VIDEO TOASTER USER

THE PERSONAL VIDEO PRODUCTION MAGAZINE

VANITY VIDEO

PROFIT FROM THEIR PERFORMANCE

A BEGINNER'S GUIDE TO LIGHTWAVE 3D

HOT NEW PRODUCTS

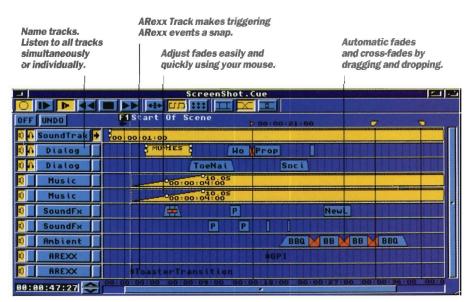## A ROAD MAP TO THE INFO HIGHWAY

CLEARING UP THE DUBBING DILEMMA

For cutting edge audio editing,

Studio 16 is the state-of-the-art in audio for video editing. So simple to use, you'll find yourself listening to your new music tracks, foley effects, and voice-overs in no time. In fact, with Studio 16 3.0's highly intuitive time-line based cue list, audio production is as easy as point and click.

With automatic fades and cross fades, you can try as many different combinations as you'd like, without worrying about altering original audio files. Frame by frame accuracy gives you precise control over the placement of every audio edit.

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

Name tracks. Listen to all tracks simultaneously or individually.

ARexx Track makes triggering ARexx events a snap.

Adjust fades easily and quickly using your mouse.

Automatic fades and cross-fades by dragging and dropping.

Crouton Tools Logger will catalog scenes from tape, Toaster projects, LightWave scenes, animations, Framestores...or any element for your productions!
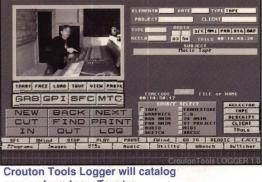
Use our ToasterSmart™ Directory Utility to effortlessly manage all of your Toaster's resources.
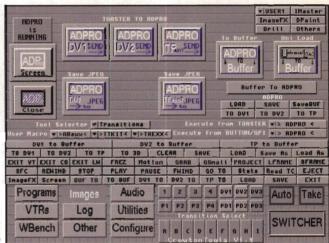

Access the weapons in your Toaster arsenal with a single mouse click.

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

CROUTONTOOLS

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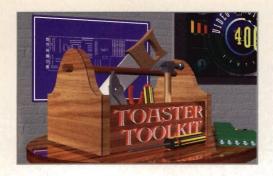
TOASTER UTILITIES SUPPORTED
- Toaster Toolkit 4000, Personal Animation Recorder, Interchange Plus, T-Rexx Professional, Pixel 3D Professional, Vista Pro, Anim Workshop, Dynamic Motion Module

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

Watch out for our other new CroutonTools modules; ProductionLine, Storyboard, 3D Catalog, Canvas "in the mix," and CroutonPaint–Video Solutions for your Video Toaster.

Toaster ToolKit 4000

An indispensible collection of utilities for Video Toaster 2.0, 3.0 and 4000 users. • AnimToFX •
• Toaster Sequence Editor • FXToAnim •
• Color Font Converter • Toaster Project Editor •
• FrameStore Compressor •

MSRP $179.95

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.

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

FOR INFORMATION CIRCLE 126

Toaster Toolkit 4000 was developed by The Byte Factory. Crouton Tools was developed by Atomic Toaster Catalog. Cocoon was developed by Ironworker Studios. Video Toaster is a trademark of NewTek, Inc.

THE PERSONAL VIDEO PRODUCTION MAGAZINE

VIDEO TOASTER USER

JUNE 1994 ISSUE NUMBER 20

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DEPARTMENTS

COLUMNS

INTRODUCE YOUR AMIGA® TO GVP'S G-FORCE 040 AND
THE SKY'S THE LIMIT!

GET MAXIMUM PERFORMANCE FROM YOUR A4000 OR A3000 WITH GVP!

Using an MC68040, the fastest and most powerful Motorola processor available today for the Amiga, means that you get unmatched power and performance from your Amiga 4000 or 3000 with the GVP **G-Force 040.**

Rendering and processing times decrease, day long projects finish in a few hours, and you become more productive.

▶ The optional **RAM Kit** adds up to 96MB of additional FAST RAM, for a total of 128MB!

▶ The optional **SCSI Kit** adds a high-speed, DMA *SCSI-II-FAST* host adaptor for adding massive high-speed storage for all your audio, video, and data retrieval needs.

FEATURES	GVP G-Force 040	Warp Engine	Excalibur	FastLane	A4091	DKB3128
40MHz Version	✔	✔	NO	—	—	—
Expandable to 128MB	✔¹	✔	✔	✔	NO	✔
SCSI-II-FAST Hard Disk Controller	✔²	✔	NO	✔	✔	NO
Use any combination of 4MB and 16MB SIMMs	✔	✔	NO	NO	NO	✔
Onboard Memory Burst Mode Support	✔	✔	NO	—	—	—
Amiga Motherboard Memory Burst Mode Support	✔	NO	NO	—	—	—
Avoids using a valuable Zorro-III Slot	✔	✔	✔	NO	NO	NO
Memory Speed much faster than Amiga RAM	✔	✔	✔	NO	NO	NO
Single Products works in an Amiga 4000/030	✔	✔	NO	✔	✔	✔
Single Products works in an Amiga 3000 & 4000	✔	NO	NO	✔	✔	✔
Integrated Expansion Slot for Future Modules	✔	NO	NO	NO	NO	NO

¹Using A4000 G-Force 040 RAM Kit. Accelerator alone supports up to 32MB.   ²Using A4000 G-Force 040 SCSI Kit.
— indicates that feature is not applicable.

≡GVP

GREAT VALLEY PRODUCTS, INC.
657 CLARK AVENUE KING OF PRUSSIA, PA 19460 • USA
PHONE 610•354•9495 • FAX 610•337•9922

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FOR INFORMATION CIRCLE 120

TOASTER TALK

You Are Communicators First

Life Will Go on, Even if Commodore Doesn't

by Phil Kurz

As we put this issue of *Video Toaster User* to bed, the situation at Commodore Business Machines has deteriorated significantly. Shortly after the company announced first-quarter losses and the fact that it was not in compliance with notes due in January to two large creditors, the company's stock took a nosedive.

Trading of the stock was suspended for a brief period and as we go to press, a share of Commodore stock was trading for less than $1. Rumors abound regarding the fate of Commodore, including that it has already been sold. However, at this point it is unclear what the final outcome will be.

On the surface, the failure of Commodore to turn a profit in the first quarter of 1994 and to meet its obligations with its creditors appears to throw the Toaster market—and by extension the Toaster user—into disarray. With the future being uncertain for the maker of the Toaster host computer, what Toaster owner hasn't asked himself what impact the seemingly endless stream of bad news from Commodore will have on his business?

A Few Facts Worth Remembering

While it's simple to be uneasy about the future of Commodore and the Amiga, there are a few facts worth remembering.

Fact No. 1: First and foremost, you are a video communicator. The amount of stress Commodore's string of woes adds to your life is directly related to how you see yourself. If you are simply an Amiga devotee, you've probably spent more on Maalox in the past few months than at any other time in your life.

However, if you are a video communicator, you recognize the Video Toaster for what it is: a powerful video post-production tool. The Toaster gives you the ability to communicate your messages affordably and effectively. Whether or not Commodore remains viable, you will continue to be able to use your Toaster to communicate your messages for profit.

Fact No. 2: The installed base of Toasters is significant and growing.

While many third-party Toaster vendors are casting a watchful eye on Commodore, most still acknowledge that the existing base of Toaster users is a large, viable market worth supporting. Thus, continued development for the Toaster looks to be a good business decision. NewTek's announcement of the Video Toaster Flyer is a case in point. Not only does the Flyer promise solutions to problems Toaster users have long faced, it also represents a serious technical and financial commitment to the market—regardless of Commodore's difficulties.

As for market growth, Commodore continues to ship Amigas. Even if there were a short interruption, reports from major distributors indicate that there is an adequate supply of Amigas in the channel to feed demand for a few months.

Clearly, the biggest problem for the continued health of the market is the possibility that the Amiga will no longer be manufactured. However, even in that case, there appears to be a solution.

Fact No. 3: NewTek says it has planned for these contingencies. Although the company has not spelled out what it will do if Commodore ceases to exist, company president Tim Jenison has in at least two different interviews in *VTU* said that NewTek has planned for any eventuality.

Although NewTek has been rather cryptic in describing its contingency plans, it's comforting to know that the company has considered its options and stands ready to implement a plan to nurture the Toaster market regardless of Commodore's problems.
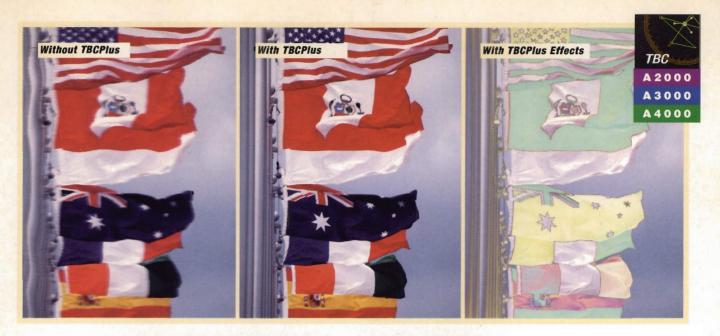
Speculation about what NewTek will do has run the gamut from buying Commodore, which doesn't look very likely, to licensing the Amiga chipset from whomever buys the ailing personal computer maker. For its part, NewTek has remained silent on the issue, not wishing to feed the rumor mill.

Peace of Mind

The danger in writing an opinion piece such as this is that the deadline requirements of the magazine mean that any comment on such a fluid development is likely to be outdated by the time you read it. However, given the importance of the Amiga to Video Toaster users, it is impossible to remain silent on this issue.

Regardless of where Commodore ultimately lands in its downward spiral, you must remember that you—not Commodore, not the Amiga, not even the Toaster—determine your ultimate success or failure in this business. While the Amiga and the Toaster are important tools, it is you who controls your destiny as a professional communicator.

Just as a carpenter must have the right tools to do the job, you too must rely upon your video implements to practice your craft. But an experienced carpenter also knows that there is much more to creating a fine-finished product than his tools. It is his knowledge and skill that allow him to shape his lumber into a fine finished product. So it is with you. It is your know-how and experience that will see you through these times regardless of what happens to Commodore and the Amiga.

VTU

LETTERS TO THE EDITOR

Dear VTU:

I read ads about Desktop Images instructional videotapes in your March 1994 issue. They don't have closed captioning for the hearing impaired. They don't follow the Americans with Disabilities Act of 1990. If they use closed captioning, hearing-impaired people will buy some tapes.

Farley M. Turkin
Sunnyvale, Calif.

Editor Responds:

Thank you for writing, I've passed along your concerns to Rave Video, distributors of the instructional videotapes.

Dear VTU:

It's important to make the connection between Rick Lehtinen's HDTV piece "The Forces that Shaped HDTV," and Phil Kurz's editorial criticizing the Information Hypeway, "Hitching a Ride," both in your March issue.

HDTV investors realize, but won't admit publicly, that the commercial appeal of high-definition images is unproven. But software engineers, such as the Apple EZTV project, are eager to take advantage of the greater bitstream to the home from the HDTV signals. So broadcast companies are preparing to hedge their bet on HDTV by seeking to use the HDTV bandwidth for a variety of other uses, including the whole range of interactive multimedia, home shopping, banking, communications and the rest.

This would be just one more toss of the dice on the future of TV, except for one thing: HDTV bandwidth is effectively being given to the corporate conglomerates that own the networks, while other bandwidth— IVDS, PCS, etc.—is going to be sold to those with the deepest pockets.

Kurz's editorial correctly notes the Clinton administration is making many independent providers of video content very nervous. This is because of the Clinton/Gore schizoid evasion of the core policy issues in the Great Convergence.

First, what will "universal service" mean, when there will be a continuum of services from plain old voice telephony to the kind of comprehensive, interactive video mail that Video Toaster users dream of? What about the radical differences in regulatory and other constraints on the providers of such services, including phone companies, cable TV operators, direct broadcast satellite companies, and possibly even public utilities? This is the HDTV ace in the hole—it is a free broadcast signal, they say, and nearly everybody has a television.

The most important universal access issue is the box in the house. Before long, anyone with a telephone will be able to get access to broadband, digital interactive services—but you'll also need high-speed modems, fast computing power, addressable cable converters with RISC chips, and/or vast amounts of digital memory to take advantage of the bandwidth. We have never subsidized personal computers, which is why growth in power has achieved escape velocity while the price has dropped through the floor. The Clinton administration continues

to bluff on this issue, making vague promises that foster dangerous confusion.

Dangerous because the second issue they duck, as Kurz pointed out, is the First Amendment. ITVR just did an analysis of the commercial potential for erotic content on interactive television that predicts a market from $3 billion to $5 billion by the year 2000. Estimates of the gambling market on interactive TV run to the hundreds of billions—with no regulatory changes of any kind.

