says all your sources really need to come out of a suitcase and be plugged into a wall."

number two, the fill. The fill's job is to lighten the key's shadows and provide some rounding for the subject.

If you look at the color comics in the Sunday newspaper, you will notice that each color drawing is outlined in black ink. The outline's job is to provide edges that appear to break the two-dimensional drawings away from the paper and give it a 3D look. The third traditional luminary, the back light, serves the same purpose.

Please note that I did not use the words light or instrument to describe any of the sources. This is where your accessories and gadgets come in. There is no law that says all your sources really need to come out of a suitcase and be plugged into a wall. Thus, thinking of them as lights limits our possibilities.

Taking advantage of existing sources can sometimes allow you to do interesting things. For instance, an interview in an executive's office could be lit from the kit, or it could take advantage of the picture window and use that as the main source. You might provide the needed fill by placing a piece of white poster board where it can act as a reflector.

Even if you choose to draw the drapes and light the executive with quartz, you could achieve a soft, natural look by working your key light into an umbrella and filling with the reflector (Figure 2).

Often, the amount of electricity available is limited. Thus, using more than one or two instruments will blow a fuse or trip a breaker. This is another job for the reflector, and careful placement of the subject is required to take full advantage of the existing light. I have a small shiny reflector made by Lowel that can be mounted out of the picture, behind the subject, where it will bounce a little light from the key to act as a back light. One advantage of using white or silver reflectors is that they are always the same color temperature as the main source they are reflecting. This makes them extremely valuable when working under unusual conditions.

Director of photography and five-time Emmy winner George Spiro Dibie (*Night Court*, *Growing Pains*, *Murphy Brown*) told me about an unusual reflector-lit interior shot in a rural building without electricity.

Dibie placed a large, shiny reflector outside to catch the sun and throw its light through the front door. Another reflector in the hall passed the light to one at the top of the stairs which relayed it to a reflector in the room. The light was then bounced off smaller reflectors to illuminate the scene. Of course, someone had to stay with the outside reflector to track the sun's movement.

Video lighting pioneer Carlton Winckler says anyone can put light onto a subject; the secret of good lighting is the artful withholding of light. This is done with several gadgets, the most common of which are scrims, flags and cucolorises.

A scrim is a piece of metal mesh screen used to cut down the intensity of a light source without changing its other characteristics. (Cutting the intensity of most lights with a dimmer will change color temperature.)

You can use commercial scrims or make your own from metal window screening. Be careful not to use the plastic type. It's very messy when it melts.

A flag is an opaque piece of metal, usually with a thin handle, placed between a source and the subject to cast a controlling shadow. Flags come in many sizes. Long, thin ones are called fingers and round ones are called dots.

A cucoloris, or cookie, is a piece of opaque material into which a random pattern of holes has been cut. When placed in front of a background light, it casts a mottled pattern and makes a plane surface appear to have texture.

A cookie with horizontal slices can make the light appear to be coming through Venetian blinds.

You can buy commercial flags and cookies, or make your own from a piece of cardboard and a wire coat hanger or from a roll of heavy-duty black aluminum foil available at most lighting supply stores.

For hit and run interviews with one light mounted on the camera, you can keep the subject from looking like he is standing in a coal mine by modifying a set of barn doors.

First cut back the top door so it provides a base on which you can rivet or bolt a double scrim. Then paint the inside of the side doors with high-temperature, resistant white paint (Figure 3).

In most single-light interviews, we start with a picture in which the person being

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Figure 3

"...when all is said and done, it's not what you carry in your kit, but what you carry in your head."

interviewed is properly exposed, but the background is dark and the reporter, being closer to the light, is overexposed.

To fix the problem, first swing the scrim into place in front of the instrument. When you open your iris to compensate for the underexposed subject, the background begins to be visible.

Next bring in the reporter-side barn door until it flags most of the light off the reporter. Now the secret; bring in the opposite barn door just enough so its white inner surface can reflect enough light to illuminate the reporter.

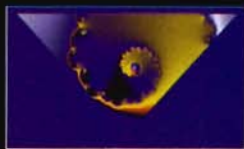
I have also added a built-in scrim to the barn doors, which normally work on my back light. I find intensity control is needed in most back-light applications, and it's nice to have a scrim handy. In this case the doors are rotated so the scrim comes in from the bottom, leaving the top barn door free to flag the light off the camera lens.

Other handy items to carry in your kit should include as many different kinds of mounting devices as you can collect; clothespins to do everything from mounting gels and diffusion to holding window curtains away from a hot instrument; ground lift adapters; a roll of real gaffer's tape—not duct tape; and an AC outlet tester to find a socket that still has power after the secretary blew the electric heater hidden under the desk. But when all is said and done, it's not what you carry in your kit, but what you carry in your head that determines the quality of your lighting job.

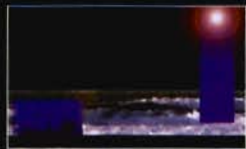
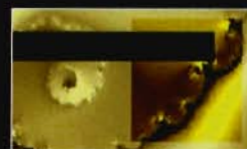
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[Editor's note: Dick's instructional videotape, "Lighting in the Real World," is available at a discount to readers of VTU. Call (408) 226-6339 for more information.]

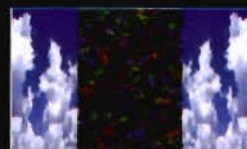
Dick Reizner is an award-winning freelance cameraman. With more than 32 years of experience in shooting film and video, he has won an Emmy, an ITVA Award of Excellence, a CINE Golden Eagle and other awards. Reizner is also the author of the popular "Tips to Clip" column in AVVideo magazine.



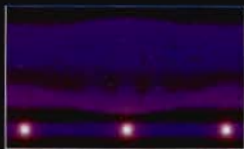
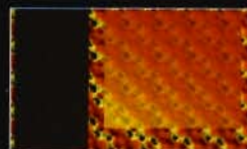
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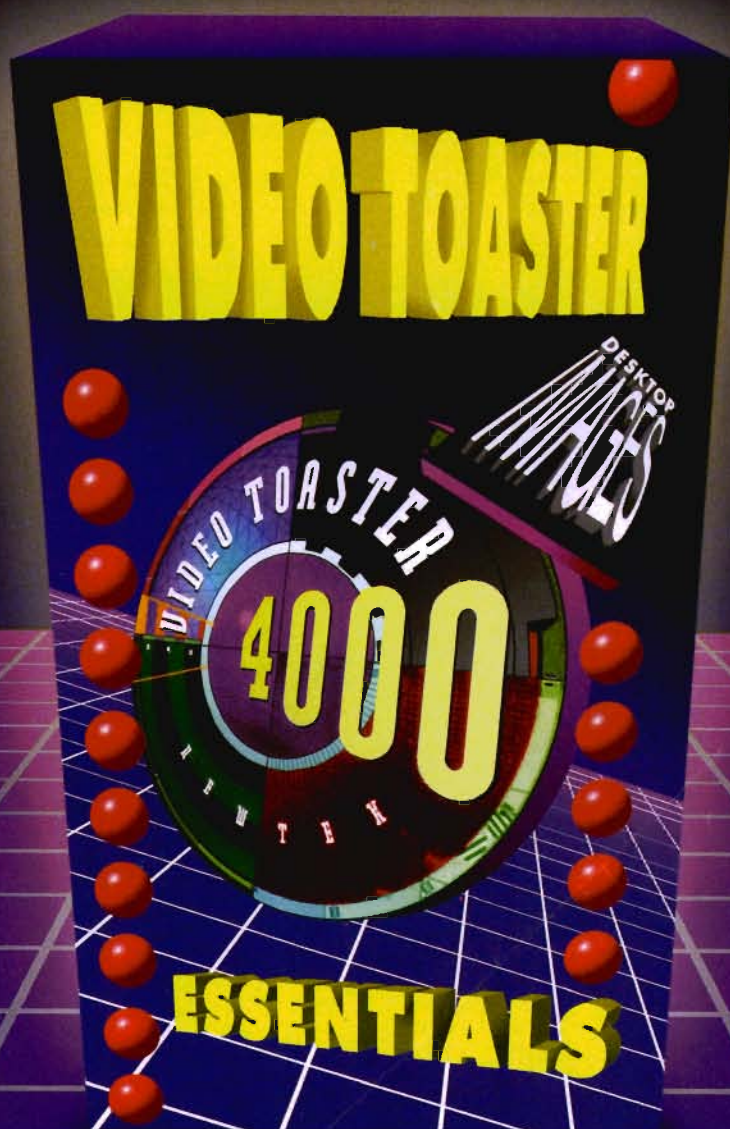
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Wuzzy Fuzzy?

How Could You Tell?

by Cecil Smith

What a mess! We're all out here trying to create the sharpest image for the right price, and every salesman has his own vocabulary about resolution. Hopelessly entwined with contrast ratio, signal-to-noise ratio and geometric accuracy, resolution is probably the most important factor in expressing overall picture quality.

There are so many questions about the meaning of resolution, what factors affect resolution and how it is measured that it's about time to figure out some of the gobbledegook.

First, our definition. With all due respect to Webster's, I'll define resolution as the ability to clearly discern details in an image. The general rule of thumb is, the smaller the details that can be seen in an image, the sharper the image and the better the perceived resolution.

There are a number of ways to measure and describe resolution. Some of the terms are derived from the old tube-type television technologies and the remainder come from the newer solid-state computer technologies. It is not always possible to convert from one method of describing resolution to another.

Television Resolution

Television resolution is usually measured in one of four ways: TV lines, rise time, bandwidth or dot pitch. Picture details along the horizontal axis are more difficult to achieve than along the vertical axis of the picture. Most specifications refer to limiting horizontal resolution. It is assumed that vertical resolution can't get any better than the number of active horizontal scans.

Limiting Horizontal Resolution Measured in TV Lines (TVL)

Limiting horizontal resolution is the number of individual black areas that can be seen on each horizontal scan. The white areas between the black areas are equal in size to the black areas. The rule is that the greater the number of individual lines (called TV lines), the sharper the detail in the picture.

Note that horizontal resolution has no direct relationship to the number of horizontal scans. There are 525 horizontal scan lines in North America and 625 in many other locations. Those numbers limit *vertical* resolution.

In North America, limiting horizontal resolution is measured with an Electronics Industry Association (EIA) resolution test chart (a portion of which is shown in Figure 1) and a high-resolution, black-and-white monitor. (Test card F, the chart used to measure resolution in most locations outside North America, is discussed later.) The vertically converging lines at the top- and bottom-center of the chart express the limiting horizontal resolution of the system and are used to measure limiting horizontal resolution. There is a point past which individual black lines cannot be seen in the picture. This is the limiting horizontal resolution of the system being measured.

The number printed next to the point where the lines converge represents the limiting horizontal resolution expressed as the number of individual black lines that can be seen in a horizontal scan. The chart must be calibrated to the television frame for the numbers to be accurate. Calibration is achieved when the points of the white wedges at the chart edges fall on the edges of the scanned area of an underscan monitor.

Limiting Horizontal Resolution Measured as Rise Time

Horizontal resolution is sometimes measured in the length of time it takes for the video signal to make a transition from a low voltage from a dark image area to an adjacent high voltage from a light image area. As shown in

Figure 2, the time spent in transition is called the rise time. The amount of smearing that takes place between adjacent picture details is being measured. The shorter the rise

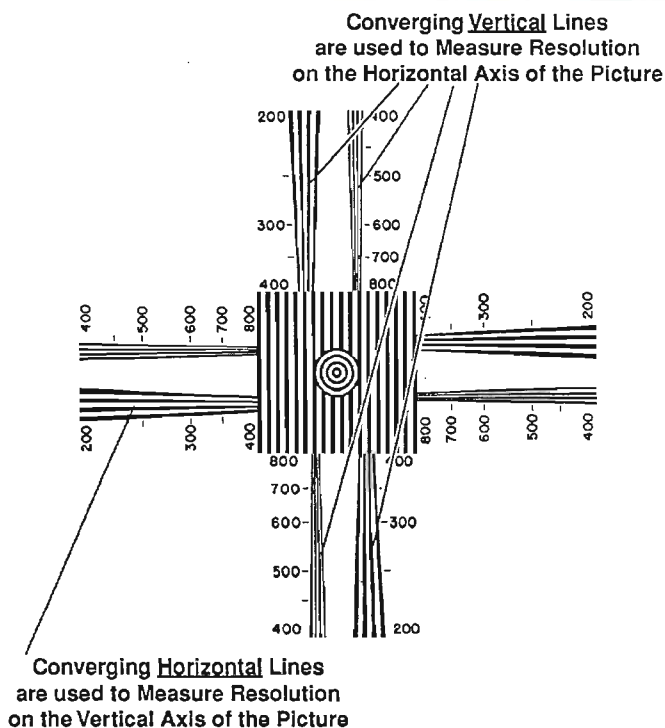


Figure 1

The Edge of a Generated Character is not Sharp

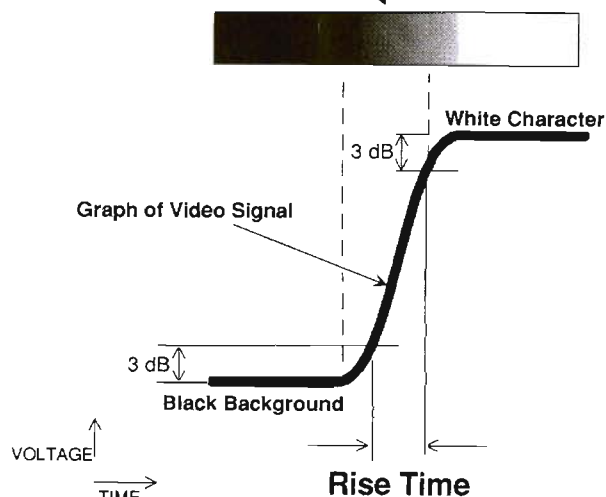


Figure 2

time, the smaller the smearing and the sharper the perceived image. Figure 3 shows a perfectly sharp transition, which is the impossible dream.