For all the talk about hooking up schools—a challenge, not a promise— follow the money. The profits that are most likely to justify the huge investments envisioned from this most futuristic technology are some very old vices— gambling and erotica. Given the government's huge role hyping the system (not building, mind you), that means the uses of cyberspace will continue to develop political significance. When you have big money, politics and hypocrisy involved in bringing technology to market, independents have a problem.

Only very large companies will benefit from "voluntary" content controls, such as video game ratings. After all, the primary function of the movie ratings for two generations was to deny independent filmmakers access to theaters. HDTV advocates know that with government support for universal access to broadband services, with a box in every home and with increasing concern about sex and violence in video content leading to cartel-like restrictions on

commercial speech, they have three aces in their hand.

Independent producers and people with a Toaster in a home office need to watch the HDTV machinations very closely. It's bad enough that the government is selling spectrum to some and giving it away to others.

It will be far worse if, in giving away the HDTV bandwidth to broadcasters, the FCC allows them to use this freebie to stifle independents.

Paul Donnelly
East Coast Editor
Interactive Television Report

Dear VTU:

I just want to applaud NewTek's technical support staff. I recently had some problems with a DigiDroid, a product NewTek no longer manufactures or sells. Although this is a discontinued product that most Toaster users never heard of, I think Toaster owners will take comfort in the fact that NewTek went to great lengths to find and send me a replacement. Kudos to Jackie and Janeen in tech!

Paul Cimino
Gulph Mills, Pa.

NEW PRODUCTS

Unbundled LightWave

3D Software Sold Separately
Product: LightWave 3D
Description: 3D Modeling, Animation and Rendering Software
Price: $695
Available: June 15
NewTek Inc.
1200 S.W. Executive Drive
Topeka, KS 66615
(800) 847-6111
Fax (913) 228-8001
FOR INFORMATION CIRCLE 01
NewTek is unbundling its popular 3D animation, modeling and rendering software from the Video Toaster. LightWave 3D is now available as a standalone package for the Amiga.

The full-featured animation software and its companion Modeler will fully support all functions currently available on LightWave 3.1 for the Toaster and is available for NTSC and PAL Amigas.

focus of PowerMacros
implement new features
streamline functions to
modeling, scene creation
rendering time. New fea
include automated scene
ation of true 3D explos
and morphing objects a
a path.

S-VHS Integration
Product: Edit Desk Syster
Description: Integrate
VHS editing system
Price: $7,450
JVC Professional Prod
Company
41 Slater Dr.
Elmwood Park, NJ 07407
(201) 794-3900
Fax (201) 523-2077
FOR INFORMATION CIRCLE
JVC has introduced the
Desk System, which is
prised of the BR-S800U
ing recorder, the BR-S5
player and the RM-G8
editing controller. The
S800U comes with buil
CTL time-code support.
like other control track
tors, the Edit Desk's un
CTL time code supp
frame-accurate addressab
The BR-S800U and BR-S5
deliver more than 400
of horizontal resolutio
digital Y/C separator, th
line, cross-talk cancella
and two channels of

Audio in the Field
Product: FP32A
Description: Portable, stereo audio mixer
Price: $1,795
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 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 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.

Digital Editing
Product: Video Toaster Flyer
Description: D2-quality non-linear editor
Price: $3,995
NewTek Inc.
1200 S.W. Executive Dr.
Topeka, KS 66615
(913) 228-8000
Fax (913) 231-0101
FOR INFORMATION CIRCLE 03
NewTek's Video Toaster production system comes full circle with 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, the Flyer is a simple and dynamic addition to the Toaster. Using a proprietary compression algorithm (Video Toaster Adaptive Statistical Coding), the Flyer's digital video is expected to surpass other compression standards,

such as MPEG, MPEG 2, JPEG and Wavelet, and sustain broadcast quality.

Powerful Stuff
Product: PowerMacros for LightWave3D
Description: LightWave3D features
Price: $149
CineGraphics
4225 Executive Square, Ste. 1480
La Jolla, CA 92037
(619) 727-5589
Fax (619) 677-3908
FOR INFORMATION CIRCLE 04
CineGraphics introduces *PowerMacros for LightWave-3D*, which brings a collection of 17 new and powerful macros to LightWave3D. The

quality audio with a dyn
range that is greater
80dB.

Affordable MII
Product: MII "W" Po
Series VTRs
Description: Lower-pr
MII line of recorders/play
Price: See below
Panasonic Broadcast
& Television Systems Co.

One Panasonic Way
Secaucus, NJ 07094
(800) 524-0864
FOR INFORMATION CIRCLE 06
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 a three dimensional-type TBC with full-field memory for dropout compensation. The AU-W33H MII studio player ($10,400 list) offers all the features of its companion units plus an auto-tracking capability for full control of noiseless slow motion and still playback.

Warp Speed
Product: Warp System
Description: An expandable parallel processing accelerator
Price: $1,995 for the base-board; $1,295 for add-on modules
U.S. Cybernetics
310 E. Haley St.
Santa Barbara, CA 93101
(800) 292-5001
Fax (805) 730-7332
FOR INFORMATION CIRCLE 07
Based on the advanced Superscalar Imnos T805 Transputer chip, U.S. Cybernetics' *Warp System* features an expandable parallel processing accelerator. Previous uses for the T805 were mainly in the supercomputing industry. With the Warp System, this technology is now available for the desktop environment. The Warp System is currently available on the Amiga platform, and is auto sensing in any Zorro II or Zorro III slot.

For the Editor
Product: The Personal Editor
Description: On-line/off-line editor
Price: $645
Nucleus Electronics Inc.
P.O. Box 1025
Nobleton, Ontario
Canada L0G 1N0
(905) 859-5218
Fax (905) 859-5206
FOR INFORMATION CIRCLE 08
Nucleus Electronics Inc. recently introduced the *Personal Editor*, a system that's ideal for both on-line and off-line editing. Standard features include B mode auto-assembly, A mode edit creation, and SMPTE time-coded clip logging in any of nine separate lists with an unlimited number of reels per list. Many of the Personal Editor functions can be controlled through its ARexx port.

Transitional Stage
Product: Pro Wipes Volume 1
Description: Toaster transitions and effects
Price: $129.95
Matrix Productions & Design
1111 Dover Street N.E.
Cedar Rapids, IA 52402
(319) 378-9648
FOR INFORMATION CIRCLE 09
Matrix Productions & Design introduces *Pro Wipes Volume 1*, a six-disk set of 75 Toaster transitions and effects that can be added to any Video Toaster 2.0, 3.0 or 4000. Pro Wipes are not animation; they are real Video Toaster format transitions that work like original Toaster wipes. Pro Wipes includes 33 live (actor) action wipes and 42 assorted 3D style wipes, matte wipes, soft-edge wipes, 16-level alpha effects, and the company's 24-bit effects that work on any Toaster system. Pro

Wipes covers categories such as weddings, sports, dance, finance, music and a large variety of general purpose wipes that can be used in a multitude of video applications.

Etch-a-Sketch
Product: VertiSketch
Description: Data capture device
Price: $123
Science Accessories Corp.
2 Research Dr.
P.O. Box 825
Shelton, CT 06484
(203) 925-1661
Fax (203) 929-9636
FOR INFORMATION CIRCLE 10
Science Accessories Corp. (SAC) and Blevins Enterprises recently introduced *VertiSketch*, a software package which allows the rapid and accurate capture of data using SAC's GP-12 3D digitizer. Using the digitizer with VertiSketch makes it possible to digitally reproduce physical objects directly in Modeler 3.0 for use in LightWave's rendering and animation software. Complex objects can be reproduced quickly by sampling points with SAC's 3D digitizer from the objects designated for input.

Cohesiveness
Product: Composite Studio
Description: Image-compositing program for ToasterPaint and OpalPaint
Price: $199.95
Dimension Technologies
2800 West 21st St.
Erie, PA 16506
(814) 838-2184
Fax (814) 838-8521
FOR INFORMATION CIRCLE 11

NEW UPDATE

Product: Bars&Pipes Professional Version 2.5
Description: Upgrade to Version 2.0
Price: $69.95
The Blue Ribbon Sound-Works Ltd.
Venture Center
1605 Chantilly, Ste. 200
Atlanta, GA 30324
(404) 315-0212
Fax (404) 315-0213
FOR INFORMATION CIRCLE 12
Blue Ribbon SoundWorks has announced the *Version 2.5* upgrade to its Bars&Pipes Professional music and multimedia environment for the Amiga. Version 2.5 contains nearly 50 features and enhancements for MIDI musicians and multimedia authors. The upgrade also provides the ability to loop any number of measures on all tracks simultaneously and split one track into several containing only one pitch.

Dimension Technologies has released *Composite Studio*, a powerful user-configurable, image-compositing program. By taking control of ToasterPaint, Composite Studio allows the user to quickly and easily combine, resize and arrange an unlimited number of framestores or RGBs. Each image can be processed in a number of ways, including emboss, negative, black and white and pixelized. Images can also be surrounded with a multilevel bevel or one of 20 frame styles. Composite Studio is currently available for ToasterPaint and OpalPaint.

Super Nova

Product: NovaY/C Max
Description: Image enhancer and Y/C decoder/encoder
Price: $1,000
Nova Systems Inc.
50 Albany Turnpike
Canton, CT 06019
(203) 693-0238
Fax (203) 693-1497
FOR INFORMATION CIRCLE 13

Ideal for sharpening the picture quality from the Video Toaster, the *NovaY/C Max* is an image processor that features digital horizontal and vertical detail enhancement. A three-line, adaptive digital comb filter eliminates dot crawl, cross luma, cross color artifacts and provides 6dB of chroma noise reduction. The decoding and encoding functions convert composite video to wide-band Y/C and Y/C to wide-band composite video. Completely Toaster compatible, the Y/C Max either plugs directly into the Amiga computer or is available in a standalone desktop version.

Across the Spectrum

Product: AutoPaint
Description: Controls Toaster-Paint
Price: $149
A+ Development
241 S. Frontage Rd., Ste. 32
Burr Ridge, IL 60521
(708) 654-0321
FOR INFORMATION CIRCLE 14

A+ Development introduces *AutoPaint*, which features 25 point-and-click screen templates that automatically composite pictures in just a few keystrokes when using framestores and 24-bit RGBs or IFFs in ToasterPaint. Auto-

Paint's multi-screen templates allow users to create builds screen-by-screen, and there's plenty of room to add text. Features include 25 auto layout templates, a simple point-and-click interface, adjustable drop shadows, flash directory technology, auto multi-file rendering and a Toaster utility accessory.

Time Sensitive

Product: LX-200 Camcorder
Description: Hi-Band 8mm camcorder
Price: $3,200; $4,099 w/lens
Canon
One Canon Plaza
Lake Success, NY 11042
(201) 816-2900
Fax (201) 816-9702
FOR INFORMATION CIRCLE 15

Following in the tradition of the Canon LX-100, Canon has released the *LX-200 Hi-Band 8mm camcorder*, which features RC Time Code with index, data coding, improved digital special effects and the VL Mount System. The LX-200 is the first Canon camcorder to offer RC Time Code with data and index search code functions. RC Time Code is automatically recorded as digital data on the P-V guard, positioned between the video and PCM audio tracks of the 8mm format. RC Time Code can also be added to a tape after recording. Among the digital special effects featured by the LX-200 are closeup and slow shutter.

Improved BC-Metal

Product: BC-Metal videocassettes
Description: Betacam SP videocassettes
Price: $40 to $125
3M
3M Center
Building 223-5N-01
St. Paul, MN 55144-1000
(612) 736-2549
Fax (612) 737-5583
FOR INFORMATION CIRCLE 16

3M has improved its line of *BC-Metal videocassettes* with a

tape design that reduces RF loss, especially in camcorder applications. The videocassettes also feature a consistently low-dropout metal-particle tape for excellent picture performance. The BC-Metal videocassettes are complemented by the 3M Anti-Stat system, a protection system designed to lessen debris attraction and lower dropout rates. The videocassettes, which feature four packaging options and an ABS-plastic shell for durability, are offered in tape lengths ranging from five to 90 minutes.

To Digital

Product: V4228 2D Digital Decoder
Description: Composite decoder
Price: $5,700
Vistek Electronics
Wessek Rd., Unit C
Bourne End, Bucks
SL8 England
44 0628 531221
Fax 44 0628 530980
FOR INFORMATION CIRCLE 17

Vistek Electronics has introduced the *V4228 2D Digital Decoder*, a composite decoder for analog, serial and parallel digital applications. Vistek's patented Varicomb algorithm is acknowedged as the most transparent process for transferring from the composite to component domain for real pictures, eliminating the artifacts of cross color and cross luminance without sacrificing resolution. The configurability of the V4228 permits selection by the interfaces required. The product was designed for both PAL and NTSC operation.

TBC for PC

Product: PC-TBC
Description: A PC-based plug-in TBC/frame synchronizer
Price: $665
Hotronic, Inc.
1875 S. Winchester Blvd.
Campbell, CA 95008
(408) 378-3883
Fax (408) 378-3888
FOR INFORMATION CIRCLE 18

Hotronic has released the PC-TBC, a PC-based plug-in TBC/frame synchronizer that is compatible with IBM or Amiga computers. The PC-TBC is built-in with an adaptive digital comb filter to provide wide bandwidth in composite signals. It also features freeze frame/field, strobe and genlock capability. The PC-TBC can be upgraded to PC-TBC-Y/C, which provides Y/C input/output and transcodes between composite or Y/C. The upgrade price is $735. A remote is also available for the PC-TBC for an additional $100.

Accelerator System

Product: The Cyberstorm series
Description: A modular acceleration and expansion system
Price: $695-$1,995
Advanced Systems & Software
1329 Skiles St.
Dallas, TX 75204
(214) 821-7776
Fax (214) 821-3464
FOR INFORMATION CIRCLE 19

Advanced Systems & Software has added to its line of Amiga 4000 accelerators and expansion boards with the modular *Cyberstorm* system. The Cyberstorm system includes a carrier board, a CPU module and a memory board, which can be populated with up to 128MB of fast-RAM. The system is available in three versions, including the Cyberstorm '040/25 ($695), the Cyberstorm '040/40 ($1,495), and the Cyberstorm '060/50 ($1,995).

The Next Wave of Video Tools
for your Toaster System

MultiLayer – *Digital Layering*

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

Features include:

A Timeline interface that provides user-friendly control of all aspects of compositing and editing. A Preview interface that provides a real-time representation of all layers/images with positioning information and size. The preview can be animated and modified with a VCR-style interface. Image representations can be dragged and positioned quickly and easily. Several types of Compositing/Digital Keying are supported including Zero-Black keys, Luminance keys, Chroma keys and Alpha keys. All compositing is performed in the digital domain using a full 32Bits of data for D1 quality . No lossy image compression techniques are used, so images with any number of layers are as crisp and clear as they were in the original images. Layers can be faded in and out to variable transparencies at variable rates of speed. Layers can appear and disappear and move around anywhere. All Layers are completely adjustable. Movement of images/layers can be anything from linear to smooth with adjustable acceleration and deceleration. Disolves 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, Ret
MultiLayer-IMFX requires ImageFX 1.5 and Workbench 2.1

The tool LightWave users have been waiting for!

Particle Animation

"SPARKS"

Standard Particle and Real World Kinematic Animation System.

The first Particle Animation system for LightWave3D 3.0

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

Image from Robo Jr. by Dale Myers made using Spar
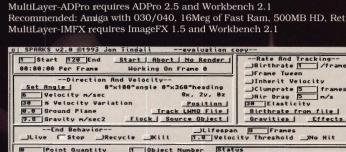
like snow or rocks. Flocking allows a source object to define initial position of objects and a motion file to follow. Objects are held to their positions with adjustable "springs" allowing external forces to deflect paths individually, yet always returning to their home position. Fade envelopes can be built on the fly with fade in and fade out controls. Displacement mapp support will give motion to all your objects at once.

You have complete control over:
- Origin - at each frame
- Gravity - Bouncing on ground plane
- Wind, Gusting, Flaking, Swirling behavior
- Multiple Local Gravities
- Rotations - evaluate user-defined expressions!
- Spacing - user-defined birthrate
- Quantity - partcle/models
- Multiple Replacement Objects
- Elasticity and Mass
- End Behavior - stop, recycle, kill-
- Direction - interactive GUI
- Source and Target positions - set start positions b models vertices
- Sprays, Streams, Fountains
- Sparklers, Flocks, Magic Wands
- Waterfalls, Explosions

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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TOASTER TIMES

Samsung Potential Commodore Suitor

Phil Kurz

Commodore International has entered discussions with South Korean electronics manufacturer Samsung about purchasing the assets of the maker of the Amiga personal computer and CD32 game machine.

According to a report from Channel 4000, an independent Toaster dealer news source, Samsung met with both Commodore and Prudential Bache, a large Commodore creditor, about the possibility of buying the company in early May.

On May 5, NewTek president Tim Jenison flew to West Chester, Pa., to hold discussions with Commodore and a large Asian electronics company, said NewTek director of marketing Donetta Colboch. Colboch would not confirm or deny that the Asian concern was in fact Samsung.

Commodore International Ltd. announced in late April that it was ceasing operations. The Associated Press reported that the company had transferred its assets to trustees for the benefit of the company's

creditors and that Commodore Electronics Ltd. was being voluntarily liquidated.

For the period ending Dec. 31, Commodore posted a loss of $8.2 million on sales of $70 million. In the same period in 1992, the company lost $77.2 million on sales of more than $237 million.

Jenison would not elaborate on his meeting in West Chester. However, he offered his views on the demise of Commodore. "A very interesting thing happened when the bad news at Commodore

broke," he said. "A lot of big companies started circling Commodore like buzzards eying the company. [These are] people who wanted set-top cable boxes, people who designed Amiga computers into expensive graphics equipment, people who wanted to exploit the CD video game market. In general, they saw the Amiga as a way to jump start the information super highway.

"When Commodore announced liquidation," he added, "these companies began to pounce. We've had talks with a number of them and it is clear that the Amiga technology is still very much alive, and that very quickly there may be much more capable hands in control of the Amiga computer."

VTU

Hollywood Film Company Subcontracts Electric Zebra; New Logo Defies Tradition

Josh Moscov

Golden Films recently subcontracted Electric Zebra to create a new corporate logo, generated with computer animation, for the company's video titles and television shows.

According to Golden Films president Diane Eskenazi, the logo will be placed at the end of the company's releases that are distributed by Sony to more than 83 countries. It will also be used on *Hip Hop Street*, a children's educational show currently in production in association with PBS Channel 13 in New York.

The character animation, composed of colorful, jovial letters with human traits, marks the first time that Golden Films has opted for computer-generated art in their productions. The company specializes in feature-length adaptations of children's classics and original films that have relied exclusively on traditional cel animation.

Electric Zebra animation director Gina DiBari said that Eskenazi requested the characters to be very animated with upbeat personalities since Golden Films' releases are targeted to a young audience. "She [Eskenazi] wanted it to be fun and [wanted] the letters to be dancing and in a rainbow color scheme." For additional guidance, Eskenazi supplied Electric Zebra with several cel animation frames of eggs with feet and other hand images created by animator Len Smith (a former Disney animator and designer of *The Mighty Ducks* mascot). DiBari used them as a visual reference while working in Modeler.

A frame from the new, computer-generated Golden Films logo.

With several years of Toaster experience on a wide variety of projects, DiBari explained that she and partner H.W. Parker have developed a unique production process that combines desktop video technology with their own (sometimes unorthodox) approaches to generating creative ideas and concepts in their projects.

DiBari said each of the characters was given a different amount of animation frames, so the entire letter chain would not look like an animation loop. For instance, the Dancer, which had four different morph-target objects, moved over 54 different frames. "So every 54 frames, if you looked at

Producer Introduces Toaster to Nature

Douglas Carey

Steven Spielberg has nothing on Betty Wills, whose lead character in her latest directorial outing was a 150-pound river fish with a long, flat, paddlelike snout.

It was familiar company for Wills, an independent producer who specializes in nature documentaries and educational programming for public television. Her latest release, *The Paddlefish ... An American Treasure*, earned Wills a North America Film/Video Award from the Outdoor Writers Association of America and an award from the Texas Outdoor Writers Association for special outdoor programming.

The Ft. Worth, Texas-based director also served as writer and producer for the one-hour documentary, which is slated to run nationally on PBS beginning this July. The special was first released last year on video.

"It's education in an entertaining way," said Wills, who streamlined her production for the paddlefish special to include only a 3/4-inch ST recorder and the Video Toaster. "The [viewers] don't know they're being educated because they're too busy being entertained."

Wills was also honored recently by the American Horse Shows Association for *A Celebration of Horses: The American Saddlebred,* a documentary hosted by William Shatner that's currently running on public television.
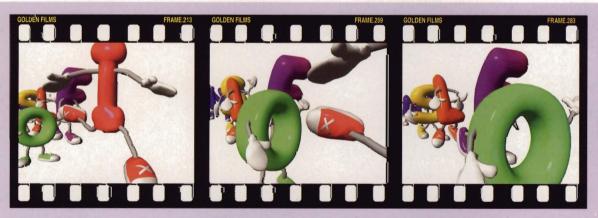
For the special on saddlebreds, Wills off-lined her entire production, saving both time and money.

"[Using the Toaster] brings your profit margin up quite a bit," Wills said. "It's also good for off-line work. If I shoot on Betacam and I'm doing something that you can't slip with 3/4-inch, I'll use this setup for off-lining and it gives me a real good perspective for what the finished product is going to look like."

Wills, whose career has ranged from magazine publishing to videography, plans to expand her use of the Toaster in future productions.

"I am practicing the animation part of it," said Wills, who is currently working on a 12-part series about horse ownership. "I really would like to get good in LightWave and Modeler."

VTU

Three lively frames from the Golden Films animation are shown at left. Bones and morph targets were used to give the characters fluid movement and personality.

frame number one and frame number 55, they were exactly the same. That's the loop. You don't want each of the letters looping at the same time. It helps give a more human, imperfect look."

The original objects were created in Modeler and combined two different fonts. "What we wanted in the end result was something that was round and lumpy and mis-shaped. So we ended up picking balloon-like font styles and created the objects out of text from the objects menu in Modeler," DiBari said.

Now having flat, polygon objects, DiBari connected the points within the objects to build spline cages. When constructing them, she used the sketch tool so that the objects would be uneven and reminiscent of traditional clayma-tion. A combination of bones and morphs also added to the complexion.

Instead of using single-frame transfer in post-production, Golden Films decided to experiment with real-time transfer by using Digital Processing Systems' Personal Animation Recorder (PAR) to a D2 master. DiBari said she was successful by transferring through the composite out on the PAR to D2. "We saved hours of transferring animation to tape and also saved a lot of money by using the PAR. In this case, the PAR output was superb, certainly worthy of broadcast."

The quality that DiBari was able to attain from real-time transfer satisfied Eskenazi, who has been working for more than a decade with traditional cel animation in film. "For the amount of time she had, she did a very good job," Eskenazi said. "What's nice about the Toaster is that it's quick ... When you have to deal with an overseas animation house, it can take much longer."

Eskenazi also noted that additional projects between Electric Zebra and Golden Films are currently being negotiated.

Golden Films is based in Beverly Hills, Calif.

Located in Palo Alto, Calif., Electric Zebra can be reached at (415) 327-6574.

VTU

DEAR JOHN

Fiscally Speaking

How to Prioritize and Stay within Your Budget

by John Gross

I receive several questions each month from beginning Toaster users looking for the best way to maximize their budget. Many problems can be solved by simply planning ahead.

Q: I currently help produce a television broadcast at my school. It's a small production, but we still take it seriously. I love broadcasting and hope one day to work at a television station. I watched *seaQuest DSV* and loved the effects. I looked at the credits and found they were produced with the Video Toaster.
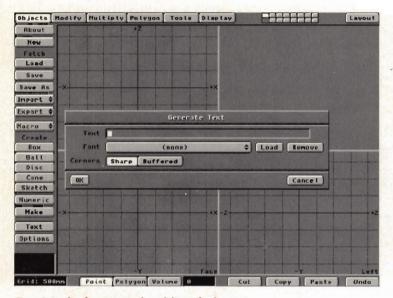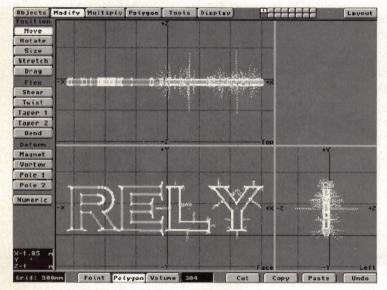
Immediately, I decided to find out as much as I could about the Toaster. I went to my local bookstore and found a copy of *VTU*. Now here's where the problem comes in: I'm looking for a basic system that will do basic things. *VTU* has ads for hundreds of products. Do I really need these products? Can I produce decent text and effects with just an Amiga and a Toaster?

What I want to do is overlay text and create good computer animation. I know absolutely nothing about the Amiga or the Toaster. What is this product called LightWave? Is this totally separate from the Toaster? Can Toaster images be transferred to VHS tape without special equipment? Finally, I would not like to spend more than $2,500. Is this possible?

Timothy Tillman
Assistant Director of the Raider Network
Mechanicsville, Va.

A: You do not need all of the advertised products in order to use a Toaster system. If you are going to use a Toaster for basic operations, you may not need any of them. Like any computer product, they are designed for specific applications and/or needs.

Using the ToasterCG, you can produce more than adequate character generation (text). ToasterPaint allows you to create nice-looking graphics, and hooking up the output of your Toaster to the input of a VHS machine allows you to record text and still frames to your recorder.

LightWave 3D comes with the Video Toaster along with ToasterCG and ToasterPaint. They are simply software programs that you can access from the Toaster's main screen. LightWave is the software used on *seaQuest*. It is also used on shows such as *Babylon 5*, *Star Trek: The Next Generation* and *RoboCop*.