This rise time is usually measured in nanoseconds—0.00000001 seconds. Rise time can be electronically mea-

Wuzzy Fuzzy?

sured with an oscilloscope. Normally, this specification is associated with character generators where the edge sharpness of the electronically generated characters is important.

It is possible to convert from resolution specified in rise time to TV lines. For the 525-line system used in

time to bandwidth (in Hertz) by dividing .35 by the rise time (in nanoseconds).

Limiting Horizontal Resolution Measured as Signal Bandwidth

As the picture goes from a dark to a bright area (and vice versa), the video signal cycles between low and high voltages. The practical limit to the number of video signal voltage cycles in a given amount of time that can be passed through a system limits the size of picture details. The bandwidth of the electronics through which the video signal passes can limit the perceived resolution of the displayed images. (With imaging devices, the term depth-of-modulation is frequently used to describe the bandwidth of the video signal.)

The governing principle is the wider the range of frequencies (expressed in cycles-per-second or Hertz) of video signal that can pass through the electronics, the higher the perceived resolution of the image. Typical video amplifier bandwidths found in professional cameras are 50Hz to 15MHz (50 cycles-per-second through 15,000,000 cycles-per-second). Lesser cameras can have upper frequency limits as low as 5 MHz.

Outside North America, resolution is frequently measured with television Test Card F. Used in a manner similar to the measurement of resolution with the wedges on the EIA resolution test chart (calibrated in TVL), Test Card F is calibrated in frequency wedges of 1.5, 2.5, 3.5, 4.0, 4.5, and 5.25MHz.

Figure 4 shows a typical multiburst pattern that can be used with an oscilloscope to measure video bandwidth. Figure 5 shows how a multiburst signal is distorted as it goes through a typical heterodyne recorder (like 3/4 U and VHS). Notice that the 3 and 4.2MHz bursts are missing entirely. This means that sharp edges in the original picture will be dulled as the signal passes through the recorder.

Notice that the 1 and 2 MHz bursts in Figure 5 have been attenuated. This means that the whites don't get as white, and the blacks don't get as black as they did in the .5MHz burst. In contrast, this reduction can be perceived as a reduction in resolution. It turns out that contrast ratio and the ability to resolve picture details are inextricably intertwined. After all, with a contrast ratio of zero (with the lights out), you can't see *any* picture details. This is one reason why a properly lit scene appears sharper than a flatly lit scene.

Depth-of-modulation is measured with an oscilloscope or waveform monitor and a depth-of-modulation test chart. Expression of the depth-of-modulation is usually encountered in imaging technology and not encountered in widespread practice.

As a rule of thumb, the resolution along the vertical axis of a television picture is limited by the number of horizontal scan paths appearing in each frame of the picture. (In North America, it's the magic 525 horizontal scan paths in each frame. Elsewhere the number is frequently 625 horizontal scan paths-per-frame.) The resolution along the horizontal axis of a television picture is limited by the number of individual picture details that can be seen on *each* horizontal scan path.

The Edge of a Generated Character is Sharp

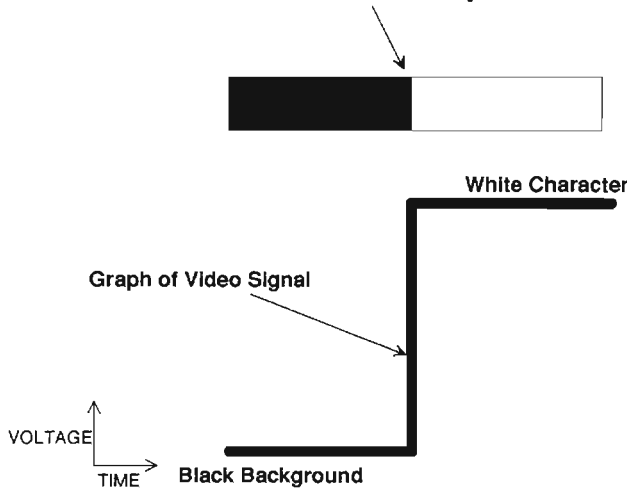


Figure 3

Increasing Frequencies Increasing Resolution

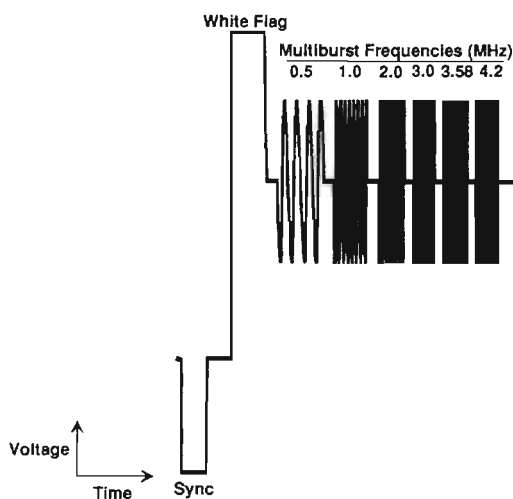


Figure 4

North America, divide 26,050 by the rise time (in nanoseconds) to come up with the equivalent number of TVL resolution. (It's a close approximation.) For the 625-line systems used in many countries, convert from rise

The greater the number of pixels, the greater the demands of memory and image-processing speed. Each pixel in a display is created in response to a code made within the computer. The code often contains information about where the pixel is to appear in the picture frame and its values of color and brightness.

The greater the number of pixels, the greater the demands of memory and image-processing speed. Each pixel in a display is created in response to a code made within the computer. The code often contains information about where the pixel is to appear in the picture frame and its values of color and brightness.

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equivalent of 384 TVL limiting horizontal resolution expressed in television terms? Not really. As shown in Figure 8, the shape of the sharply edged pixels versus the Gaussian-edged TV lines are not the same and produce different measurement results. Remember, we're talking about new, solid-state technology versus old tube tech-

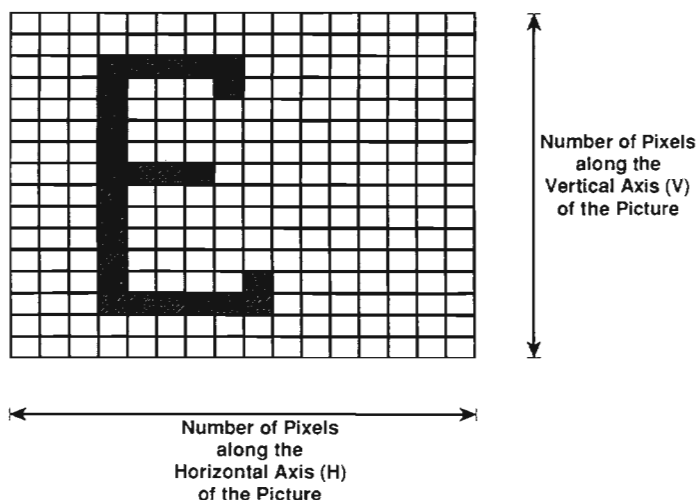


Figure 7

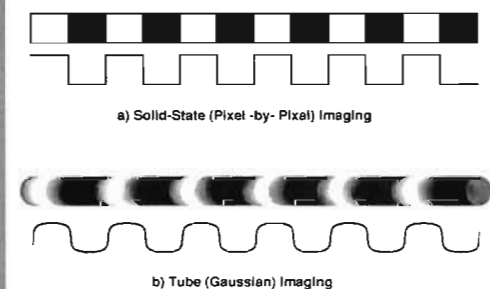


Figure 8

appropriate to talk about pixel resolution instead of limiting horizontal resolution. The smearing between picture elements was much more of a factor of tube imaging than solid-state imaging.

Dots-per-Inch Resolution

Many computer output devices measure resolution in terms of the number of individual dots that can be discerned in a given length. Figure 9 shows how an array of black dots (black ink dots on white paper) creates an image. For laser printers, the typical limiting resolution is around 300 dots-per-inch (dpi) along the vertical and horizontal axes of the paper. Professional typeset-quality imagesetters have limiting resolutions of 1,024 dpi and greater. The greater the number of dots, the more storage area and memory that is required. The greater the number of dots, the less ragged the appearance of any diagonal elements on the page will be (particularly on some letters like A, X and V).

The other factor of printer resolution is the ability to accurately reproduce halftone photographic work. When the resolution is higher, the reprinted photo appears more natural. Remember that printers typically have only black ink to splatter on paper, so the relative amounts of white paper-to-ink splattered paper establishes the ability to reproduce shades of gray.

Offset Printer Resolution

If you decide to take your computer-generated halftones (photographs, shaded drawings, etc.) to the local copy shop for offset printing, you will run into another measurement of resolution. When they photograph your halftone copy, they shoot through a screen that breaks the image into small elements. This screen process enables the printing of grays by varying the density of the black ink applied to the paper. You can see coarse results by looking at the photos in any newspaper.

The resolution of screens is measured in lines-per-linear-inch. Screens of 55, 65, 85, 100, 120, 133 and 150 lines are common. When the number of lines is greater, the pictures become sharper. For newspaper resolution, 55-, 65- or 85-line screens are used. For coffee-table picture books and glossy magazines, 133- and 150-line screens are usually used.

System Resolution

Now, let's look at some of the more confusing aspects of resolution. First, it is true that the resolution through a system of individual pieces of equipment is limited by the weakest link (lowest resolution) component in the system. It's somewhat akin to trying to use a garden hose to replace a large water main. You can't get more water through the system than is allowed through the small garden hose, regardless of the size of the remainder of the pipes. There is a hidden benefit to using the larger pipes before and after the garden hose—there will be less turbulence in the water at the end of the process.

Starting out with a picture that has the highest possible resolution is the best scenario. This means a high-quality camera or graphics generator and can give you a chance to provide the highest-possible quality of system-picture output instead of limiting your options at the start.

Maintaining the highest-resolution circuitry through as much of the system as you can afford is also advantageous. Higher-resolution equipment does not limit the picture quality by introducing distortion-producing artifacts in the picture that will decrease perceived resolution.

Taking this philosophy a step further, the numbers used to express resolution are not absolute. An individual piece of equipment with a 260 TVL limiting horizontal resolution does not usually limit the entire system to only 260 TVL horizontal resolution. It *will* degrade the resolution but not by that much. If you start out with a picture created by a camera capable of 800 TVL resolution and send it through a recorder capable of only 260 TVL resolution, the picture still appears sharper than if you started with a camera capable of creating a 400 TVL picture.

Misconceptions

Another common misconception concerning resolution specification is about what devices are included in the specification. With computer systems, it is often difficult to figure out whether the 1,024x768 capability is associated with a computer display, a film recorder, a graphics card, a computer architecture, a television output interface or whatever. For instance, some of the illustrations

accompanying this article were scanned in monochrome at 300 dpi, edited on a 1,024x768 by 256,000 color display with a 1,016 dpi digitizing tablet, printed on a 300 dpi laser printer for proofs and printed in final form with a 133-line screen.

When interfacing a computer with a television system, it is often difficult to determine whether or not the promised resolution and number of colors are indeed output by the

Factors that Affect Resolution in a Television System

The quality of the camera:

- The quality of the optical system (including the lens, filters and prism).
- The cleanliness of the optical system (a dirty or scratched lens reduces resolution).
- The quality and type of imaging devices (tubes or chips).
- The quality of design of the video amplifying and encoding electronics.
- The accuracy of registration among the imaging devices.

The quality of the viewing device:

- The quality of design of the video signal amplifying and decoding electronics.
- The pitch of the red, green and blue phosphors on a color monitor.
- The accuracy of convergence of the landing of the electron beams modulated by the red, green and blue video signals as they land on their respective phosphors.
- The cleanliness of the face of the picture tube (where airborne dust and dirt are naturally attracted).

The quality of connectors and cables:

- The accuracy of the characteristic impedance of the connectors and cable.
- The condition of the connectors and cable (crimps and flat spots cause ghosts in the picture that interfere with the desired image to reduce perceived resolution).

The quality of the recorder:

- The quality of the recorder (particularly the video heads).
- The cleanliness of the recorder (particularly the video heads).
- The cleanliness of the environment in which the recorder must operate.
- The type of video-signal processing used (heterodyne will always be worse than component, which will always be worse than direct, which will always be worse than digital).
- The quality of the videotape (the more information that can be crammed into a given area of tape, the higher the resolution).