There are a number of ways to record LightWave output to tape. If you happen to own a Toaster 4000 (in an Amiga 4000), you can play back LightWave animations in real time. The more RAM in your machine, the more you can play (18MB of RAM allows about five to six seconds of playback). This playback is limited to 256,000 colors and lower resolutions, so it may not be suitable for every application.

If you have a Toaster in an Amiga 2000 or 3000, more equipment is required to get your LightWave animations to tape. You need a single frame-accurate recording deck and some type of single frame controller. Alternatively, you could use a Digital Processing Systems (DPS) Personal Animation Recorder or Sanyo's GVR-S950. Either way, you

Figure 1: Loading fonts is as simple as clicking a few buttons.

Figure 2: To kern text, select the letters and use the Move tool.

A L P H A PAINT!

real time painting
alpha channels
text effects
perspective
video blending

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

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

- The first full featured 36-bit Paint package for the Video Toaster.

- True REALTIME painting in 24-bits directly on the Toaster's display.

- Full screen, free-form WYSIWYG painting – with no waiting.

- 12-bit Alpha Channel for image texturing, blending and compositing.

- Paint into the Toaster's hardware Video Mixing Channel for unique Live Video Transparency and Soft-Edge Feathering effects – an Alpha Paint exclusive!

- Proprietary display of 16-level Alpha Channel key pages over live video.

- Advanced Paint and Image Enhancement Features such as Oil Painting, Sharpening, Airbrushing, Gamma Correction, Rub Thru, 3D Perspective Rotation, and more!

- Sophisticated Text Tool allows free rotation and resizing of Toaster, Chroma and PostScript fonts with ultra high level anti-aliasing.

- Automatically adds dazzling edge effects such as Embossing, Cast Shadows, Outlines and Glows to logos and text.

- Compatible with Video Toaster 2.0, 3.0, 3.1 and Toaster 4000.

Alpha Paint™ is *the* all-in-one professional paint solution for the Video Toaster™ with NO additional utilities, programs or Chip RAM upgrades required.

Why paint yourself into a corner?
To paint like a Pro, call 510-638-0800 and order Alpha Paint today!

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TECHNOLOGY

InnoVision Technology • 1933 Davis Street, Suite 238 • San Leandro, CA 94577 • Fax: 510.638.6453

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need to spend at least $2,500 (more for the single frame-accurate deck).

Finally, your $2,500 budget is cutting it close. For that amount, you could expect to buy a used Toaster system in a 2000 computer. A Toaster 4000 in an Amiga 4000 would run between $3,500 and $4,000. If you wish to lay text over images on videotape that feeds into the Toaster, you need to buy a time base corrector (TBC) that allows you to connect the tape source into the Toaster. Expect

to spend at least $1,000 on a TBC. However, if you wish to overlay text on a live-image feed from a camera, you would not need any additional equipment (except, of course, the camera).

Q: I have a Video Toaster, and I am going to throw it in the bathtub while plugged in and toast myself. I spent all my money on it and have had trouble getting a few simple questions answered. This is my system:

Toaster 4000 with 18MB of RAM, 120MB hard drive
2 DPS TBC III
1 DPS chassis for TBCs
1 Maxtor 128MB hard drive
1 68040 accelerator
1 DPS 2000 machine (I don't use it since I don't have editing equipment)
Pixel 3D
Art Department Professional
Imagine
Here's what I want to do:
1. I would like to load fonts from the CG into Modeler. I need to spell "RELY." There's too much space between letters: How do I kern? After this, I want to take it into Layout and animate.
2. I also need to get my animation to a VHS tape. I also heard that a SyQuest drive is a broadcast-recording device. I want to take a segment of animation to an editor and insert it in a project I have done. I have asked others, but most do not use LightWave at all. A dealer told me about recorders and image stabilizers and record controls. He couldn't exactly tell me what the pieces did and what the end result would be.
Franco Frassetti
Staten Island, N.Y.

A: Loading fonts in Modeler is pretty simple. First, click on the Text button (Objects menu), then select the Load button on the right hand side of the Text requester (Figure 1). This should open a requester that looks at the ToasterFonts directory on your hard drive. You can use the Parent button in this requester to revert to the previous directory. After selecting a font, you are returned back to the Text requester. You can now either type out the text you wish to generate in the text field or use the Text macro (Objects menu) to create the text.

In order to kern the fonts in Modeler, understand that once the fonts have been loaded and typed, they become objects. They are no longer really fonts. Because of this, you cannot simply kern them; instead, you need to move the individual letters around.

To accomplish this, simply select all of the polygons that make up the letters by pressing the Polygon button at the bottom of the screen and circling the letters with the right mouse button. Once the letters are highlighted (Figure 2), you can select the Move button

(Modify menu) and move them where you wish. Hint: Hold down the Control key after selecting Move to constrain the movement along the first axis.

To get your rendered animation to tape, you may need more equipment. One way to do this using your existing equipment is to create a Toaster 4000 animation of your scene. Before rendering your animation, select Save ANIM File from the Record panel in LightWave. The requester that appears should be looking into your framestore directory (if not, go there). Create a name in framestore format (i.e., ###.FS.Animname) for your animation. Alternately, you can select Easy ANIM from the main Layout screen, and LightWave takes care of this for you. After you enter a filename, select Render, set your first and last frames and click on Automatic.

The resulting animation is saved to your framestore directory where you can load and play it from the Switcher. Connect a deck to the Toaster output and press Record while you play the animation.

The other way to record an animation is to use a single frame controller and a frame-accurate recording deck. While this is more complicated, higher-quality animations can be achieved. Basically, you need to render your LightWave animation frame by frame and record those frames to a deck. There are many options as to what types of decks and controllers work, and a reliable Toaster dealer should have the information you need.

Finally, a SyQuest drive is not a broadcast-recording device. It is simply a removable medium (hard drive) where you can store data and take it elsewhere.

Q: What does AGA mean and what does it do for the computer? Most importantly, can AGA chips be installed into an Amiga 2000 with Toaster 3.0 or greater? If so, will it process the effects of the newer Toaster version, or to put it another way, will my Amiga 2000 with a Toaster 2.0 card upgraded to 3.1 work like the Toaster 4000 and process the effects? Last, but not least, where could these chips be obtained if it is possible to install them?

Thomas Chaltry
Chaltry Photo and Video
Spencer, Wis.

A: AGA stands for Advanced Graphics Architecture. It is the chipset available in the newer Amigas (1200 and 4000) that allow for more colors and some faster operations. The AGA chips cannot be installed into an Amiga 2000. In order to use the new Switcher effects of the Toaster 4000, you must have it installed into an Amiga 4000.

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

Questions can be sent to him in care of this magazine or electronically on Compuserve at 71740,2357, America Online as Bubastis or via the Internet at jgross@netcom.com.

For a written reply, please enclose a self-addressed, stamped envelope.

TIPS & TECHNIQUES

Using Text Attributes

How ASCII Can Save Time in Layout

by Brent Malnack

U sing bones in LightWave can be a complex and time-consuming process. The following is a great tip submitted by Marilynn DeSilva. Because of its complex nature, this might be better suited to more sophisticated users.

"Boneified" Tip

This is a time-saving suggestion for setting up groups of bones to be mirrored or symmetrically arranged.

Placing bones in a complex object such as an accordion can be extremely difficult. Using this month's tip, bones can be placed symmetrically with ease.

1. Create, set rest length, parent and position the first set of bones. Give them repetitious names, such as LeftBone1, LeftBone2, etc. Save the scene.
2. Open a text editor or word processor with ASCII-save capability. Load your scene. Because LightWave saves scenes as ASCII text files, they may be easily loaded into a word processor and modified. This can be helpful when it is necessary to change the path from which objects are loaded. Instead of having to select the objects LightWave cannot find when loading a scene, the path can be replaced. More on this later.
3. Locate the reference to the first bone, starting with a line that reads AddBone. Read down to the last bone's entry, which should end with the line: ParentObject n.
4. Select and copy this entire block of text.
5. Insert the cursor at the end of the block you just copied and paste the text there. This copies the entire list of bone information.
6. Insert the cursor at the beginning of the block you just pasted and perform a forward Find and Replace. Type LeftBone as your Find string and RightBone as your Replace string. Do not include the numbers of the individual bones.
7. Save the file (remember to save it as an ASCII text file), return to Layout and load the edited scene.
8. Reposition the parent bone of the new group and all of the children will follow.

Editing Scene Files

This tip can be used to modify other aspects of a scene file. Here is a sample LightWave scene file:

    FirstFrame: 0
    LastFrame: 1
    FrameStep: 1
    LoadObject: Objects/big_slab
    ObjectMotion (unnamed)
    EndBehavior: 1
    ShadowOptions: 7
    LoadObject: Objects/Cone
    ObjectMotion (unnamed)
    etc.

If this were a scene that somebody gave you, or you wanted to move this scene to a different machine, you could change the path from which the objects are loaded. For example, if these objects were loaded from a floppy, change the path to look this way:

    LWSC
    1
    FirstFrame: 0

TIPS & TECHNIQUES

```
LastFrame: 1
FrameStep: 1
LoadObject: df0:Objects/big_slab
ObjectMotion (unnamed)
EndBehavior: 1
ShadowOptions: 7
LoadObject: df0:Objects/Cone
ObjectMotion (unnamed)
etc.
```

This was changed by searching for Objects/ and replacing with df0:Objects/. For most scenes, this process would not save a lot of time. However, consider a complex scene such as one that WaveMaker might create. It could consist of more than 100 objects. If you load this scene into LightWave and the paths are not correct, it could take 100 mouse clicks to get the scene loaded. Searching and replacing the correct path takes just a few seconds.

File to Film

Having Toaster graphics translated to film can be a complicated process. The following collection of tips from Timothy Rue explore preparing graphics for conversion to film or slides.

According to Rue, the best film to use for prints (negatives) is Kodak Ektar ASA 100. For slides (positives), try Kodak Ektachrome Professional Plus, ASA 100.

Other options include Polaroid High Definition film 100 for negatives and Kodak Ektachrome 100 speed for slides. In previews where no processing is needed, Polaroid 669 is required.

Slide film (positives) should be used if the intended print size is to be larger than 16x20 inches. However, an interneg will need to be created. (An interneg is a 4x5 negative created from a slide. Internegs slightly reduce image quality while eliminating grainy appearance.) Twenty-by-30-inch prints from 35 millimeter negatives begin to show grain but may be acceptable for non-professional or artistic use.

Although positives (for slides) and negatives can be mixed on a roll of film (using imaging processing software to reverse colors), it is not recommended. Doing so successfully requires testing all the variables (film type, software used to reverse colors and software and hardware for file-to-film transfer) and is generally more expensive than using film intended for different formats.

Color Approximation and Correction

Due to an almost unlimited combination of models and ages of video cameras, digitizers, color scanners, monitors, file-to-film equipment, film types, and lab processing factors which could be used in a project, photo labs and service bureaus cannot produce exact colors. To maintain a degree of uniformity, a hard copy reference is used.

You can help ensure some degree of reliability by following a simple process (or test cycle) and always using the same equipment, film and photo lab.

Have an image file put to film and developed to print. Compare the print to the image displayed on your monitor. Adjust your monitor to create the best color match. Recognize the importance of your monitor's representation of your graphic, but remember it will never be perfect.

Some monitors cannot be adjusted, so it is important to use

one that can. Simply make note of these adjustments and use them when working with image files going to film. Once you have a reliable working representation and you know what to expect, you can begin saving money.

Color correction is generally applied in two ways: with preprint software or during the photo lab process. Because the photo lab (film to print) is the last step, it is also the most often used method of final color correction.

However, the user's software not only can eliminate a lot of color correction done in film to print (and save money), but sometimes this method is the only way to correct problems. In the file-to-film process, it is possible to make the intensity or brightness of a given color too strong. This can lead to washed out or bleeding of that color in the final print, which cannot be corrected in the lab.

Watch for hot colors (reds, yellows and oranges). These are common problem colors in photography of video/file.

Software can adjust these colors by offsets. Colors can be adjusted by RGB, CMY(K), YIQ, HSV, etc. Most image-processing software has controls for one or more of these. Keep a record of any software settings.

Don't get carried away with adjustments. Using software controls to adjust your monitor to match a test print will work only if doing so does not alter the image files you're saving to go to film.

To adjust your monitor, you need a final print. Any adjustments to these software controls that affect a file can require a readjustment of the monitor. Once established, these software value settings should be used on all image files saved to go to film. Also, keep a nonadjusted copy for any additional work on the file image; otherwise, the degree to which the monitor represents the print becomes unreliable.

With the objective of removing problems the photo lab cannot correct and eliminating the lab's extra step in color matching, this test cycle may need to be done a few times.

A good photo lab writes a code on the back of prints when they implement color matching. It's important to record the frame and negative that this code applies to. For example, let's say you sent an image to be converted from file to print. The lab did color matching and printed its code on the film print. You lose the print. To have another copy made, you need to take in the negative and give the lab the color matching code.

Once you establish your test image file and a best match with both your monitor and file to film, have the lab produce a few 8x10s of this frame with any final color correction that may be needed. The next time you have some files to film done, use this file as one of the frames.

This allows the entire roll to be color matched with one frame against its existing hard copy. Be sure your test image contains various levels of CMY(K)—Cyan, Magenta, Yellow and Black (a subtractive primary system)—and/or RGB—Red, Green and Blue (an additive primary system). With a little effort, you can avoid the need for your lab to do color correction. For her winning tip, Marilynn DeSilva receives a free copy of *Mastering Toaster Technology*.

VTU

DR. VIDEO

The Dubbing Dilemma

How to Increase Signal Quality

by Rick Lehtinen

Welcome 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.

Last month I mentioned I'd help readers with Video Toaster wiring problems, as long as I could do it within the context of the column so that we could share the answers with everybody. The response has been, to say the least, gratifying. I have several block diagrams of troubled Toaster systems in hand, and a TV station in the Caribbean has retained me as a consultant.

So let's dive right in. This month's setup comes from D.C. in Wayne, N.J. It is shown in Figure 1. D.C. is confident that the system is wired incorrectly and reports that his major complaint is a significant color shift on edited tapes.

Actually, I am surprised that it works at all. Let's start with the TBC hooked up to the camera. Time base correctors are designed to remove the instabilities caused by the moving tape and spinning head drum in a VCR. Tape and drum speed is servo controlled, and servos only actuate when what they are controlling has drifted out of tolerance. (Like moving the rudder on a sailboat to compensate for swells.) The camera used should not require a TBC, and any camera that is so poorly designed as to require a TBC probably won't make a good picture, anyway. A rewired version of D.C.'s system is shown in Figure 2.

Normally, the two playback decks would require TBCs. However, the decks used here have built-in TBCs. As to how the decks are wired, my personal preference is to keep the video path short and simple. This minimizes things that can go wrong and also keeps electrical noise out of the video signal. However, I am a big fan of monitoring and have shown the second output of the decks feeding inputs A and B of the waveform monitor and vectorscope.

I would break my own rule about short video paths, and wire from the Toaster Program output line through the waveform monitor and vectorscope input C to the record machine. This is because it is important to know what the Toaster output actually is. There are level adjustments on the record VTR that might make the waveform monitor falsely read high or low.

I can't see a reason for having both the A and B side of the program monitor look at the same point, which is essentially what is happening in Figure 1. I'd connect the A side to the video output of the waveform monitor and vectorscope. This way, it can be switched among Player A, Player B and Toaster Program from the waveform monitor. I'd then connect the B side either to the recorder video output, so I could review edits, or possibly to the camera, which seems to have no monitor at all.

Now about the sync reference signal. In Figure 1, nearly every terminator is set incorrectly. Use terminators, either switchable or the kind built as physical connectors at the end of the pipe. No circuit gets more or less than one terminator. This is true even if a signal loops through several devices on its way to the last one, which is terminated.

It would be possible to loop sync from device to device, ending at some single-ended machine (that is, one that doesn't have a loop-through connection). I think D.C. could save a lot of headaches by installing a distribution amplifier to send reference video everywhere it has to go. This is especially so when one is trying to do system timing. It is best not to tear up a system to time it. The wiring may have been part of the problem.

I will go through the timing of this system in next month's column. In the meantime, readers may want to look over the recent "ABCs of Video" series, which concluded in *VTU*s March 1994 issue. It covers a lot of these subjects.

Q: How do they do it? Almost any rental VHS tape seems to have better picture quality than what we are able to make here in our studio. My animations are mastered on Betacam SP. When I dub directly to whatever VHS deck I try, I never seem to get as sharp of a picture. What gives?

G.M.
College Station, Texas

Rx: It really is disheartening when a carefully created image seems to fall apart while dubbing to VHS.

There are several reasons why a rental VHS tape looks "better" than a locally produced one. Some may be under your control, some may not.

First, feature films are not shot in video; they are shot on 35 millimeter film, which has significantly better resolution. Often, a videotape is made at the same time as the film, using a "video assist" device. The tape is then edited, and the film negative is cut or conformed to match the video. The negative is then

played back through a telecine, which inverts the colors and makes a dub master, from which the release tapes are dubbed.

Second, some movies are dubbed using recorders, but others are made in bulk using high-speed transfer systems that use heat and magnetic fields to "print" the signal on the tape.

Third, the dub facility adheres to standardization. This means that they have waveform monitors and know how to use them. Also, the dubbing signal may employ special preprocessing.

Fourth, the dub deck, if used, is likely to be a special machine that is more expensive than the decks you are using.

The BVW-75, for example, has many outputs. Stick with program or line outputs. Monitor outputs are for monitoring, not recording. You may also be able to increase quality by using a VHS deck that accommodates Y/C or some dub format as an input. A transcoder box can take the analog component (Y, R-Y, B-Y) output of the BVW-75 and convert it into the dub signal. This avoids several NTSC coding and encoding steps, which is where degradation can occur. All of this presumes that the BVW-75 is working well and properly calibrated.

Q: I want to make a training film using animated automobiles, roads and houses. Unfortunately, I know so little about the field of video production that I can't even seem to ask the right questions about what I need to get started. What hardware and software do I need, and what materials can I purchase to educate myself?

R.R.
Manchester, N.H.

R: One way to make the video you are describing is to create the animations in LightWave, the 3D animation program that comes with the Video Toaster, and then mix them with video segments and narration using a Toaster and an audio mixer. However, you are in luck because NewTek has just announced the Video Flyer, which does all of this and more.

As to where to learn the language, I agree you have a problem. Video has a rich history and language, as does the computer. Desktop video is the merger of the two. Twice the jargon, twice the fun. Read *VTU.* We try hard

Figure 1

to provide a rich video education in every issue. Last month in this column I listed a few books and authors you might want to try.

Until you become familiar with the language, you are at the mercy of those who could try to sell you things that may or may not work. You do not need a closet full of gizmos. You need a training video. Why don't you tackle this first project as a producer? Know what you want to do, work up a script and a storyboard showing how you imagine each scene will go, then put the word out that you are taking bids. Start in the *Yellow Pages,* calling every TV station and video production house and videographer and photog-

rapher you can find. Interview those who are interested, and ask those who aren't for recommendations. After you have explained yourself a few dozen times, you will have crystallized your message and know who can help you. By the time you have your video, you will know exactly what equipment is needed should you want to take the next job in-house.

Q: I want to make a short film of daily street traffic in my city. I need to capture frames at certain intervals (say, one frame per minute) using my Toaster. How do I do it?

J.S.
Coon Rapids, Minn.

DR. VIDEO

Rx ▪ Digital Processing Systems makes a great device called the Personal Animation Recorder that is designed for such time-lapse photography. You feed your camera to the input, set up the duration of each shot and the interval, and it clicks away for you. Recall the frames in order and lay them to tape, and you have your film. If you can tolerate the extra delay, you might be able to do the same thing with your Toaster directly, making framegrabs as driven by an ARexx script. Of course, this project should be a snap for the Video Flyer non-linear disk recording system.

Q ▪ After using the Video Toaster 4000 and then quitting the program, the Workbench screen shows up on my Preview monitor and also as a negative (black) image on my Program monitor. I can't seem to clear the image from my monitors. NewTek's technical support team says their systems do this too and that I can clear it by switching to an unused input before quitting the Toaster, but this doesn't seem to work. What gives?

R.D.
Ridgewood, N.J.

Rx ▪ It is well known that the Video Toaster depends heavily on the resources of its host computer. The Toaster board doesn't turn off when you quit the Toaster application; it just goes to a don't care or day-dreaming state and passively forwards anything that happens in the underlying Amiga to its output amplifiers.

Switching to unused inputs is the right thought, because even if you don't turn the Toaster off, at least what passes through will not be distracting. I suspect that you might cure your problem by setting all inputs to black (many Toaster users feed color black as the reference video to input one), then calling up two black frames into the still stores, and setting Chroma Effects and keys to black as well. If that still doesn't work, do as you suggested in your letter. Turn off the Toaster's Program and Preset monitors when you are using the Toaster's Amiga for other things.

Q ▪ What can I do when I transfer my copyrighted photographs
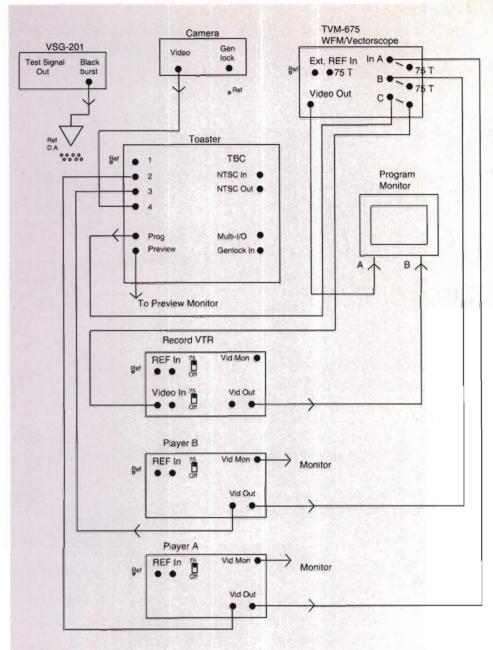
Figure 2

onto videotape so they won't be stolen, pirated or copied?
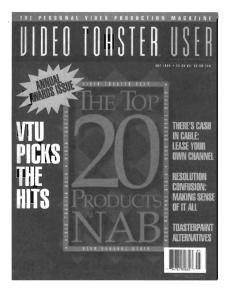
E.S.
Valley Stream, N.Y.
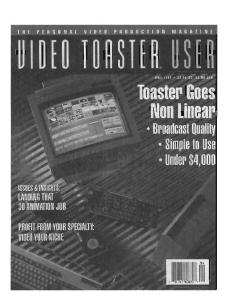
Rx ▪ Take a two-pronged defense against piracy. First, legally protect yourself with appropriate copyright notices at the head of the tape, and maybe in the middle and the end. Repeat such copyright notices in the packaging material that comes with the tape.

If it is not too obtrusive, you might consider keying in your logo in the corner of the screen, as they do at the television networks.

Finally, anytime someone uses one of your images without permission, take some kind of action, even if it is nothing more than sending a letter explaining that they must not do that. All of this demonstrates you are diligently defending your copyright. You have to pay money to go after people, and your chances of collecting damages depend on how good your and their legal counsel is. What you can't do is fall asleep and then spring into

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SOUND REASONING

Handling Hum
End the Buzz

by Cliff Roth
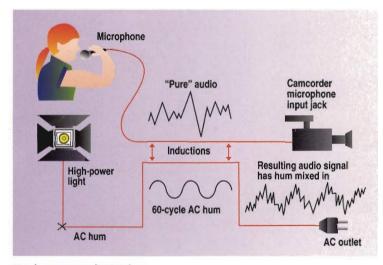
O f all the audio problems likely to plague your video productions, none is so ubiquitous and professionally embarrassing—because it's so easily avoidable—as hum.

If there's any doubt in your mind as to what hum sounds like, just hook up a cable to the auxiliary input of your stereo system or the microphone input of your camcorder and touch the other end of the cable at the tip with your finger. You'll hear hum.

Technically, hum is a low-pitch tone with a frequency of 60Hz—the same as that of AC power lines in the United States. (In Europe and other parts of the world, AC power runs at 50Hz and hum thus has a slightly deeper pitch.)

How hum enters audio signals

Pure hum, properly recorded, has a mellow tone. But since hum usually enters the audio picture as an unwanted invader, it is rarely recorded properly. When it is at such a high level that it overloads the input circuitry (such as at a sensitive microphone jack), the pure sine-wave shape of the original hum signal gets distorted (clipped); the result is an even more annoying buzz. This distinction between pure and distorted hum becomes important when you try to filter it out.

How Hum Happens

Hum can creep into electronic signal lines in thousands of different ways. In fact, hum distortion is hardly limited to the audio side of your video productions; it can also show up in the picture as a wavy distortion that slowly rolls up the frame. Regardless of whether hum enters your picture or sound, the basic process—electromagnetic induction—is the same.

Electricity and magnetism are closely related forms of energy. Most electrical power generation is based on this relationship, as are such basic technologies as magnetic tape and disk heads, dynamic microphones, phonograph pickups, speakers and CRT display screens (such as ordinary computer monitors and TV sets).

The relationship between electricity and magnetism works like this: Whenever electricity passes through a wire, a magnetic field is created around that wire. Conversely, anytime there's a magnetic field increasing or decreasing in the vicinity of a wire, it generates an electrical current in that wire.

Let's look at the first part. In the case of a flashlight that uses single-directional direct current (DC) batteries, there's a constant flow of electricity while the flashlight is on, and hence there's a constant magnetic field created around the flashlight. (A simple electromagnet concentrates that magnetic energy in a coil, creating a stronger magnetic field.)