The quality of the transmission system:

- The wider the range of frequencies that can pass through the system, the higher the perceived image resolution.
- The less processing used, the higher the resolution (baseband raw video always creates a higher-resolution image than RF-modulated video).
- The greater the number of components of the video signal that can be kept separated, the higher the perceived image resolution (three-channel component Y,R-Y,B-Y is better than two-channel Y/C is better than one-channel composite video).

Factors that Affect Resolution in a Computer System

The quality of the input device:

- The quality of the imaging camera (if used).
- The accuracy in which position can be determined by a mouse or digitizing tablet (if used).
- The quality and type of scanning devices.
- The number of individual picture elements that can pass through a television-to-computer interface (such as frame buffers, frame captures, etc.).

The quality of the computer:

- The quantity of memory locations allocated to store the image (the greater the number of locations, the higher the resolution of the image).
- The rate at which information can be stored and retrieved from the memory.
- The number of individual colors and levels of gray that can be accommodated by the graphics processing within the computer.
- The shape of the individual picture elements in the computer-generated picture (some computers used square picture elements, others use rectangular elements; square is better for graphics).

The quality of the output device:

- The quality of design of the video signal amplifying and decoding electronics.
- The pitch of the red, green and blue phosphors on a color monitor.
- The accuracy of convergence of the landing of the electron beams modulated by the red, green and blue video signals as they land on their respective phosphors.
- The cleanliness of the face of the picture tube (where airborne dust and dirt are naturally attracted).
- The number, shape and color of individual, ink-like elements that can be printed on a given area of paper by a printer.
- The number of colors and individual flakes of color that can be photographed in a given area of film by a film recorder.
- The number of individual picture elements that can pass through a computer-to-television interface, including genlocks.

The quality of connectors and cables:

- The accuracy of the characteristic impedance of the connectors and cable.
- The condition of the connectors and cable (crimps and flat spots cause ghosts in the picture that interfere with the desired image to reduce perceived resolution).

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television interface. The only way around these problems is to read specifications carefully, ask questions and con-

sider *caveat emptor* the credo of the television and computer equipment businesses.

Somehow, a simple concept like picture sharpness and detail has taken on a myriad of subtle connotations. Over the years, each imaging industry developed its own method of measurement. Television came along somewhere in the middle; before television, ink printers were using line screens. After television, computer types decided on pixels and dots-per-inch. The continuing evolution of imaging processes will create even more ways to express resolution and confuse the issue.

Despite all the measurements, measurement units and specifications, it all boils down to what looks good to you. Numbers on a specification sheet can be deceiving—you have to use those calibrated eyeballs to measure a given system to find out if it's good enough.

VTU

Cecil Smith is a consulting engineer specializing in imaging and television systems, facilities and training. He is the author of Mastering Television Technology: A Cure for the Common Video and Answers to Television Technology: An Encore. He may be reached at (214) 231-6804.

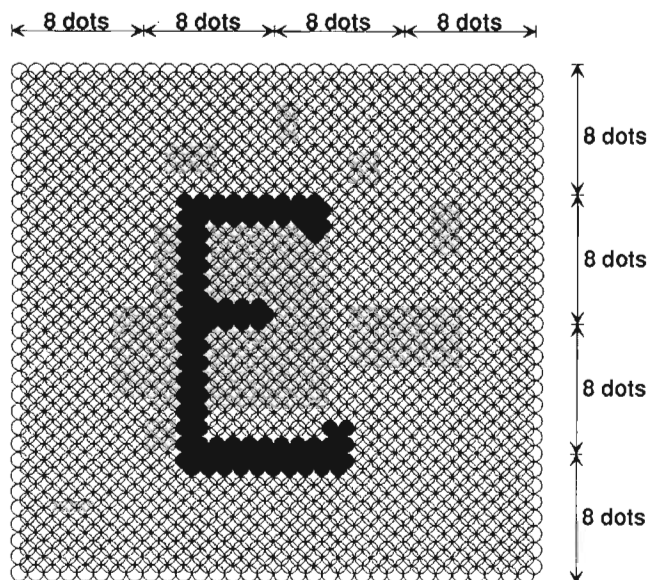


Figure 9

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- 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 controller which makes it a highly sophisticated edit deck. Includes a full-function shuttle dial allowing easy selection of a range of forward and reverse playback speeds for swift, precise scene location.



- 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 32:1 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.
- Strobe and Art playback modes - six-speed strobe 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 expected to last for the lifetime of the scanner, negligible warm-up time, and no variation in the light source over time (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)
- EXTERNAL lightweight, portable unit (specify Mac or PC)

Call
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 connector 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 Compatibility - 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 is 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-A80) to set the pause time from 1 to 8 seconds.
- You can let 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



EDITOR 2.0 PC-Based Edit Controller

The TAO Editor 2.0 is a hardware/software combination video edit controller that runs on Windows 3.1 and supports both Prosumer and Professional equipment. The Editor comes complete with integrated Windows-based software for VCR control, A/B Roll Editing, tape logging, EDL management and EDL import/export. The Editor supports virtually every protocol including Sony Control-L, Panasonic 5-pin, RS-232C parallel and serial. It has 3-VCR control, an auxiliary serial port and multiple GPI triggers. It has switcher control for the WJ-MX30, WJ-MX50, Video Toaster and most of the other devices in your suite.

Hardware Features:

- Three VCR control ports for true A/B roll. Each VCR port can support a different protocol. (For example, you can use a Panasonic AG-1970 as 'A' source, Sony EVS-3000 as 'B' source and JVC BR-8822 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.
- MFPC Audio and MIDI support for embedding sounds and MIDI sequences in your EDL.
- DPS TBC II & III support - you can control two personal TBC cards and the Personal V-Scope from a serial port.

Software Features:

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

CALL

Sundance Technology Group

Q-BASE Scene Logging Database

- Connects any Macintosh (MacPlus and up) to any source VCR with RS-422 9-pin interface. Cable and Software included.
- Machine control provided via the RS-232C serial port allows use of mouse, keyboard, or optional jog/shuttle device.
- Four easy keystrokes for each log entry. Simply mark Time Code IN, OUT, select the Comment Window (enter a comment of 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 alphanumerics
- 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 Only Video Editing

- Q-Cut Cuts-Only is a software only package. Connects any source VCR with an RS-422 9-pin interface to the RS-232C Serial Port and any editing VCR with RS-422 protocol to the printer port for a complete cuts-only edit system.
- Includes full integration of Q-Base Scene Logger. You can import event lists from Q-Base to Q-Cut for instant access and auto-assembly.
- Generates CMX and Sony compatible EDL for import or export.
- Records single-frame animations from Toaster, LightWave 3D and many other popular 3-D software programs.
- Dynamic Motion Control or DMCC 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, backtag, and "Hit" Point calculation.
- View "EDL" vertical timeline, drag and drop edits to reorder the list - with and without auto-ripple.
- EDL clean and trace with trace journal report.
- Split Video/Audio 1 and Audio 2 edits.

\$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 GVG 100 Protocol.
- Includes Q-Base and all features of Q-Cut Cuts-Only.
- Includes all cables and connectors for A/B Roll editing.
- Software allows designation of any machine (from up to 15) to be the record VCR.
- Roll up to 6 sources in slave/sync mode.
- Double Play/Double Record for recording.

\$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 FutureVideo'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 allows 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 cuing both the player (source) and Record (edit) VCRs to their pre-roll 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 out points. Can be used with any SEG (Special Effects Generator) with GPI input like the Video Toaster, WJ-MX30 or WJ-MX50.

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-232C serial control for connection to IBM or AMIGA computer and FutureVideo's Edit Link 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-232C industrial VCRs like the JVC BR-805, Sony CVD-1000 V-Deck, and Panasonic AG-5700.
- Has programmable GPI trigger for timed turn on, turn off, or pulse. So 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 TC Plus generates 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-232C serial VCRs.
- Provides three external programmable GPI triggers.
- EditLink 3300 connects to your computer via a built-in RS-232C 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 (TTU) 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
- AudioVideo insert editing and dubbing capabilities
- Audio out select switch (Hi-Fi/Normal/Line)
- Versatile editing facilities: S-Video Out terminal/Adaptor terminal/Synchro Edit/5-pin Edit terminal/Edit switch
- Includes Panasonic metal system case

- Three 1/3" CCD image sensor system delivers over 530 lines of horizontal resolution
- New 10.1 2-speed zoom lens (see above) 6.6mm F1.6 with automatic and manual zoom. Also features 20:1 digital zoom.
- High resolution color viewfinder lets you preview and shoot scenes exactly as they are
- Built-in digital TBC (Time Base Corrector) eliminates jitter and skew and assures stable, distortion-free playback
- **Digital Mix** - for soft fade-over between memorized still and moving images
- **Digital Still** - lets you freeze a particular scene for as long as you like, without interrupting sound recording
- **Digital Gain-Up** - delivers clear, distinct images in low-light levels, even down to 1 lux!
- **Digital Strobe & Digital Wipe** - add professional effects to your shooting.

AG-455 2-Hour S-VHS Camcorder

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



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 magnetic 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 recording CD quality audio the AG-1970 also has 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 high speed 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 generate 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.
- Luminance 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 camera throughout the tilt range.
- Includes independent pan and tilt locks, bubble level, dual pan handle carriers and integrated 75mm ball leveling.

#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 leveling 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 8.5 lbs., supports 50 lbs.
- Very portable, folds to 27"
- Includes 75mm (3") ball leveling bowl with model 420 model 402 includes 100mm (4") ball leveling bowl

System 20 Catalog #338

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

System 20 ENG Cat. #339

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

Vinten

Vision SD 12 and SD 22

- Pan and Tilt Heads with Serial Drag
- The Vision SD 12 and SD 22 are the first heads with the "Serial Drag" pan and tilt system. The system consists of a unique, permanently-sealed fluid drag and an advanced lubricated friction drag. So for the first time, one head gives you all the advantages of both fluid (viscous) and lubricated (LF) drag systems - and none of their disadvantages. Achieve the smoothest pans and tilts regardless of speed, drag setting and ambient temperature.
- Simple, easy-to-use external control for perfect balance
 - Patented spring-assisted counter-balance system permits perfect "hands-off" camera balance over full 180° of tilt.
 - Instant drag system breakaway and recovery overcome inertia and friction for excellent "whip pans"
 - Consistent drag levels in both pan and tilt axes
 - 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 leveling bowl, fold down to a compact 28", and support 45 lbs.
 - The #3513 weighs 6.5 lbs and the #3523 CF (Carbon Fibre) weighs 5.2 lbs.

Vision 12 Systems

- All Vision 12 systems include #3364-3 SD 12 fluid and lubricated friction drag pan/tilt head, single telescoping pan bar and clamp with 100mm ball base.

SD-12A System

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

SD-12D System

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

Vision 22 Systems

- All Vision 22 systems include #3386-3 SD-22 dual fluid and lubricated friction drag pan and 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
- #3219-52 Second telescoping pan bar and clamp
- #3516-3 Two-stage EFP tripod with 150mm bowl
- #3314-3 Heavy-duty calibrated floor spreader

SONY

EVW-300 Hi-8 3-CCD CAMCORDER



The EVW-300 is a complete one piece camcorder which includes a variety of innovative and advanced operational features. So, whether 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-1B) 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
- May micro-lens technology provides exceptional sensitivity of F7.0 at 2000 lux and new LO-LUX mode lets you shoot with almost no light! Now you can shoot superb footage with excellent color balanced 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 LRA (Low noise amplifier) delivers a S/N (signal-to-noise) ratio of 62dB - the highest achieved for this type of camera
- 26-pin connector outputs Y/C or component video signal allowing hook up to a portable S-VHS, Hi8 or Betacam recorder and simultaneously record with Hi-8
- Quick-start 1.5" viewfinder needs no warm up time so you never miss a shot. Zebra pattern in the viewfinder alerts operator to excessive video levels.
- Genlock capability allows synchronization with other cameras. Also full calibration functions are built-in as well as color bar generator.
- Variable high speed shutter from 1/60 to 1/2000 second
- Built-in 8mm time code generator records an absolute address to every frame.
- High-performance back electret condenser mic records to all three audio tracks. Low cut filter eliminates wind noise.
- Sports very low power consumption. The TSC-200 draws only 16 watts per hour allowing 100 minutes of recording time with a single NP-1B battery
- Camera body is made of magnesium alloy previously found only on broadcast cameras. Still, lightweight at only 13 pounds in standard configuration.



HITACHI Z-ONE-C 3-CCD Dockable Camera

- Using three 2/3" CCD chips and high accuracy CCD technology the Z-One-C delivers 750 lines of horizontal resolution.
- The #2408 high gain mode and new Super High Sensitivity (SHS) function provide operation down to 1.5 lux at f1.8.
- 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-step electronic shutter, the new lookscan feature permits the continuous adjustment of the shutter speed in 1H steps to stop 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 (800 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 (BV-S) without need for adapters.
- Docks to Betacam SP (P-VV-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

Metal Particles	4.99	E630HME	8.79
P630HMP	7.19	E660HME	11.29
P6120HMP	9.69	E6120HME	15.79

AMPEX

107 KCA 3/4" U-matic Broadcast (In Box)

KCA05	6.49	KCA10	6.89	KCA15	7.29
KCA20		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
SPS20 (mini)	10.85	SPA20 (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-SLA	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 9mm High Grade

P6-60 HG BQ	4.99	P6-120 HG BQ	6.49
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BQ Certified Hi-8 Metal Cassettes

P6-60 HM BQ	6.49	P6-120 HM BQ	8.49
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P/1 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)

HGXT-60 Plus	3.49	HGXT-120 Plus	3.79
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BQ Broadcast Quality Expitaxial VHS (Box)

T-30 BQ	5.49	T-60 BQ	5.99
T-120 BQ			6.39

BQ Certified Professional S-VHS (In Box)

ST-31 BQ	6.49	ST-62 BQ	6.99
ST-126 BQ	7.69	ST-182 BQ	14.99

KCA 3/4" High Grade w/Album & Sleeve

KCS-10 HG (mini)	6.99	KCS-20 HG (mini)	7.69
KCA-5 HG	7.29	KCA-10 HG	8.29
KCA-20 HG	8.99	KCA-30 HG	9.49

KCA 3/4" Broadcast w/Album & Sleeve

KCS-10 BQ (mini)	7.49	KCS-20 BQ (mini)	8.49
KCA-5 BQ	7.69	KCA-10 BQ	8.29
KCA-20 BQ	8.99	KCA-30 BQ	9.99

SONY

Hi-8 Professional Metal Video Cassettes

P6-30 HMPX	5.99	P6-30 HMEX	8.49
P6-60 HMPX	8.59	P6-60 HMEX	11.99
P6-120HMPX	11.69	P6-120HMEX	15.99

PR Series Professional Grade VHS

T-30PR	2.49	T-60PR	2.79	T-120PR	3.29
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PM Series Premier Grade Professional VHS

T-30PM	3.49	T-60PM	4.09	T-120PM	4.99
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BA Series Premier Hi-Grade Broadcast VHS (In Box)

T-30BA	3.79	T-60BA	4.29	T-120BA	5.29
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MQ Master Quality S-VHS (In Box)

MQST-60	8.19	MQST-120	8.59
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BRS 3/4" U-matic Broadcast Standard (In Box)

KCS-10 BRS (mini)	7.99	KCS-20 BRS (mini)	8.69
KCA-10 BRS	7.89	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-10 (mini)	9.19	KSP-20 (mini)	10.69
KSP-10	9.89	KSP-20	10.99
KSP-30	12.49	KSP-60	16.39

BCT G Betacam Broadcast Standard (In Box)

BCT-5G (small)	4.99	BCT-10G (small)	5.89
BCT-20G (small)	7.39	BCT-30G (small)	9.39
BCT-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)	18.99	BCT-10M (small)	19.29
BCT-20M (small)	21.29	BCT-30M (small)	23.29
BCT-5ML	18.99	BCT-10ML	19.29
BCT-20ML	21.39	BCT-30ML	23.49
BCT-60ML	31.89	BCT-90ML	49.95

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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 us/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 audio monitoring easy, has color bar limit markings for Betacam, M-I 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, 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 PREVIEW 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 1/4 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 striping of 8mm time code will not affect any of the video and audio signals) Can also read RC (Reversible 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 cut-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 50 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 dial 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 crowded 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
- 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, B-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 (B-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 input, 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 DCC (Drop-out compensator)

AP41-SF

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

AP41-SP

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

I.D.E.N. IVT-7

DIGITAL TBC/FRAME SYNCHRONIZER

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

1699.00

The KitchenSync Dual Channel TBC

- Two complete infinite window time base correctors on one IBM AT/Amiga compatible card
- Plugs into any Amiga or PC compatible
- Use more than one 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/R 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 Video Toaster. It controls low-cost industrial VCRs like the Panasonic AG-1960 and AG-1970 machines with RS-232 Control (AG-5700, CVD-1000 Video), and machines with the Sony Control 1. 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, mouse, keyboard and trackball, plus an optional jog/shuttle editing keyboard
- Industry standard keyboard layout (CMX/GVG)
- Auto calculated GPI, plus 48 additional GPI triggers per edit with optional hardware
- Controls industry standard audio mixers

Edit List Management

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

Editing Control

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

Edit Modes

- Provides for multiple audio/video splits per edit event
- Open ended immediate/delayed transition edits
- Performs all edit modes plus "Music Video Mode" for easily synchronizing edits to music
- Integrate graphics, animation and character generation
- Scene-based editing with advanced park 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 views and dopes, 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.

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 spiral tearing, spray paint, windshield wiper, heart, clock, iris, spiral and many more
- Organic transitions such as clouds, spilling paint, pouring water, smoke, fire, shattering glass

Luminance Keyer

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

Frame Grabber/Frame Store

The Toaster can grab and save a full frame (in 16.8 million colors) and has sophisticated motion removal algorithms to provide a rock-solid freeze frame. These frames may then be loaded into ToasterPaint or LightWave 3D for further manipulation. Up to 1024 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 1/6 of a second from RAM or 3 seconds from hard drive. These frames can also be used as inputs to the switcher for transitions and digital effects.

ChromaFX Color Processor

ChromaFX is a sophisticated real-time color processor that gives you complete control of all aspects of the brightness, contrast and color of your video. It can interleave with color negatives, day for night, sepia tone, monochrome, saturation, posterization, color stylization and other totally unique effects such as Niko, Chroma, Glow, Zebra, and more. ChromaFX also gives you the power to create your own custom color effects from subtle left-to-right changes or into, to blazing psychedelic effects that will wake up your audience.

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 RS232 or RS422 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.

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 computer. Includes Amiga and MS-DOS software.
- Exclusive feature of the TBC IV is the 50-pin CVE (Component Video Exchange) port. When this port is connected to a DPS Personal Animation Recorder you can capture and record real-time video on the animator's dedicated hard drive. This combination is ideal for rotoscoping and other video capture processes.
- Fully compatible with TBC II, III and Personal V-Scope. The TBC IV is operated via software, or by using an optional DPS RC-2000 multi-channel desktop controller.

DPS DR-2150

Personal Animation Recorder

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

- Combines custom 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/MLI) outputs. Also has a genlock input enabling it to be easily integrated with virtually any video production system.
- Supports direct rendering of all common image formats including 24-bit IFF and Video Toaster frame store files and is fully compatible with all popular animation packages including Morph Plus, Lightwave 3-D, Fractal Pro, Imagine, Vista Pro, and Cinema 4D.
- Real-time video capture for rotoscoping and other video capture applications is possible when used in combination with a DPS TBC IV card.

Nova 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 DDS, 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.

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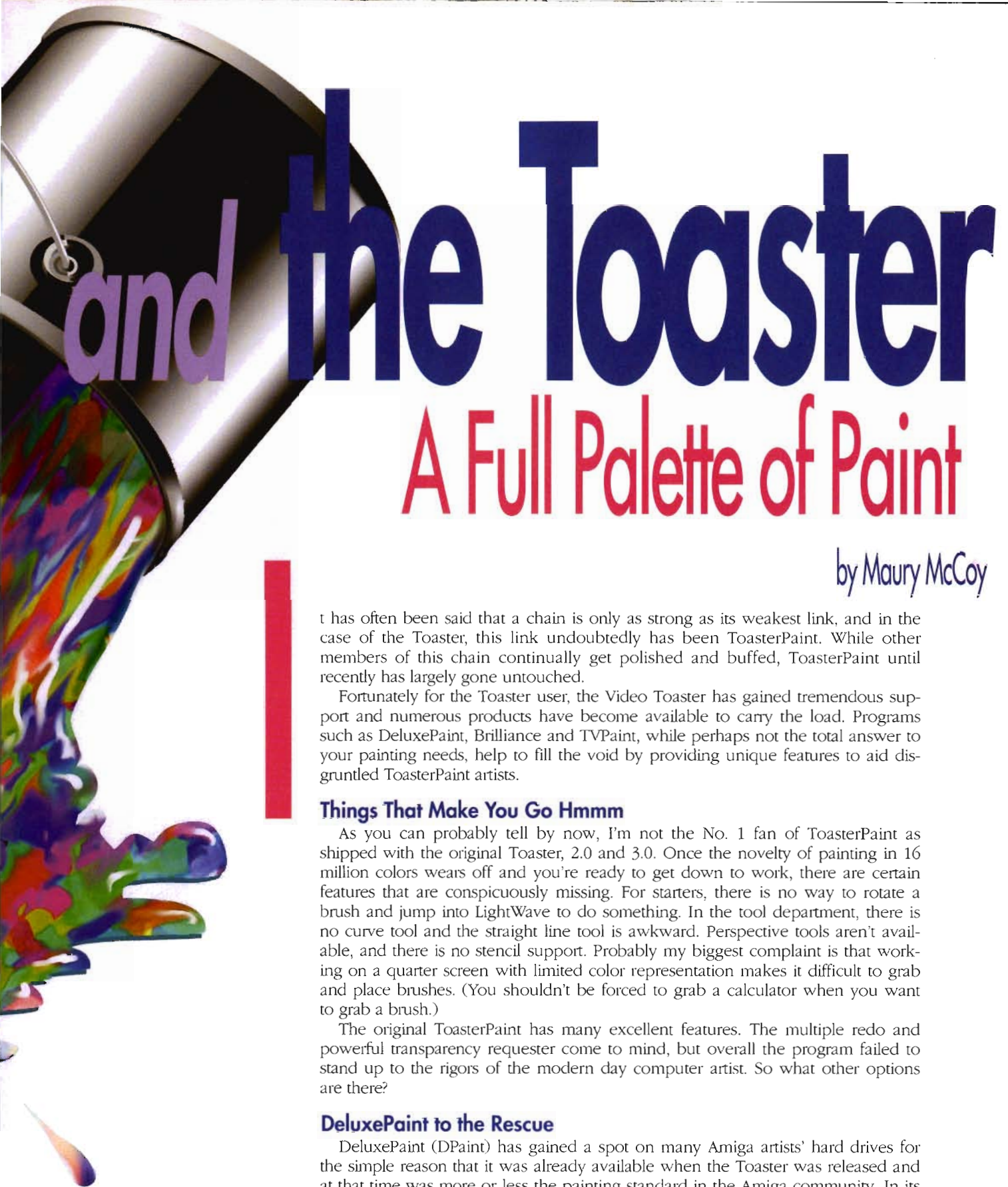
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FOR INFORMATION CIRCLE 102

Video Paint



ILLUSTRATION BY TOM TWOHY



and the Toaster

A Full Palette of Paint

by Maury McCoy

It has often been said that a chain is only as strong as its weakest link, and in the case of the Toaster, this link undoubtedly has been ToasterPaint. While other members of this chain continually get polished and buffed, ToasterPaint until recently has largely gone untouched.

Fortunately for the Toaster user, the Video Toaster has gained tremendous support and numerous products have become available to carry the load. Programs such as DeluxePaint, Brilliance and TVPaint, while perhaps not the total answer to your painting needs, help to fill the void by providing unique features to aid disgruntled ToasterPaint artists.

Things That Make You Go Hmmm

As you can probably tell by now, I'm not the No. 1 fan of ToasterPaint as shipped with the original Toaster, 2.0 and 3.0. Once the novelty of painting in 16 million colors wears off and you're ready to get down to work, there are certain features that are conspicuously missing. For starters, there is no way to rotate a brush and jump into LightWave to do something. In the tool department, there is no curve tool and the straight line tool is awkward. Perspective tools aren't available, and there is no stencil support. Probably my biggest complaint is that working on a quarter screen with limited color representation makes it difficult to grab and place brushes. (You shouldn't be forced to grab a calculator when you want to grab a brush.)

The original ToasterPaint has many excellent features. The multiple redo and powerful transparency requester come to mind, but overall the program failed to stand up to the rigors of the modern day computer artist. So what other options are there?

DeluxePaint to the Rescue

DeluxePaint (DPaint) has gained a spot on many Amiga artists' hard drives for the simple reason that it was already available when the Toaster was released and at that time was more or less the painting standard in the Amiga community. In its fourth revision, DPaint is a well-polished program that has withstood the test of time. The only problem with this program is that it doesn't allow painting in 24-bit color, and thus requires you to load images into ToasterPaint for final color enhancement and output.

With the release of DPaintV AGA, the gap between DPaint and ToasterPaint was narrowed by allowing DPaint to paint in HAM8, which is the same format

used to display animations from the Switcher on the Amiga 4000. HAM8 is a far cry from true 24-bit painting and unfortunately by adding support for this feature, DPaint has become noticeably slower.