Unlike a battery-powered flashlight, a table lamp in a living room uses alternating current (AC power) obtained from a wall outlet. By definition, AC involves constantly changing directions and levels of electrical flow. The electrical current flows in one direction, then the opposite and finally back and forth. The rate of change is 60 cycles, or complete waves, per second. This results in a magnetic field that's constantly building up and collapsing at a rate of 60 times per second.

Now let's look at the second part of electromagnetic induction. Imagine you've got a microphone cable lying right next to a lamp cord. Although there's no electrical connection between these cables, there is a magnetic connection. The lamp cord is emitting a changing magnetic field. Within the microphone cable, a small amount of electricity is induced to flow each time the magnetic field around the cable expands and collapses. This occurs 60 times per second.
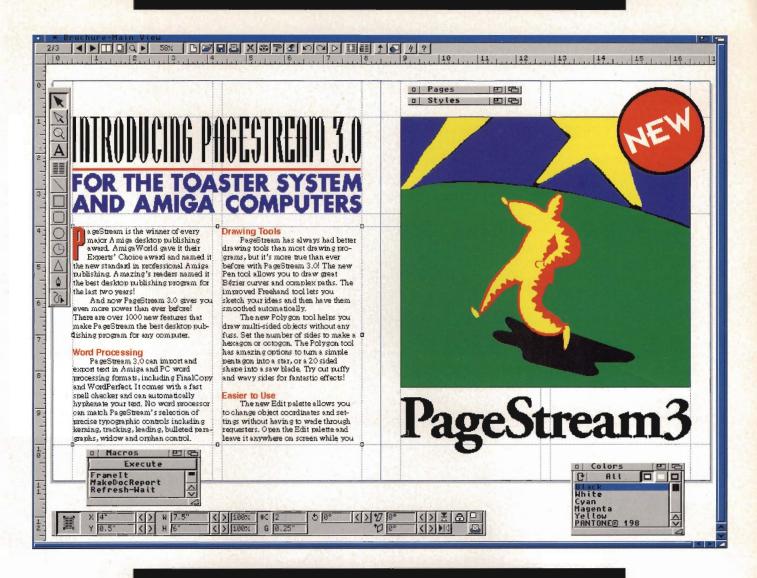
Signal Levels

Although the amount of electricity induced to flow in the microphone cable is very small, a microphone signal itself is rather small. When mixed together in the cable, the hum can become a significant component in the overall signal and can even render it unusable.

Since microphone inputs are extremely sensitive to minute, electrical variations, hum is more of a problem with microphone cables compared to other audio signals.

Audio engineers categorize audio signals into three

general categories: microphone, line and speaker levels.

Microphone-level signals are on the order of 1/1000th to 1/10th of a volt, and power is in the ballpark of less than one microwatt (one millionth of one watt). Because these signals are so tiny, they're the most susceptible to distortion.

Line-level signals are more hardy. They can usually be carried by coaxial cables in lengths of up to 25 feet with minimal hum pickup. Technically, line-level audio signals measure about one volt, and the power transferred between a line-level output (such as from a CD player) and a line-level input (such as the auxiliary input on a stereo amplifier or the audio inputs on a VCR or monitor/TV) is in the ballpark of a few milliwatts (thousandths of a watt).

Speaker-level signals are the strongest. They run upwards of 10 volts, with power ranging from about one watt up to hundreds of watts— enough to drive stereo speakers with room-filling sound. These signals are so strong that induced hum is rarely a problem. Speaker-level signals are so much more powerful than induced hum that you usually don't need coaxial cable; ordinary zip cord is commonly used to connect speakers to amplifiers.
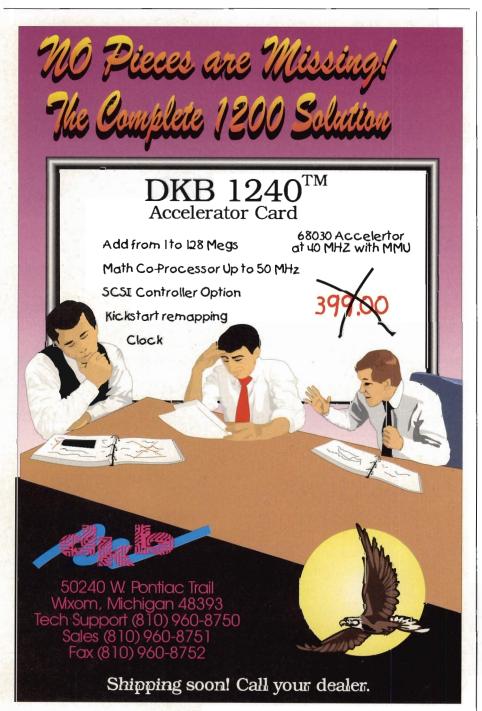
No More Hum

The best way to eliminate hum is to nip it at the bud. Never record audio containing a significant (audible) level of hum. Of course, the only way you'll detect hum, especially in its more subtle forms, is by listening with headphones to the recordings while you make them. When using a camcorder to record sound, always wear headphones. You wouldn't want to shoot pictures without looking at the viewfinder, would you?

The basic rules for minimizing hum are relatively simple.

1. Amplify the signal as soon as possible. Avoid long cable runs (more than a few feet) with microphone level signals. If a microphone level signal needs to travel more than 50 feet, try to get it amplified to line level prior to the cable run.

2. For microphone cable that runs longer than five feet, always use balanced microphones and cables with XLR (Cannon) connectors. These are the connectors with three pins surrounded by a metal shell. Note that for the best hum rejection, you'll need to hook into a balanced input, or use a transformer adaptor at the input jack of a camcorder with an unbalanced microphone input, as most consumer models have.

3. Always use coaxial cables for line-level signals. Note there are different qualities of coaxial shielding, generally measured in percentages. The best cables offer 98 to 99 percent shielding, meaning they're more impervious to electromagnetic induction.

4. Never run audio cables alongside AC power cables. Keep microphone cables at least three feet from AC power. If an audio cable must cross an AC power cable, keep the crossing perpendicular (at

a right angle) and don't run the cables along each other, even for a short distance.

5. Be aware that there are hidden AC power cables behind walls and underneath floors.

6. Avoid using AC power whenever possible—run equipment off batteries when you have the option.

7. Plug audio and video equipment into different AC branch circuits than halogen lights and heavy machinery.

8. Coils of wire tend to exacerbate hum problems and should be avoided. A long coil of AC power cord emits a much stronger field than a straight wire; likewise, a coiled audio line becomes more sensitive to magnetic fields in the vicinity of the coil.

Hum Cures and Postmortems

Suppose you take the solemn oath of hum prevention, as outlined above, from this point forward. What if you've already got an audio recording plagued by hum problems? Is there a cure? Yes, sometimes.

It may be technically possible to filter the hum from the recording and leave a decent audio track for your final mix.

But the hum must be audibly mixed in with the desired signal—not totally overpowering it. In other words, if you listen to your recorded audio and hear only hum—without even hearing a trace of the desired signal—your track is unsalvageable.

Hum can usually win most sound battles, especially if it's much stronger than the original signal. Such hum forces the camcorder's (or VCR's) automatic level control to attenuate (mute) the signal to bring it into the proper recording level range, thus minimizing the much-lower desired signal as well.

Assuming there's some desired signal left on the tape to salvage, you can attempt to filter out the hum. Note that even if you're totally successful at eliminating the hum, the end result will still probably have a lot more audible hiss than if there had not been any hum in the first place. The tape itself has inherent hiss. In recovering the relatively weak desired signal, you'll also be amplifying this hiss.

Equalizing Hum

There are two types of audio filters commonly available: graphic and parametric equalizers. The graphic variety offers components for many home audio systems, while the parametric equalizers are considered more of a professional item.

For eliminating hum, you're probably best off with a parametric equalizer. They're usually capable of creating a more severe decrease in hum and

able to focus in more precisely on the hum without affecting other pitches. (Assuming there's adjustable frequency, that is. Inexpensive mixing consoles may have fixed frequency tone controls that are of little use for eliminating hum.)
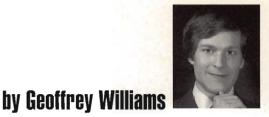
Your starting point for hum elimination is to feed the signal through an equalizer that's been set for maximum reduction (cut) at 60 Hz. On parametric EQs this may be as much as -24dB

CYBERSPACE

The Information Highway
Searching the Digital Road for Toaster Data

by Geoffrey Williams

You've heard the talk about the information superhighway and how the entire nation will be communicating digitally in the near future. For those of us with computers and modems, that lofty vision is already here. The amount of information that can be accessed digitally about the Toaster, LightWave and video topics in general is so vast you could spend every waking hour perusing it. This month, I'll clue you in to what this Internet information is all about, the utilities and ways to sort through the vast amount of information available to Toaster users, and cover some of the many digital newsletters and magazines available from a local BBS.

Surfing the Digital Wave

There is a lot of information out there in a variety of formats. In the download areas of a BBS are files such as press releases of new products, hints and tips and even regularly published digital magazines. They might

The QBlue off-line message reader sorts messages by subject, date, from, to and message number or by key words.

be standard text files or AmigaGuide documents, which you can identify by the extension .guide. AmigaGuide is the official hypertext format on the Amiga, and in order to read them, you'll need both the AmigaGuide.library and AmigaGuide, which should be in your c: directory. These can be downloaded from most systems. If you have Workbench 3.0, it uses MultiView instead to read AmigaGuide documents (and MultiView only works under Workbench 3.0). Since a lot of AmigaGuide documents use MultiView as the default hypertext reader, I made a copy of AmigaGuide in my c: directory and renamed it MultiView. So when an icon calls for MultiView, it actually winds up using AmigaGuide. This saves me from having to change the default tool in the icons.

The other type of information can be found in message sections, where you can read and write messages to others, either on your local BBS or through vast networks that let you communicate with people around the world. Every topic is available, from message sections specializing in LightWave, to general video information.

Finding a BBS

The first step is to find Amiga BBS systems that are local to you. Try calling the BBSs mentioned here. Chances are, they have the latest edition of Ed Dukeshire's monthly list of BBS systems that support the Amiga (the AmigaGuide version is created by Ron Glidden). Originating from the Amiga Asylum, an all-Amiga BBS at (508) 372-2258, the *Worldwide BBS List* is an invaluable resource if you are looking for BBSs in your area. The list tells you if the boards have access to networked messages, such as FidoNet or UseNet, which most likely gives you access to video or Toaster echoes. But it does not tell you if the board has Toaster or graphics support.

Echoes

My reference to a video echo is probably cryptic to a good percentage of you. Echoes are collections of public messages sent across the country (and in some cases the world). In the middle of the night, these messages are gathered together and sent from one computer to the next in a vast network that eventually gets the messages to all of the participating computer systems. These messages revolve around the topic of that particular message base, and there are thousands of different types, including echoes for video, Amiga video, Video Toaster, Amiga graphics, Amiga 3D and much more. In these messages you can discover a lot of questions being answered, general tips and advice and the inevitable rumors that must be taken with a grain of salt.

Your local BBS may include one or more of these national networks, but the message bases that board subscribes to are decided by the sysop (system operator) of that board. Most of them take requests to add message bases, though. The main networks are FidoNet and UseNet. FidoNet was started by Tom Jennings in 1984, and today there are more than 10,000 participating computers. UseNet was started by a couple of college students, and the different message bases are called news groups. UseNet now has millions of users every day, including some well-known Toaster professionals. For example, LightWave programmer Allen Hastings is at adh@well.sf.ca.us.

Conquering the Digital Wave

There may be as many as several hundred messages added overnight to a BBS, so reading and responding to the messages can be a daunting task—if you tried to do it while connected to the BBS. Most let you bundle the messages into a compressed file that you can then download into your computer. Typically, the messages

are compressed in an archive such as LZH, but when you decompress them you get a huge text file, including all of the areas you have chosen. This is quite difficult to browse through. Then you have to write down the message number you want to respond to, log back onto the BBS and manually respond on-line.

A better solution is to have the BBS compress the files using a message bundler. One of the most common formats for this is called a QWK file. Using a special program called an off-line message reader, you can sort through the messages and respond to them and later upload your responses to the BBS in compressed form.

The one I like the best is called Q-Blue (version 1.0) by Paul Kienitz. It has a very attractive user interface and supports the Bluewave and QWK formats. It lets you sort the messages by subject, date, from, to and message number, and you can search messages for key words. You can save an individual message to a file or print it out and load the word processor of your choice for writing responses. It even

and covers both computer industry and Amiga-specific news. It is published in AmigaGuide format and includes reviews, rumors and news from Portal and FidoNet.

I have seen a couple of publications, one on 3D in general, and the other dedicated to Amiga 3D, but since I can't verify if they are currently being published, you'll just have to keep an eye out. Plus, new publications continue to appear.

The Global Village

The Internet is a vast, complicated global information network. There are currently more than 40 countries connected, with Russia becoming a recent participant. More than 1,000 computers are added to the Internet each day, with some 25 million daily users. Based on current growth, it is estimated that by the year 2000 the Internet will connect more than one million networks servicing more than 100 million computers.