Most Toaster artists will probably shy away from the HAM modes of this program because the associated color fringing of HAM makes many graphics unsuitable for video. The real strength of DPaint is in its register-based modes. It's hard to find a more reliable program for doing logo touch-ups, magnification work or any 16-color graphics and animations, such as texture maps for LightWave. There is also an added advantage in the fact

that 16-color animations can be keyed over framestores or live video and output using the Toaster's genlock function.

DPaint is perhaps the easiest of all the various programs to use. Like a game of chess, the basic principles are fairly simple, but the combinations are endless. All of DPaint's tools can work in combination with each other to provide a plethora of painting possibilities. The pro-

gram is backed by an excellent manual and performance record, which makes it great for those who are new to the world of computerized painting and animation.

Brilliance/TrueBrilliance

Brilliance from Digital Creations is a recent entry into the world of Amiga paint programs. Although many programs have tried to knock DPaint from its throne as the king of register-based paint programs, Brilliance is the first formidable opponent to come along in quite some time. Brilliance is essentially two paint programs, a register-based version similar to DPaint and a 24-bit HAM version called True-Brilliance.

Brilliance is basically the operational equivalent of DPaint with a different interface. All of the basic tools are here, and the majority of keyboard shortcuts are the same. Brilliance has also included a variety of useful tools and features, such as Bezier curves, aspect-corrected rotations, Compugraphic font support, a paint-stencil feature and the ability to perform multiple undo functions. The addition of this multiple undo feature is unique to Brilliance and instantly becomes an integral part of the way you work. Not only does this feature protect people from making stupid mistakes, it allows the artist to test different techniques without fear of losing their work. About the only thing that Brilliance lacks in comparison to DPaint is a well-written manual and perhaps a better way to handle text.

TrueBrilliance is similar to Brilliance. Where the program differs from Brilliance is in the way a few tools work because of the increased number of colors supported. For

owners of an Amiga 4000 who work in ToasterPaint, this program is a must-have. TrueBrilliance offers the ease of use and power of DPaint while at the same time allowing 24-bit images to be edited and transferred to and from ToasterPaint.

On an AGA-equipped machine, TrueBrilliance breaks the quarter-screen barrier, and allows you to work on a full-screen image. By harnessing the power of this new chipset, Brilliance is also capable of allowing you to edit a HAM8 262,144-color representation of a true 24-bit image. This process is similar to the way that ToasterPaint uses a HAM6 (4,096-color) representation of its images. True-Brilliance also has speed. It is possible to pick up a brush and actually move it around the screen without it flashing like a strobe light as in ToasterPaint. TrueBrilliance's powerful paint stencil feature is great when working with 24-bit images. Another advantage of TrueBrilliance is that it is nearly identical to the register-based version of the program and thus requires that an artist get accustomed to only one system.

Is Brilliance the answer for everyone? Well, not quite. This program isn't capable of outputting directly to the Toaster framebuffers, so images must be saved in RGB format and then loaded into ToasterPaint to be viewed in true 24-bit. Brilliance also does not support the framestore file format of the Toaster, so if you want to edit an image that was grabbed with the Toaster, it must be loaded into ToasterPaint, saved as an RGB file, loaded into Brilliance where it can be edited, then loaded back into ToasterPaint where it can finally be viewed. Obviously, few will be eager to do this every time they need to touch up an image. It is sometimes faster to do things the hard way in ToasterPaint as opposed to going through the numerous loading and saving procedures required of Brilliance.

Brilliance along with DPaint lacks any AReXX support, which eliminates any method of automating these processes and impedes the potential power of this program. Owners of Amiga 2000s are still faced with the same old scrolling, quarter-screen view, but at least they now have all of the powerful tools provided by this program. On a 2000, Brilliance is essentially a souped-up ToasterPaint. Brilliance also lacks the powerful transparency requester found in ToasterPaint and requires that a dongle be plugged into the joystick port at all times, which is a real hassle. However, Brilliance is still in its first release, and it is likely new features and improvements will be added as the user base for this fine program increases.

TVPaint 2.0

So far, every program mentioned suffers one major drawback: none allow you to directly manipulate and view a 24-bit image at the same time. That is the main selling point of TVPaint 2.0 from MacroSystemUS. TVPaint supports a variety of third-party 24-bit display cards, such as the GVP IV24, Harlequin and the MacroSystems Retina.

I used this program with the Retina card and was amazed. After trying this program, any dedicated artist may want to look no further. For a program to be an artistic tool, it must be integrated into the way the artist works. In this area, TVPaint excels. TVPaint was the only pro-



Amiga 2000 owners are still faced with the problem of scrolling screens in TrueBrilliance, but now have the ability to draw curves, rotate brushes and much more to fill the void left by ToasterPaint.

A

PAINT!

Alpha Paint delivers high-end Paint Box performance for the Video Toaster!



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With Alpha Paint, any Toaster Videographer can create stunning network caliber graphics in a snap.

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INNOVISION
TECHNOLOGY

gram I've tried on the Amiga that offers extensive support for pressure-sensitive tablets.

For artists coming from traditional media, this option alone should merit TVPaint serious consideration. The airbrush tool almost has to be seen to be believed. Where other programs merely splatter pixels (Brilliance has a few more options for splattering pixels than DPaint), TVPaint supports a true airbrush tool complete with an adjustable nozzle, density and power settings.

Occasionally while using this program, I couldn't resist the temptation to spray a few lines simply to see this tool in action. TVPaint supports nearly every feature you could

ask for, and the Retina version of the program is very fast. Painting in 16-million colors with TVPaint is comparable to painting in 16 colors with register-based programs. The smoothing and blurring options are incredibly quick and extremely effective.

Numerous brush operations are supported along with a perspective tool and brush-wrapping features. Colorizing images is a snap. This

program also supports numerous image processing features, such as convolutions like relief, blur and even an impressionistic effect.

TVPaint also has extensive ARexx support with the ability to call macros by using the Shift key in combination with the various function keys. ARexx, combined with TVPaint's various image processing features, offers power users enough features to keep them busy for a long time to come. The ability to draw stencils and a spare screen also are supported. The transparency requester, which is at the heart of many ToasterPaint operations, has been taken to new levels in TVPaint and gives the artist complete control. Multiple redo has also been included in TVPaint, which supports an 8-bit alpha channel and other powerful features.

So why hasn't everyone run out and purchased a copy of this marvelous paint program? I suppose the main reason is its price. To use TVPaint requires buying a relatively expensive graphics board, such as the Retina, and a VGA monitor to display the output of the board. A drawing tablet is also a wise addition. Thus, your investment here is much higher than for the other paint programs.

However, don't misunderstand me. TVPaint is a professional program and depending on your needs may be exactly what you are looking for. It also suffers from the problem of not being able to load framestores directly, but it does load a variety of other file formats, including JPEG. TVPaint could also use a better manual and requires the presence of a dongle. However, for the most part TVPaint is a fine program that can completely replace ToasterPaint for most artists' painting needs.

Other Options

These are only three of several options available to complement ToasterPaint. DCTV Paint by Digital Creations, makers of Brilliance, is a program that has found a place in many artists' hearts. Unfortunately, certain DCTV modules have a problem with the Toaster, and it is impossible to tell which ones. If you have an empty 2000 case left over after upgrading your Toaster, you might want to check out OpalPaint. This program requires an OpalVision card, which fits into the slot currently used by the Toaster. The program is a power-packed paint package that has loads of features.

Deciding which paint program will best complement ToasterPaint depends on your needs and system. For Amiga 4000 owners, Brilliance offers a majority of the features lacking in ToasterPaint for a reasonable price. Unfortunately, this program isn't quite as impressive on non-AGA machines. For those who haven't upgraded to a new Amiga system or simply want a lot of painting power, TVPaint will most likely fill all of your needs while providing a pleasant atmosphere to aid your creative abilities. Unfortunately, this program requires a healthy investment. In any case, everyone should look into owning at least one register-based paint program, such as DPaint or Brilliance, for doing logo touch-ups and 16-color animations.

Whatever options you choose, with a little creativity you will undoubtedly be producing better images with the aid of one of these programs, as well as providing yourself with new creative opportunities.

VTU

Maury McCoy was the original designer of objects included with LightWave 3D. He currently specializes in 3D cel animation at Snittily Video Productions in Lincoln, Neb.

Companies Mentioned:

Digital Creations
P.O. Box 97
Folsom, CA 95763
(916) 344-4825; Fax (916) 635-0475
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Electronic Arts
1450 Fashion Island Blvd.
San Mateo, CA 94404
(415) 571-7171; Fax (415) 513-7040
FOR INFORMATION CIRCLE 038

MacroSystemUS
24282 Lynwood, Ste. 101
Novi, MI 48374
(313) 347-6266; Fax (313) 347-6643
FOR INFORMATION CIRCLE 039

NewTek Inc.
1200 S.W. Executive Dr.
Topeka, KS 66615
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TVPaint has outstanding features including extensive ARexx support which was used to draw the TVPaint Logo in the image above.

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Personal TBC IV

Personal TBC IV component digital transcoding TBC provides S-Video in and out. 4:2:2 processing ensures the cleanest possible video image. Only TBC capable of interfacing with the DPS Personal Animation Recorder for real-time video recording onto a hard drive. Film-mode strobe. GPI freeze. Color black generation. Auto genlock.

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\$849

DPS Personal Component Adapter

Is a combination 3-Line Adaptive Digital Comb Filter Decoder and Y/C Encoder card designed for use with a NewTek Video Toaster. The DPS Encoder card converts the output of the Video Toaster into two Y/C (S-Video) outputs and a component analog video (Betacam/MII) output. These outputs can then be connected to Y/C inputs, which are converted to Video Toaster input feed.

\$419

Personal Animation Recorder

A plug-in AMIGA card, the Personal Animation Recorder functions as a single-frame recording deck. With it, you can digitally record your animation onto a dedicated hard disk and play it back in real time. The Personal Animation Recorder operates in a totally digital environment. You won't be bothered with the time base error, jitter, skipped frames or bobbed edges you encounter with traditional animation recorders. You can produce an infinite number of first-generation tape copies. The Personal Animation Recorder features outputs for true component analog video (Betacam, MII), composite and S-Video (Hi-8/S-VHS).

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DPS Personal V-Scope

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AVEC DT

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\$72



Pixel 3D Pro

Powerful 3-D object utility for the Amiga. Use to convert a bitmap into a 3-D object by extruding it (giving it depth). Offers several extrusion options that let you make 3-D objects quickly, easily and accurately.

\$129



Art Dept. Professional 2.3

Offers JPEG image compression technology which dramatically decreases the space consumed by 24-bit plane images. Large numbers of hi-res images can be stored in true color by compression to as little as 1/80 of original size.

\$149



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That is what AMILINK does. As part of your Toaster Workstation, Amilink's powerful software and hardware will completely control your VCR decks, Audio Mixer and the Video Toaster. Once you have decided on the edit list for your video and have created your CG screens, animations and computer graphics and chosen your effects and transitions, the Amilink remembers everything perfectly and will edit your video with 100% accuracy.

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JL Cooper AVSIX

Professional Audio Mixer with AMILINK Receiver. The JL Cooper AVSIX is an audio mixer designed to ease the audio for video post production process. The AVSIX permits the automation of audio editing, for broadcast, educational, industrial and consumer video production. The AVSIX mixes the audio from various sources, typically at least two Video Tape Recorders and output to the record VTR or other recording device. With the included AMILINK receiver it is triggered automatically by the AMILINK edit controller.

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Box 150 Drive

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150 MB Cartridge \$99



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LL NEW TOASTER TRAINING!

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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!

SmoothTalker

A Teleprompter for the Amiga

by R. Shamms Mortier

For most newscasters, it is like flying without a net. Their most-dreaded segment usually comes near the end of a newscast, when the weary director with time to fill instructs his cast to finish with a few unscripted moments of meaningless conversation. Forced to work without the security of a teleprompter, the newscasters quickly gain a new appreciation for the tool many take for granted.

Although reading scripts live is older than television itself, electronic prompting began sometime after the television was first introduced. The early methods involved the use of giant cue cards, usually held by a stagehand, with writing large enough for the talent to read at a distance.

While this method has been replaced by modern teleprompters in many broadcasting facilities, the use of cue cards is still popular in many situations.

Regardless of the method, the purpose is primarily to make the on-air talent appear as if they have memorized a script. For some reason, delivering a narrative while reading from a sheaf of printed pages is rarely perceived as believable. Viewers tend to watch more attentively when the newscaster is making constant eye contact with the camera (and with the eyes that stare at the monitors on the receiving end of the signal) while reading.

One exception appears to be the delivery of news by most national newscasters. For some reason, if the audience does not see the trusted anchorman with a handheld script, some viewers think that the news is being delivered extemporaneously, without the benefit of "proven" and "authentic" sources. The truth is that the papers shuffled around are usually a printed copy of the script that is running on the teleprompters. While newscasters may seem to be fumbling for the right words if a teleprompter crashes, they're most likely trying to pick up the story on their printed copy and not miss too many beats.



Teleprompters used for professional situations are vital for a flawless broadcast, and they're priced accordingly. Many traditional teleprompters rent for approximately \$150 per day. In addition, there's the inconvenience of preprinting scripts in large type on a paper scroll, which makes even simple changes difficult or illegible when editing words with a marker. However, the SmoothTalker systems from Zen Computer Services aim

to change everything, especially for studios that already have or are thinking of investing in an Amiga.

Smooth Operator

The SmoothTalker systems include a do-it-yourself system (\$299); one for use with an Amiga 500 (\$599); one for Amiga owners who need a prompting monitor (included; \$749); and a system which features a complete turnkey system with an Amiga 500 and a prompting monitor (\$999).

Learning to use the systems is as easy as reading from a teleprompter. The software comes on one disk with separate installation procedures for Workbench 1.3 and 2.x and above users. While hard disk installation is advised, running it from a floppy is also an option. The manual is clear and concise (12 pages), and one reading allows the user to file it away forever.

On the end of the GPI trigger, which is provided with the software, is a parallel port connector to hook up to the Amiga. A composite out cable should be used to connect to the prompt monitor (black and white). An instructional video also comes with the software, but I can't imagine needing to reference it since an average person can learn to operate the software in about 10 minutes.

While I tested the software on an Amiga 4000/040, there is absolutely no need to use it on such a high-powered machine unless it's the only Amiga available (the fact that a

SmoothTalker system can be purchased with an A-500 suggests that as well).

The do-it-yourself SmoothTalker is ideal for many small studios on a tight budget. It's possible to design and build the teleprompter hardware (plywood, paint, plexiglass and black cloth) for less than \$50. The process starts by taking any black-and-white TV and hooking the Amiga's RF output to it.

Mount a plywood box on a heavy tripod. (When a quality tripod is dedicated to the teleprompter, smooth tilts and pans can be done with the tripod supporting 35 to 40 pounds of combined camera, counter and prompter weight.) At the bottom of the box is a black-and-white TV facing up with a piece of plexiglass mounted above it at a 45-degree angle. At the back is a hole for the camera lens to poke through. A black cloth shroud snugs tightly around the lens so light doesn't leak in. The inside is painted black to cut reflection.

A script is then loaded into the SmoothTalker program running on the Amiga. SmoothTalker reverses the words to read right to left, so that when they appear scrolling up on the black-and-white TV, the reflection in the plexiglass reads correctly from left to right. The camera sees right through the plexiglass without registering any reflection from the TV.

By reading the script while maintaining perfect eye contact with the camera, the on-camera talent isn't forced to read from their notes. This helps to make even first-time users appear natural, confident and believable, allowing for effective presentations.

The Edit Screen

SmoothTalker users are offered the option of accessing two associated screens in the software; Edit and Prompt. This is where SmoothTalker expects you to load a previously saved ASCII script for prompting display. Standard file requesters are used. Once loaded, the script file appears on the left of the Edit screen. You can select to have it display in any font, though the actual prompting display is in low resolution. Thus, simple sans-serif fonts are advised (helvetica, futura, etc.).

A slider on the right of the script display allows you to move to any place in the script. On the right are seven Function key equivalent buttons: F2 deletes any line that the cursor is resting on in the script display; F3 brings up a status display; F4 allows the user to save, store and load a script file; F5 alternates

the prompting display between white on black or vice versa; F6 places a "cue marker" at the start of any line in the script display; F7 highlights any selected text line for narrative emphasis; and F10 which alternates you between the Edit and Prompt modes.

A separate display in the upper right shows what number line the cursor is presently resting on. I ran several tests by loading in a bunch of ASCII files and manipulating them within the software and faced no unexpected problems or crashes.



This is the SmoothTalker Edit-screen interface as it appears on the Amiga screen, ready for the editing of your ASCII-imported script. A click of the mouse on the "Prompt Mode" button or a depression of the F-10 key sends you into interactive Prompt Mode.

The Prompt Mode

The supplied GPI trigger has a controller for adjusting the scroll speed of the script, while a menu setting allows you to adjust the sensitivity of the controller itself (high, medium, low). A separate toggle on the controller lets the user move instantly from one of the cue markers that's been placed in the text to the next and backwards as well. A reverse text setting can be toggled in the Edit screen.

The reverse setting is preferable because for most teleprompting situations, the receiving monitor's screen is reflected in an angled piece of plexiglass that is mounted above the monitor; therefore, a reverse mirroring results.

While in prompt mode, there is a modicum of control over the spacing (vertical and horizontal) of text on the screen. The user can also access the status line at any time while in prompt mode, providing instant changes which may be necessary in the live narrative.

Unrelated to prompting, SmoothTalker also features several hidden gems. Using a smaller font and passing the signal through a SuperGen and Cross Point Latch switcher, it is possible to process clean and readable open captioning. Some places charge more than \$1,000 to caption a 30-minute program; with SmoothTalker, it can be done for a fraction of that cost.

In the Field

The teleprompter can be used during both field and studio shoots when appropriate, but an application for interfacing the prompter software with the Video Toaster has yet to be devised.

In short, the SmoothTalker system is the best way to ensure that information is complete and concise, especially since last-minute script changes and deletions can be made instantaneously. The systems load scripts from any Amiga word processor, or the user can also load ASCII from Macintosh or PC-DOS system.

With their computers, users can write scripts which then load easily into SmoothTalker with its large 36-point Prompt font. Any other Amiga font can be used, and scripts can be shown either as white letters on a black background or vice versa.

The SmoothTalker is ideal for first-time users since retakes are made easy with several helpful tips. Words can be highlighted for emphasis, and simple keystrokes adjust both horizontal positioning and vertical spacing. There's even a status feature which tells the reader how many lines are in the script and the amount of time it takes to read at the present scroll rate.

With these and other attractive features, SmoothTalker has made a smooth transition in the field of professional teleprompting, bringing a valuable part of the newsroom into personal studios.

VTU

Company mentioned:

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LightWave 3D Top Down

See the Light without the Hefty Manual

by Victor & Geetha Ramamoorthy



he Video Toaster and its software muscle, LightWave 3D, together are unquestionably one of the most sensational packages on the market today.

The combination is sensational for two reasons: First, LightWave is cheap—it comes free with the Toaster (of course, this statement may be opposed by LightWave fanatics who consider the Toaster to be a costly dangle to LightWave). The complete Toaster system, including the computer, costs only a few thousand dollars. Everyone can almost afford one at the favorite Zen spot of the basement. However, users who want the capability of transferring their creative video output in a saleable form to customers may have to spend an additional \$15,000 to \$20,000.

Despite the investment expense, the benefits are limitless for aggressive LightWave users.

The Video Toaster/LightWave 3D package is also making Hollywood insiders take notice. LightWave has become an invaluable asset to shows such as *Babylon 5* and *seaQuest DSV*.

For beginners, however, LightWave may present an overwhelming challenge. Many new Toaster owners are disheartened after learning that a complex field such as computer graphics requires both time and practice. Owning a machine and maximizing its potential are two different things.

With LightWave, progress is easy. Simply click a button on-screen and the LightWave software begins to work.

While LightWave presents a sleek and friendly graphical user interface, a deadly complex and powerful engine lurks behind the surface. The trouble comes once the time arrives to figure out what buttons to click to achieve the desired result, and what really happens when a given sequence of buttons are clicked.

Since there is an endless combination of possibilities, listing even a portion of them will scare the daylight of even the most systematic software programmer. The real solution to this dilemma is to obtain an overall view of the system.



By following the three steps described here, new LightWave users may be rewarded with a global picture of the program that even the manual does not provide.

Problems of Youth

Reading any manual that is bundled with software products is rarely an enjoyable exercise, and the LightWave manual is no exception. Despite its problems, the manual is the best of the lot. The only problem is that it is out of step with the actual software. By the time you finish reading the manual, the product line might have changed drastically.

Because of the constant changes in the LightWave environment, there's often a problem in keeping track of new developments and improvements. Users may also be confused with LightWave-specific operative commands. In any case, it is always

better to look at any product from different angles.

For the purpose of this tutorial, the subject is the LightWave 3.0 package that comes with the Toaster 4000—and not the earlier versions. This version runs on an Amiga 4000 computer equipped with the Toaster 4000 card, 18 MB of RAM and a large hard drive.

Step 1: LightWave Model

LightWave uses the animation model shown in Figure 1. There are three main ingredients in LightWave: Camera setup system, objects and lights.

There are only three items to worry about, and each is essential to a good animation package.

Lights are focused on the objects while they move, morph and do things. The camera setup captures the action, and LightWave provides all flexible controls required for doing the shooting. Each of the three items exist in a three-dimensional world with a left-handed reference coordinate system. You move the camera, lights or objects or all of them at any time. The motion path of the camera, lights and objects are recorded and stored. Integral to the camera is a set of three projection screens and a fog generator. The screens include background,

foreground and foreground alpha. Each of these is arranged so that objects are always in between the screens, irrespective of the size and distance. In addition, screens are viewed in full-size by the camera all the time. Figure 2 illustrates the camera system in detail.

Why do you need the three screens?

By projecting an image sequence on the background screen and keeping the objects in the front, it's easy to create an illusion of a "grand studio setup." It's also possible to project another image sequence in the foreground screen, hiding the objects that won't be shot. Or the user can project controlled parts of the foreground projection by means of the foreground alpha screen. The alpha screen projects only the masking-image sequence that picks up selected parts of foreground imagery. As a result, it becomes possible to transfer a favorite UFO from an image (sequence A) on to another scene consisting of different objects with another background image (sequence B). This technique is known as compositing with "flying" mattes.

Another option is taking the output sequence from the camera and using it as either a background or foreground sequence for the next round of compositing. With this procedure, the user is able to keep making complex scenes in multiple passes. LightWave also provides the flexibility of creating alpha image sequences along with the regular camera sequences. Check to be sure that the image sequences are D1 resolution (digital production quality video at 30 frames per second and at 752x480 pixels spatial resolution) to avoid aliasing and interpolation errors. Multi-layering can produce generation loss due to tandem quantization—particularly if used in the wrong way—but is negligible compared to the result with tapes.

What about the fog? A linear or non-linear fog with adjustable

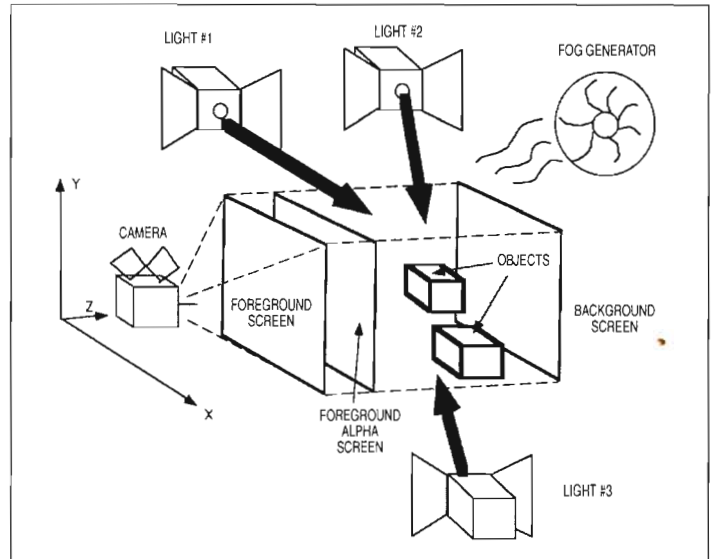


Figure 1

color and operating distance can be inserted anywhere between foreground and background screens to cover any part(s) of the object(s). And this is no run-of-the-mill fog. Wonderful things can be done by dynamically controlling the extent of fog.

As shown in Figure 2, there are many possibilities to control the parameters of the camera setup system. Camera parameters such as focal distance, depth of focus, zoom factor and filter can be set up at will. Rendering options can also be controlled.