The Internet is amazing not just as a phenomenal technological achievement, but also as an accomplishment

of the Internet in clear simple English. Being in hypertext, it is easy to browse through and find the information you want.

How do you gain access to the Internet? You need to find a service that allows access to a participating computer. A text file called PDial by Peter Kominski has information on most of the services that can link you to the Internet. For a fee of $20 a month, you get unlimited access to the entire world, and in most cases it's a local call. Not a bad deal.

Of all the ways to telecommunicate, Internet is the most complicated, but also the most powerful. It lets you send electronic mail to other Internet users as well as BIX, CompuServe, Genie and other telecommunications subscribers. You can FTP (download binary programs, typically shareware) a vast number of programs from computers across the country through AmiNet, and access information on almost any subject imaginable. There are also mailing lists on a variety of topics that are sent to you via E-mail, including the popular LightWave mailing list with lots of LightWave information and the Video Toaster mailing list. You can be put on the LightWave mailing list by E-mailing this message: "Subscribe (your user ID) LightWave to this address: LightWave-request-@bobsbox.rent.com." You can be put on the Toaster mailing list by E-mailing this message: "Subscribe (your user ID) Toaster to this address: Toaster-request@bobsbox.rent.com." Services such as Internet are the communications vehicles of the future, and you can be a part of it today.

While on the subject of BBSs, I got a call from Don Smith to let me know about his LightWaved BBS. Located in the San Francisco Bay Area [(510) 228-0886], it offers nearly 400 objects, lots of textures and scene files and a section for LightWave tips and hints. In fact, Don tells me that the board's main emphasis is sharing information on how to get more out of LightWave, so it should prove to be a valuable resource.

On another note, I have received many requests from people to make LightWave objects available on disk. Frankly, there is just too much available, and perhaps this is one of the main reasons why a modem is a good

By the year 2000 the Internet will connect more than one million networks servicing more than 100 million computers.

keeps track of which message sections have been read, displaying whether you completely read, unread or partially read the section.

Digital Magazines

There are a number of regularly published magazines to be found on most BBS systems that support the Toaster and Amiga.

Genie is a commercial BBS, but they also publish a couple of digital publications. *ViewPort* is published monthly in the AmigaGuide hypertext format and is edited by Jim Meyer along with able assistance from old-time Amiga hands such as Peggy Herrington. It includes articles and news. The weekly *Starship Weekend News* provides a quick look at the week's Amiga happenings.

The weekly *Amiga Report Online Magazine* is edited by Robert Glover

at the social level. No one owns the Internet; it is a cooperative between all those involved. This cooperation extends beyond national boundaries involving numerous countries, and yet somehow, it works. (It almost gives you hope for humanity.)

Accessing the vast amount of information flowing through the Internet is not easy, and there is a learning curve. There are many good introductory books, and one I like is called *Navigating the Internet*, by Mark Gibbs and Richard Smith (SAMS Publishing, 1993, ISBN 0-672-30362-0). There are also some on-line files available through your local BBS that are quite useful. *The Big Dummy's Guide to the Internet* is in AmigaGuide format and published by the Electronic Frontier Foundation. It offers an excellent introduction to the many aspects

Mirror,

Profit at Your Beckoned Call

Mirror

by Allen Edmonds

Provided a man is not mad, he can be cured of every folly but vanity.
Jean Jacques Rousseau

Vanity doesn't limit itself by demographic, profession or economic class. It's neither virtue nor vice. Defined in classic literature as "the sixth insatiable sense," vanity is simple reality—a human characteristic as natural as joy and sadness.

As such, it can be harnessed, catered and sold—much like the corner grocer polishes and markets his reddest, juiciest apples to hungry passersby.

Do you know a corporate league basketball player? A recreation league quarterback? A Sunday afternoon third baseman? At some time or another all of them have probably pretended to be Joe Montana searching for an open receiver, Ken Griffey, Jr. crashing into the outfield wall or Charles Barkley burying an open jumper. That's the dream.

When the dream becomes reality, vanity steps in. When people pay to feed their vanities, somebody's found the right niche.

Vanity causes us to do more things against our inclination than reason does.
LaRouchefoucauld

In video production, niches can be difficult to find. Rarely does an independent producer strive to be the price leader, cranking out work in volume for slim margins. Most fancy themselves as specialists, customizing the work to trigger the emotions, needs and wants of the client or viewer.

That expertise and talent doesn't come cheap. Time, effort, dedication and, yes, equipment, each come with a price tag. The combination works for Steven Spielberg, who has found a way to collect a little from each of the millions. It can work for an expert in one field or another who can tap the mass market for buyers. But for the custom producer who specializes in preparing work for a particular client, profits can be tough to come by.

It becomes much easier, of course, if you can appeal to that sixth insatiable sense. If you can take what they see in their bathroom mirror every morning and put it on their television screen in favorable comparison to the likes of Joe Montana or Steffi Graf, you've found the key to the vanity niche.

For Ted Barszewski of the startup Post Video Effect firm in New York City, custom sports video has helped launch a new business. He and partner Dan Nessel contracted with a local corporate sports league to shoot and produce highlight films for football, basketball, softball and volleyball participants. The league offers the videos to players as part of the sign-up deal.

"We've found that with sports like football, people are very interested, and they're willing to pay—no doubt about it," Barszewski said. "Softball is similar, and basketball is decent, too. I think it comes down to an exposure thing. People are used to seeing those sports on TV, and

Mirror, Mirror

they like to associate themselves with [famous] players. When they see themselves performing on TV, they feel like they can."

Given the cost of shooting and editing time, the duplication expenses and overhead, a highlight video can run between $700 and $800 to produce, Barszewski said. "But if you're taping a lot of games, it could easily go up to more than $2,000." That's why sports video is still most

Post Video Effect makes the weekend warrior the star of his own high-light reel.

successful if the work is sold in bulk to the sponsoring organization, rather than to individuals.

But, he said, "we've had teams call up and ask for raw footage from the games we tape. We're able to sell that to them on request. We charge $25 for one game, and for a series of three games, we'll charge them $50."

For Gary Freedline, director of Video Keepsakes in Miami Beach, MTV's original *Basement Tapes* program served as a bridge between local musician and video entrepreneur. A musician himself, Freedline was raised as a video buff and grew up with the technology—beginning in the late '70s with the first Sony Betamax video deck and his father's prized $3,000 camera and tripod.

"He would take my brother and I and show us some moves with it," Freedline said. "We would try framing and zooming and anything else we could do."
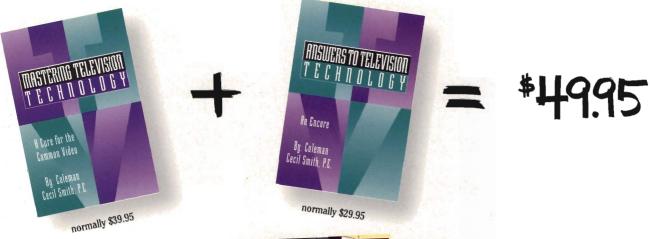
Shortly after taping a friend's bar mitzvah, Freedline and his brother opened their own company. "People didn't know what video was. They didn't have machines, so how were they going to play it back?" he explained. Freedline added that the first year was quite tough; their company was hired for only two jobs.

By the early '80s, though, the market was beginning to warm up. Their initial success came at a local Dunkin' Donuts, where the brothers produced a music video featuring a friend's band.

"It was just a crazy MTV-type video. We sent it in to *Basement Tapes*. We didn't win, but we got on the air," said Freedline. At that time, there was no real networking relationship between the music and video worlds, so Freedline began to develop one.

As time progressed, other opportunities began to unfold for Video Keepsakes at bodybuilding competitions, horse shows, weddings and parties. There was a market, he discovered, for video almost anywhere sports and entertainment were happening.

"We're known here in Miami Beach," Freedline said. "A lot of duping houses, when they're asked for production people, steer [clients] this way. For our party business, which is our weekend business, we've gotten friendly with the temples, synagogues, churches and other photographers."

Photo montages, a type of video photo album set to music, is another technique Freedline has found to feed the vanity trait. Though most people jokingly shy away when cameras pop out at family gatherings and parties, no one forgets to run to the drugstore when it's time to pick up the finished prints.

When Freedline shows up at the condominium association, the photo shop or through his door-to-door campaign handing out fliers and showing demo tapes of his montages, his company naturally gets at least a second look.

And once the work is seen, price is only a secondary issue.

"We did take out advertising in the *Yellow Pages*, and it just doesn't seem to work for this business," Freedline said. "People who are getting ready for their wedding will call just wanting to know how cheap we are. We aren't cheap, and we're not looking to do that kind of Uncle Henry production with anything we do. You have to let your customers and your work be your best salespeople."

His custom work has led to commercial business as well. From 30-second spots for cable TV to almost anything else, Freedline has found a way to produce video for people he may meet.

"It's difficult to put a preconceived idea into someone's head. With video, you can do practically anything. If you meet someone who has a bit of a photo itch, you can probably work something out with them," he said.

"The surprising thing about the parties I shoot is that probably 90 percent of my commercial business comes from meeting people at them. Everyone owns their own business now, and when I go to show them the video and they see how amazing it is, I ask them what they do. If they own a small business, I whip out my double reel of commercials, and I end up getting a lot of business."

We do not content ourselves with the life we have in ourselves; we desire to live an imaginary life in

Mirror, Mirror

the minds of others, and for this purpose, we endeavor to shine.
Pascal

The vanity button—the one that opens pocketbooks and turns an art form into a viable business—can't be pushed with a claptrap production, even if the purchaser is the star. Foresight, planning, equipment and talent must be dedicated to the work.

PVE'S network-quality video and graphics sell well.

Barszewski's selling point is quality—the player must appear to be starring in an ESPN *SportsCenter*-like production, or the ruse won't work.

"We use Hi8 cameras, prosumer models," he said. "One of the big things with filming sports is that we have to use equipment that will work well in low light. Gyms quite often aren't very well-lit, and with outdoor sports, you're shooting a lot of night games."

Graphics are critical to a professional sports production, and Barszewski said the company uses screens for standings, team names and scores.

"In some ways, we have to gear our presentation to however sophisticated the league's record-keeping system is. There are certain things you can do; the league we work with is pretty good, but you can't always depend on them to keep all the records. And there are some sports leagues we work with that only provide the standings. Those are the times you have to be somewhat creative."

Since it's not feasible to serve as both video producer and statistician, it is important to gauge the sophistication of the record keeping at the planning stage. In Barszewski's case, each basketball and volleyball video averages about 45 minutes, while softball and football season wrap-ups can stretch to 90 minutes.

Each tape consists mostly of season highlights, but Barszewski also includes a full recap of every championship series and game. "Those recaps can sometimes be 10 to 12 minutes long, so the narration must be planned as you go," he said.

Barszewski, who used to do his own narration, has since arranged local sports personalities to provide the voice-over.

"As we're editing each video, we log it so we know exactly what's happening at that time. And we write the

Vital Statistics

Name:
Gary Freedline

Company:
Video Keepsakes

Location:
Miami Beach

Previous Job:	Freelance video editing
Focus:	Party, industrial videos
Established:	Approximately 1989, full-time
Began Making Profit:	First year
Equipment:	Betacam SP cameras, Betacam A/B-roll and Toaster to edit

Vital Statistics

Name:	Ted Barszewski (right) and Dan Nessel (left)
Company:	Post Video Effect
Location:	New York City

Previous Job:	Began business out of college
Focus:	Corporate league sports, real estate marketing videos
Established:	1991
Began Making Profit:	1993
Equipment:	Hi8, prosumer shooting and editing equipment; Toaster

script as we go, refining it later on. Every time we show a new scene, we have a line for that scene, pacing it out throughout the video," he said. Buyout music is used to cover dead space, so the end product puts even the most discriminating fan/athlete into the big-time.

For Freedline, an early stint as a freelancer with ESPN served as an introduction to the world of true broadcast production, and he uses the experience today. With help from an ardent Toaster professional in the Miami area, Joel

Video Keepsakes is prospering due to high-quality work and referrals.

Tessler, he learned the intricacies of the Amiga system and the Toaster. As his business grew, Freedline steadily improved the sophistication of the equipment he uses.

"We started out using the best S-VHS camcorders we could get, like the Panasonic AG-450. Then, we moved on to the 455s. Now I'm using either Betacam SP or the JVC X2, which is a three-chip S-VHS camcorder," he said.

Freedline uses Betacam SP for A/B-roll editing and shows clients the finished work on S-VHS. In addition, he has devised his own system that permits him to preset edit in and out points, insert Toaster effects and walk away while the video auto-assembles. Returning three to four hours later, he said he could have a wedding video edited to his specifications.

Pampered vanity is a better thing perhaps than starved pride.
Joanna Baillie

As with any instance where the art community meets the business world, a satisfactory mix is difficult to achieve. It's easy to underestimate the amount of time it will take to make the production just right, and there is always a tendency to sell services short for fear of offending or losing a client.

Research and prior knowledge is critical. Barszewski and Freedline both said it is vital to make sure you know just how much of your time and expertise will be required for a project.