Another positive feature is the possibility of creating quality previews with the option called "EasyAnim"; it produces a

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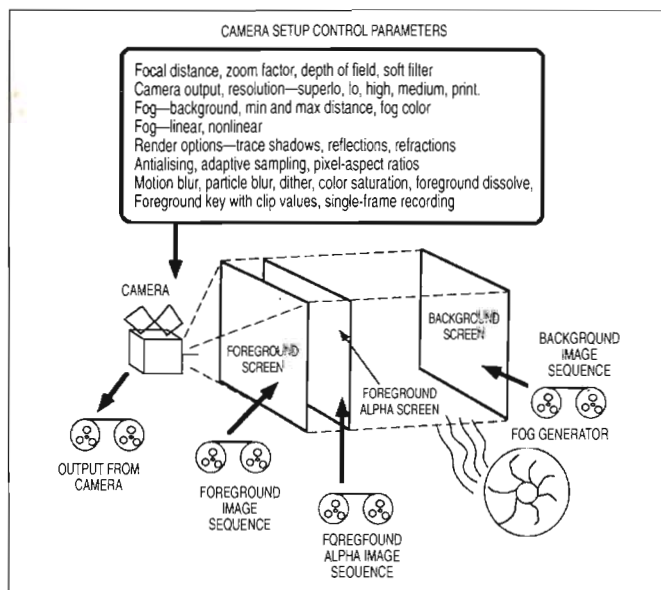


Figure 2

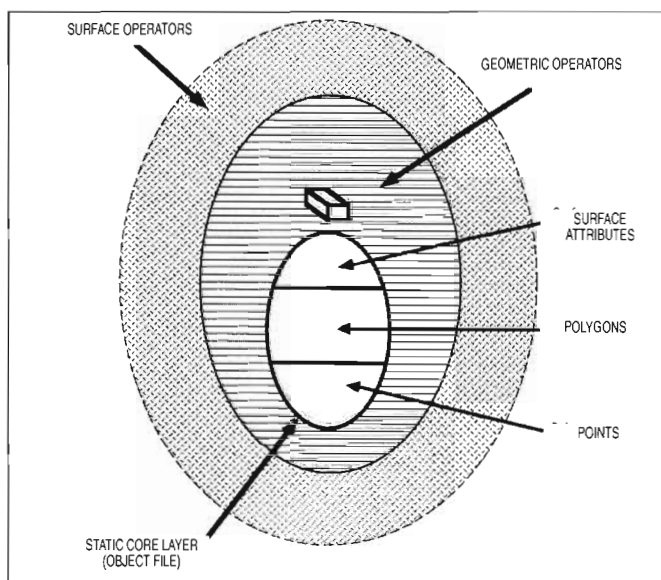


Figure 3

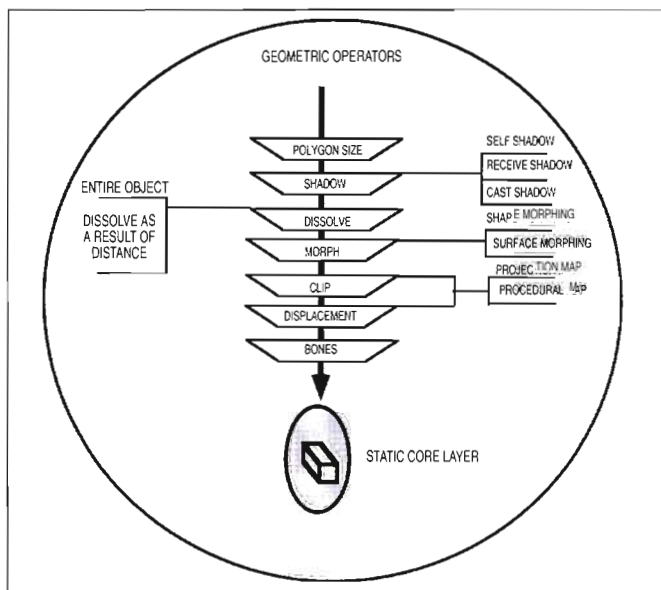


Figure 4

low-resolution animation sequence in a proprietary format that can be loaded into the Toaster switcher for real-time play. This works great for sequences less than six seconds long with 18 MB of RAM in the Amiga 4000 computer.

Once the animation is finalized, a high-quality rendering can be done with a number of flexible options, including Abekas D1 format or D2 format, pixel aspect ratio change, and even print resolutions if a large RAM exists.

What is shown in Figure 2 is handled under three different menu categories called "Camera," "Effects" and "Record." By combining each of them in one group, a high-level of understanding can be obtained.

We will not go into details of how to handle the requesters and menus—that part can best be understood by having the manual by your side and running the Toaster. They should not present any problem to users familiar with Amiga computers.

Step 2: Objects

Objects in LightWave are abstract entities consisting of 3D points, polygons and surfaces. They mimic real-world objects with a minimal set of parametric descriptions.

At the lowest level, points provide all the information of the 3D coordinates of the object. Then they are organized into polygons. At the third layer, each polygon gets painted with a surface.

LightWave does not constrain an object to a three-layer structure (Figure 3). For example, an object could be just a collection of points or polylines (i.e., lines joining several points). There is no need to have polygons.

Polygons can have an unlimited number of points though it is wise to use only triangles as polygons. Triangles have nice properties such as planarity (i.e., a non-curved surface can be inserted between any three points) and ease of subdivision (i.e., interior points of a triangle are easily computed).

When an object is loaded into LightWave, only the "static core" of the object is loaded. This can be modified on the fly by means of two sets of operators. The first set affects only the geometry of the objects—hence the name "geometric operators." The other kind—"surface operators"—affect the surface properties of the object.

In Figure 4, each of the geometric operators are working on the points. Why? Because operating on polygons is tricky. Points can be moved without affecting the polygonal topology of the object—i.e., the information about which point connects to what point in a polygon. This is why all geometry operators just control the points.

Bones, for example, operates like a magnet on steroids. The difference between a magnet and Bones is easily distinguishable. A magnet is a tool which can be used to pinch an object and pull or push toward a region of an object in a controlled way. The "magnet" operator exists in the LightWave modeler if its purpose is for modeling.

A bone exerts a controllable force field on the neighboring points. When you move or rotate a bone, the neighborhood of points undergoes a similar treatment. As a bone, additional information regarding the bone's orientation and position is tracked with that of the object.

To make the bones work, it's important to verify that the object has a large number of points. Otherwise, the result may be ugly, uneven surfaces with polygons sticking out for help. Interesting character animations can be made with bones, but it takes practice. It also takes experimentation in positioning and controlling them.

Another way to modify the points is by relating the points to the intensity values of an image. This kind of displacement mapping can be done in a number of ways. The intensity of the controlling image can move points in X, Y, Z directions by a specified amount. This movement can also be combined with a wave-generating texture map to produce interesting motions. Again, the basic

assumption is that a large number of points is needed and the positions of these points are moved by a function of the mapping image. This kind of mapping works well for procedural maps.

Of course, there is a way to control individual points in an object by ARexx scripting. However, this is not recommended for a large number of points since the ARexx overhead may kill the AmigaDOS. But bones and displacement mapping compensate for this deficiency to a large extent by providing near-point manipulation capabilities.

While bones and displacement mapping work on a macro scale with an object featuring a large number of points, clip mapping works on a micro scale for objects with a few points. The main use of clip mapping is to create realistic shadows or projections with another image.

Morphing, which interpolates the positions of points between two objects having the same number of points, can also be done for surfaces. Make sure there is the same number of points in both the object and its morph target. The other geometric operators are indicated in Figure 4.

The subject of much experimentation in recent years, morphing is the short word for the process of metamorphosis—the gradual transformation from one shape to another. Morphing gained a national audience with the release of *Terminator* and Michael Jackson's *Black or White* video.

Step 3: Power of Parenting

Even though objects, camera, lights and bones can be moved at will to create complex motions, a greater flexibility is obtained by having a hierarchy of motion paths. In LightWave, this is called parenting.

When a number of objects or bones is parented to a single master object or bone, creating a complex motion becomes a snap. The parented objects and bones can do their individual chores, and the master does the main act. Their combined motion becomes interleaved. The parented entities follow the parent's global motion while performing their own individual dances.

By breaking down a complex motion to a global motion and other lower-level motions, a vast amount of flexibility and control is achieved. This is where the power of parenting shines.

The idea of parenting is not limited to objects. They also apply to the camera and lights. Parent lights to a master light or object, and there is also a "null" object that is useful when sweeping a light or camera across a scene.

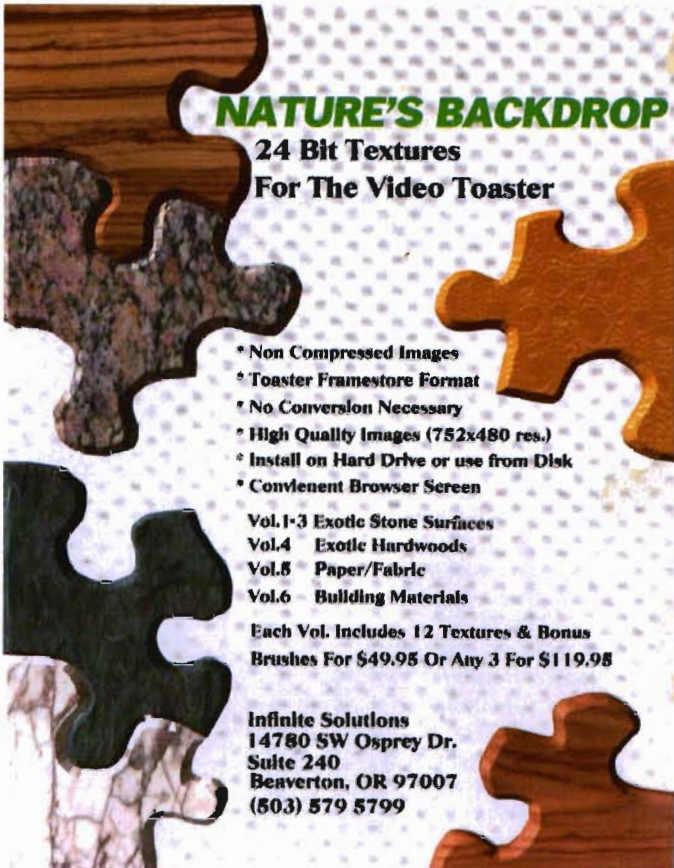
Remember that parenting is a deterministic coupling between the parent and the parented. Because of the determinism in the coupling, the resultant motion appears predictable and robotic. For simulating realistic human motion, a touch of stochastic element is needed in the coupling. This stochastic spice is missing in the current version.

In next month's installment, we'll walk through the final three steps by reviewing surfaces and lighting.

VTU

Victor Ramamoorthy holds a Ph.D in electrical engineering and has done research and development work in the area of video, speech, robotics, multimedia and networking for the past 10 years. He has published more than 50 technical papers in international journals and conferences.

Geetha Ramamoorthy holds a bachelor's degree in engineering and architecture. Her interests vary from form design, interior design, graphics and video "walk-throughs."



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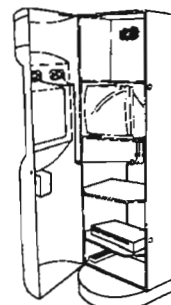
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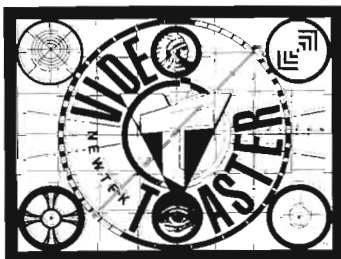
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CYBERSPACE continued from page 49

While there is no animation player that I feel meets the needs of those of us who want to transfer animations to video, here is what I think the ultimate playback utility should have (programmers, take note): First and foremost, there should be a way to trigger the animation, preferably through ARexx. Better yet, we should be able to have the player call a text file when run from Workbench to sequence a series of pictures and animations, or do this from the command line. It should preload the next image for a series of animations or images, making sure that the transition from one to the next is clean, pausing on the last frame of an animation if the next is not fully loaded yet. A simple ARexx trigger should sequence to the next, and we should be able to set a length of time (number of loops or once through with a hold) for each.

If you are playing a single anim, you should have the option of holding on the first and last frame. It should have the ability to play directly from the hard drive or from memory, and offer fast playback speed. It should support Anim 5-, 7-, and 8. In addition, it should also support the current DPaint IV implementation of color cycling for which I have not found a single player. Another suggestion comes from Kara Blohm, who sometimes finds it necessary to do a little last-minute tweaking after taking the animation into the studio for recording to tape. Blohm says you should be able to pause on any frame and pop up a quick palette requester to change either just that frame or the global palette. While we are at it, why not add a built-in NTSC filter? And we also need a standard method to add sounds to animation. Hope somebody out there with programming skills is listening.

VTU

For the PD programs mentioned in this column, send \$5 to: Geoffrey Williams, VTU-Animate Disk Offer, 1833 Verdugo Vista Drive, Glendale, CA 91208.

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

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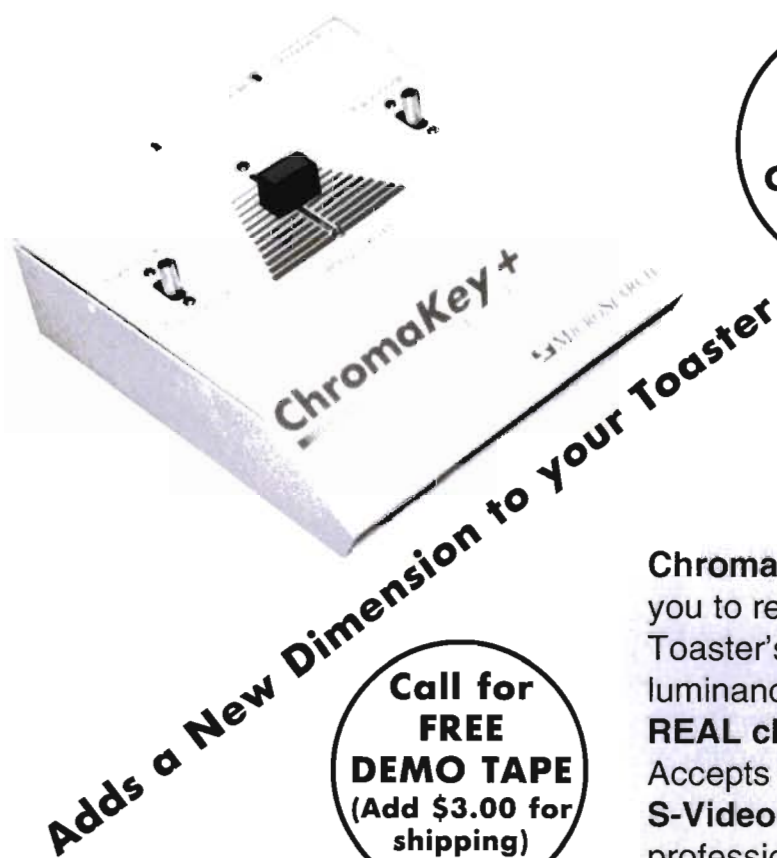
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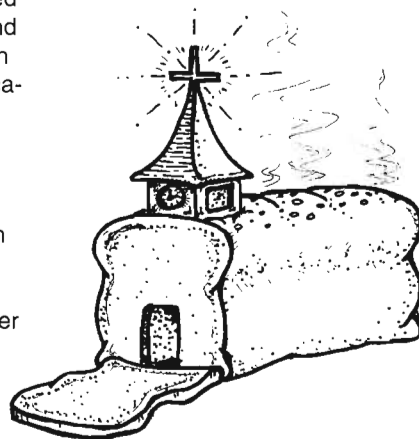
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Glendale, NY 11385

(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 Settlemaier
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 V.42.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

DMAAUG

Des Moines Area Amiga User Group
Arthur Szczygielski
4046 Hubbell Ave., Ste. 155
Des Moines, IA 50317-4434
(515) 266-5098
Fax (515) 266-1012
Meets on the last Tuesday of every month at the Christ Church, Ashworth and 74th Street
7:30 p.m.

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
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

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
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

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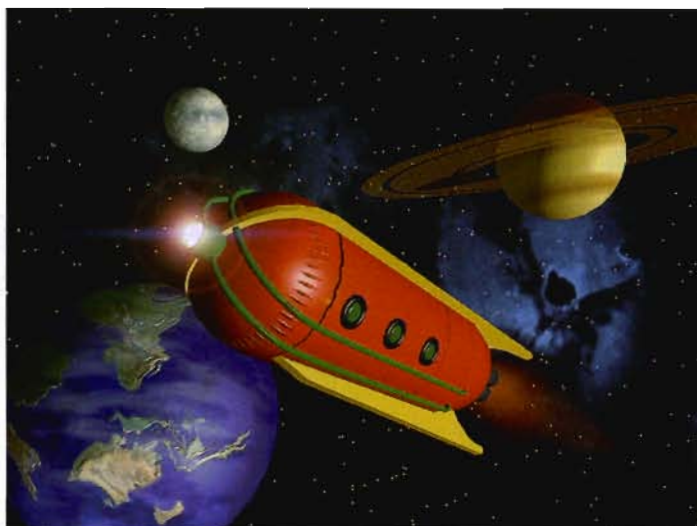
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▲
Robert J. Howard

Flash was completed with an Amiga 2000-'030 and 9MB of RAM. Howard makes award-winning graphics for Cap Disc and his own company, 20/20 Hindsight. He can be reached at (202) 966-1296.

▼ **Jeanne-Marie Dushel**

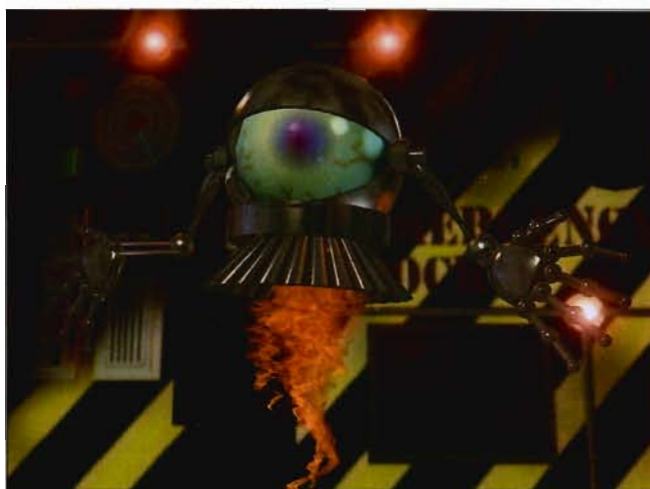
Kitchen with Huge TV was created on an Amiga 2000 with 9MB of RAM. Her company, Imagelust, caters to professional producers interested in accessing new technologies for its cost-effective solutions. Dushel can be contacted at (202) 966-1296.



▼ **Casper McElwee**

Blinky was created using an Amiga 2000-'040, LightWave 3.0 and 16MB of RAM. It has 33 surfaces, 23,827 polygons, 11 lights and took 19 minutes to render.

McElwee is the animation director for Mercury Productions in St. Louis. He can be contacted at (314) 647-8044.



▲
Tim Doherty

Designed for use in a PBS television series on astronomy, *Lighthouse* was created with an Amiga 4000, LightWave 3.0 and 16MB of RAM. The image took approximately 18 minutes to render.

Doherty is a professional LightWave animator with TDK Animation. He can be contacted at (714) 895-5623.

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LAST WORD

No Time to Rest

On the Road in Pursuit of the Video Flyer

by Lee Stranahan



I've been busy folks. By now you've all heard about the Video Flyer, so rather than my making some pithy comments about it, I thought you might be interested in seeing a few pages from my diary. It's history in the making, and you are there.

March 5, 2:30 p.m.; Albuquerque, N.M.

I'm on the road, driving to Topeka, Kan., home of NewTek Inc. No hotels this trip—just pulling over at rest areas when I get tired, taking a nap, then waking up and driving some more. I was just at NewTek three days ago and in meetings for about 14 hours. Then I flew to Phoenix to give a Toaster seminar. Last night after the LightWave class, I had dinner and got on the road.

There's going to be a lot of work to do in the next two weeks before the National Association of Broadcasters (NAB) show. I know that I'll be one of the people demonstrating NewTek's new hard disk-based editing system at the show, but at this moment the product still doesn't have a name or a firm price. I've never seen it, either.

If it actually does everything it's supposed to do, it will be a major breakthrough product—probably even more important than the Toaster. Buying editing decks, TBCs, editors, and then learning the editing process has been a major problem for many Toaster owners for a long time now. From everything I've heard, it looks like that could change forever. I sure hope so.

March 5, 6 p.m.; Albuquerque

Just left Brad Carvey's house. I had a baloney and Velveeta sandwich (two of Brad's favorite foods) and took a shower. Brad thinks the NAB show should go very well.

March 6, 10:30 p.m.; Topeka, Kan.

Twelve hundred miles and one speeding ticket later, I'm here. (The speeding ticket was bogus. Remember to watch out for Hooker, Okla.)

March 7, 11:53 p.m.; Topeka

Well, my first real day here was interesting. Very, very hectic, but that's not surprising. The product still doesn't have a name, but the price is just under four grand, which is great. Naming this thing will be hard, but there are lots of smart people here, and some of the suggestions are interesting. So far, the ones in the running are Tapeless Editor, Digital Editor, Flyer, Hacker, Predator (Professional Editor) and a few really weird ones like Done and Gurm. I still haven't seen the thing, though—whatever it's called.

We also started brainstorming ideas for a video to introduce the product to people on the Sunday before NAB opens. We need to create a bunch of videos; actually a new LightWave reel that shows all the cool video stuff our users have been doing...that kind of thing. Well, it's a good thing NAB is two weeks away.

March 9, 1:20 a.m., Topeka

Another busy day. I'm too tired to write.

March 10, 10:45 p.m., Topeka

I'm in my temporary office here at NewTek, waiting for my wife, Kathy and son, Shane to arrive from Los Angeles. Boy, I've missed them.

It's been two amazing days. First off, there are some very talented people working here. Guys like Jason, Brad and Ron have really been doing amazing stuff in the video and animation department, and the people I already knew (Donetta, James, Jud, Arnie, Peter, etc.) are really working hard at what they do. The attitude is just so different than it was the last time I was here; I can't believe it. And Tim Jenison... well, Tim's a pretty amazing guy—he built the Toaster revolution, and now he's building another one.

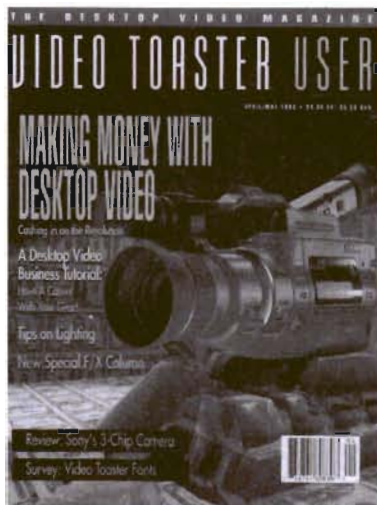
Tonight I have to write the script for our Video Flyer (that's the name—chosen today) roll out at NAB. The whole idea is to make fun of the over-hyped marketing that has plagued NewTek for the past year or so; public relations hype like, "This is the important thing...blah blah blah." I hate that! So we're going to parody it. We're producing a video that starts off like *Revolution* (and the bad sequel) called *Way Way Beyond Revolution*. Ken Nordine (the voice-over guy who did the first two) will be narrating what looks like another offensive NewTek tape. But far more annoying—we'll have the sports cars and that kind of thing, but we'll also have Tim lighting cigars with hundred-dollar bills...etc.

Then, just when the audience thinks it's going to vomit, the video will end. Silence. Blackness in room. The crowd starts to turn into a mob. Suddenly a voice booms out (Penn Jillette from Penn and Teller). Penn is the voice of anti-hype. He tells people the cool part—that they've been watching the demo! The video and audio haven't been coming off tape, but rather a hard disk. And in D2 quality—NewTek's ASC compression is supposed to be far, far better than any JPEG, MPEG or Wavelet. What the crowd has been seeing is the Video Flyer.

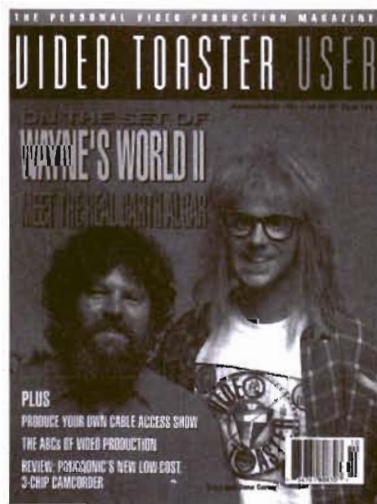
It's a risk, but I think most people are as sick of the hype as I am. I know the people who work at NewTek are—Tim loved the idea and even added a few twists of his own. Penn's voice-over was great—he's a real pro and very funny. I still haven't seen the Flyer. I hear it's nice.

March 11, 7:15 p.m.; Topeka

Well, I'm tired. I pulled an all-nighter last night. Brad and I were up to finish editing the LightWave video that Ron had started—it seems to be coming together nicely. The big news is that I saw the Video Flyer—they showed it at a special company meeting. I'm about to pass out, though, so I'll be short. It's going to be a good NAB.



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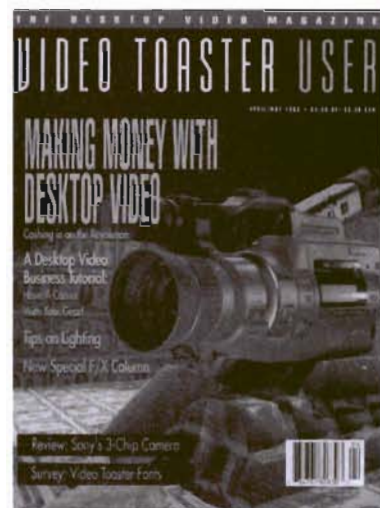
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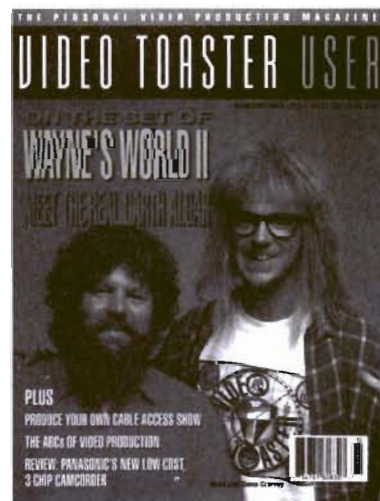
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9	24	39	54	69	84	99	114	129	144	159	174	189	204
10	25	40	55	70	85	100	115	130	145	160	175	190	205
11	26	41	56	71	86	101	116	131	146	161	176	191	206
12	27	42	57	72	87	102	117	132	147	162	177	192	207
13	28	43	58	73	88	103	118	133	148	163	178	193	208
14	29	44	59	74	89	104	119	134	149	164	179	194	209
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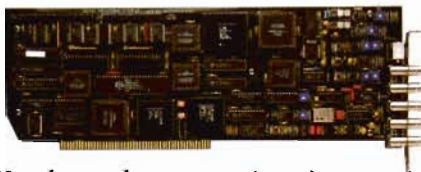
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