Both also agreed on the importance of doing much of the work themselves, especially at the beginning. While both use freelancers to shoot material at times for practical reasons, it can be difficult to communicate a creative philosophy to an outsider.

"We do all the work ourselves, except for some softball leagues where there are a lot of games going on at once.

Music Can Make Video, but Beware

Vanity videos and music just seem to go together. From cruising on a Saturday night with the car stereo blaring to dances, parties and weddings, all of our best memories seem to be linked to a favorite song.

CBS has made a connection with the song *One Shining Moment*, which is played annually with the network's video montage of highlights from the NCAA basketball tournament. Moments after the completion of the

national championship game, while excitement is still pulsing through the veins of a nation of fans, winners and losers, the song's familiar lyrics (*In one shining moment/you reach for the stars*) seem to weave seamlessly with beautifully shot images of the heartbroken and jubilant, all consumed with the type of emotion only associated with the big dance.

Be careful, though. There are a number of land mines associated with

using music with videos designed to market to the public. The principle is simple: If you intend to make money using an artist's work, that artist is going to have something to say about it. The resources of a major network are bound to differ significantly from those of an independent producer.

In fact, Barbara Zimmerman of BZ Rights in New York said, "Almost anyone who is doing weddings, graduations and that sort of thing is using

We do all the logging and editing of the tapes ourselves, though," Barszewski said.

"And it's very important not to underestimate how time-consuming it can be. Say you go to a couple of softball games. The game itself is an hour and a half. Then you have to log that, and it can take another hour and a half. So that's three hours right there, and you haven't done any editing, graphics or voice-overs. So before you make any kind of deal with a league, you really have to be careful and figure out the hours to see if it will be worthwhile."

Freedline agreed. After researching the hours involved, his company sets a price for clients and gives them the full package. He tries to reinforce the fact that it takes a full day in the field. "And with the editing, although you do want to try to edit something in one day, you don't slap it together quickly," he said.

Freedline also emphasized the importance of conducting the entire process himself.

"If I hire an editor, he's going to do it his way. He's going to miss some things, and since he didn't shoot it, he's not going to understand the way you want it edited, no matter how much you explain," he said.

For industrial shoots such as non-personal video, commercial and television work, most producers prefer not to charge their clients on an hourly basis.

"For a 30-second spot, we know we're going to put in about four to six hours of editing. And if there's going to be morphing or any kind of 3D animation involved, then we're going to charge a little more for that. For a company [logo] fly-in, for example, we'll put it together for about $200, and I'll prepare it prior to the edit session," Freedline said.

For his party business, Freedline hires freelancers as shooters, but only those with top-quality equipment and only if he's too busy.

Barszewski, whose Post Video Effect business is also involved in real estate, began with a shoestring budget and is now nearing the point of hiring interns.

And Freedline, who has made great strides since his company's inception, admits to a profit only when pressed.

"In this business, you're never making a profit. No matter what you bring in, you always have to have something new. That's the thing about video production. You really have to love what you're doing, if you're going to try to really be the best and do creative work," Freedline said.

"Money has to be kind of a secondary thing. You have to make sure you are making money, but that's not the only reason I'm in business. I don't like to take vacations, because this is my vacation. Business has been good, but I know a lot of guys out there who are struggling."

The key to staying out of that trap, he said, is to start slow and build yourself up gradually.

3D graphics and animation generate extra revenue.

"You have to get yourself known and begin to get referrals. Don't let things go out that you're not happy with, and by all means, don't give up your [regular] job. Not until you're built up to the point where you're literally filled up with work," Freedline said.

Another key, he said, is to get along with the entire community—including competitors.

"Don't step on people's toes and don't bad-mouth people. Just be concerned with the quality of your own work," he said. "There's always going to be someone better than you—and someone worse."

In other words, don't let your own vanity get in the way of a job well done. **VTU**

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

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music illegally. If they were to request music legally and do what they should, they couldn't possibly afford it."

There currently is simply no procedure for securing the rights to a wedding couple's four or five favorite records for use on a videotape for sale, she said.

"If you had five records, you would probably end up with $5,000 to $6,000 as your cost. And no one can possibly produce a wedding video and pay the music business that kind of money. There's just no channel for it," Zimmerman said.

ASCAP and BMI have designed what Zimmerman believes is a workable

plan for department stores, restaurants and other establishments that play music for the public air, in which the proprietors pay an annual fee for the rights to the music.

But with the exception of a few companies that market "buyout music," and the existence of "needle-drop" music (for which the rights are paid by the song), there are few options.

Ted Barszewski of Post Effect Video uses buyout music for his sports-highlight videos.

"We've tried videos with real music in the background, and it works great," he said. "But there's just no way you

could afford the rights to market your work like that."

Gary Freedline of Video Keepsakes, who uses the needle-drop music method, charges the client the fee, then handles the release forms.

"I run into a few problems with clients over that, because some will say that a competitor has all this music, and we just choose what we want and they use it. I have to handle them delicately because I don't want to accuse someone of copyright infringement," he said. "I just tell them that everyone has a favorite song, and I would have to be a music store to keep up with it all." **VTU**

From Script to Screen:

A Sky Full of Stars for Babylon 5

by Mojo

Babylon 5 Commander Jeffrey Sinclair's simple words from the show's pilot, "... and the sky was full of stars—every one of them an exploding ship," may sound like idle dialogue, but they ultimately led to the script for *And the Sky Full of Stars,* one of the more powerful installments of the science fiction series.

This highly anticipated episode features a flashback to the Battle of the Line, in which humanity itself was almost wiped out during a war with the alien Minbari race.

The script describes Sinclair's memory of watching his comrades and their ships lost in flaming tombs. He is left powerless to help and is the lone survivor.

At the start of the series, it is the most important event in the life of Jeffrey Sinclair and the most emotionally traumatic. The entire production staff of *Babylon 5* knew that portraying the Battle of the Line would be difficult.

It had to be a gripping, memorable sequence and although many people are involved with bringing a script to life, the special-effects team at Foundation Imaging was faced with the most difficult task: creating a large-scale space warfare scene on a limited television budget.

From Script to Screen:

Let's walk through the entire creative process, from story concept to post-production, to grasp the inner workings of episodic television.

Conception

Although *And the Sky Full of Stars* was shown as episode number eight, an early draft was written by co-executive producer J. Michael Straczynski long before the series began.

"It was the freshest in my mind," said Straczynski, when asked why *Sky* was written first. "In order to really portray the characters in the movie properly, I had to have the events of the Battle of the Line very much in my head."

A scene from the pilot when a Minbari assassin tells Sinclair he "has a hole in his mind," as well as a long, detailed remembrance of the battle, hinted that these events were well thought out for inclusion in future episodes.

This will come as no surprise to fans of the show, who have long been aware that *Babylon 5* has a five-year story arc already mapped out, with small pieces of the story revealed each week.

Sky delivers a large portion of the puzzle by explaining some details about what happened during the Battle of the Line and why Sinclair has a 24-hour gap in his memory.

Even though Straczynski had envisioned the battle scene years ago, the final version bears little resemblance to his original concept.

"I thought we would be closer to the earth and see it in the shots and have it as more of a background—I certainly envisioned a lot more ships and more of a frenzy of activity. That said, however, I am not in any way disappointed with what we got," he said.

What he got was the vision of special-effects director Ron Thornton, who actually had no idea what the battle would look like upon reading the early draft of *Sky* more than a year ago.

"At the time we really didn't have any designs for fighters and we didn't know what anything was going to look like, so I couldn't really picture it," Thornton remembered.

"When we first got into [the series] we really had no idea how we were going to get around this whole weightless space battle and make it interesting."

However, a space battle had to be created for the program's first episode, *Midnight on the Firing Line*, so Thornton and his staff were challenged by having to develop a true-to-life galactic dogfight.

What were the results of their efforts?

Ships moved and fought using real

Layout shot of the battle shot pictured below.

© 1994 FOUNDATION IMAGING

Notice how the angles and lighting make the ships seem ominous.

© PTN CONSORTIUM, INC. 1994

astro-navigational physics, and the entire scene proved very exciting.

Upon seeing the finished sequence, Thornton had his first spark of inspiration for the Battle of the Line, although it

was in a much different direction than one might imagine.

"[The Battle of the Line] is so important to the character of Sinclair, it had to be different, and it had to be more disturbing. It couldn't be a sort of shoot-em-up, *Star Wars*-type space battle," Thornton said.

He discussed with Straczynski his ideas of how the flashback should be portrayed. "I wanted a slow-motion feel," he explained, "that really graphic, guys-in-the-trenches feel rather than the Nintendo-type space battle."

Did he go for the concept?

"Show me," was all Straczynski said.

During the next few days, Thornton created a quick test of what he envisioned the Battle of the Line to look like—a slow-motion, closeup view of a Starfury (the Earth Alliance space fighter) slowly banking towards the camera, narrowly avoiding a nearby explosion.

The test effort captured the essence of his concept and sold the idea to the show's creator. "I think it does hit the correct emotional chords," said Straczynski, referring to the flashback as it was realized.

"You can either take the stance of going for big effects or striking the emotions in the core of the scene ... It focused in on the one character [Sinclair] and what he was going through, which is probably better in the long run than seeing one more large-scale battle scene," Straczynski said.

Having decided upon a way to tell the story, Thornton and his Foundation crew had to figure out how they were going to portray an interstellar fight scene—complete with alien ships, explosions, laser-like energy weapons and computer-generated pilots. In addition, the scene was shot in a closeup camera angle and slow motion.

Pre-production

Hiding is a common practice in special effects. If a model isn't up to snuff or has a flaw, you simply avoid closeups or have it fly past the camera so quickly that no one will notice the imperfections.

However, the design for the Battle of the Line was a special-effects nightmare, since the closeup, slow-motion concept meant that everything had to be of high-enough quality for close scrutiny. This meant existing models had to be detailed and fine-tuned, as well as new models created with stricter standards than usual.

Using a pre-3.0 version of LightWave's Modeler, Thornton designed and built the most important new models: the Minbari war cruiser and fighter.

"It was something I had been thinking about for a long time," said the veteran craftsman of the final design. "We had done something like it in the pilot with the Vorlon ship: that was the organic look but very beautiful.

"I wanted something that had a bit of butterfly in it and had some resemblance to the Minbari structure—like the bone on Delenn's head. I also wanted it to have a verticality, like a sunfish—towering rather than being a broad destroyer.

"It's more graceful that way, I think, and it sort of sums up the Minbari. They have to be graceful yet threatening at the same time," he said.

Thornton also recalled deciding on the color scheme for the Minbari ships. "Blue is supposedly synonymous with the spiritual side of things—it just seemed to make sense. It's not an angry color. Red is a danger color; green is a sort of camouflage color, very militaristic; grey is also militaristic, but blue just

Demolition Made Easy

Some of the most spectacular effects in the *Babylon 5* episode *And the Sky Full of Stars* are the up-close and personal demolitions of the Earth Alliance fighters. The person responsible for these sequences was Foundation Imaging's Mark Kochinski.
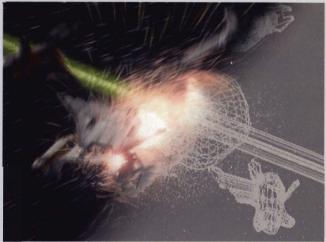
"Nobody else wanted to deal with it," he explained, referring to the task of blowing up the fighters. "Explosions were kind of complicated, but I was naive enough to look forward to it, because it was a great opportunity to show off a little bit," he joked. "Of course, it turned out to be 10 times more complicated than I thought it was going to be."

Kochinski was somewhat prepared for the role by his contribution to *Midnight on the Firing Line*, in which he developed an explosion effect. "That seemed to convince everybody that I was the ideal person to handle the explosions on *Sky*," he said.

His first step was to take the existing model of the Starfury and slice it into several, jagged-edged pieces in Modeler with Boolean functions. He would then save each piece as a separate object and reassemble them into a cohesive fighter in Layout. When rendered, it looked like a normal fighter, until he began to move the sections apart; done quickly enough, it would appear to be the flying debris of an exploding fighter.

He admits that a lot of trial and error occurred before things started coming together. "One of the advantages of working in 3D [over traditional special effects] is that you can redo things over and over until you get it right," he explained. "And one of the advantages of explosions is that you've got so much stuff going on at once that a lot of things can cover up your elements."

The 3D pyrotechnician is referring to the multitude of particles, explosion objects and lens flares used to

Behind the scenes of Kochinski's explosion effect.

cover up some of his shortcuts in creating the effect. An explosion object, consisting of a semitransparent sphere mapped with sequential images of fire, was the base element of the fireball. On top of that were several lens flares to make the sphere seem to glow and many layers of particles to simulate flying sparks.

All these elements were pieced together and parented to a single null object and saved in its own "fireball" scene. After creating a shot of a fighter breaking apart, Kochinski would simply load all the fireball elements from that scene using the Load from Scene feature in LightWave's Object menu. He could then parent the fireball's null object to his exploding fighter without having to re-create the chaotic fireball for every shot.

"It took about a week to work everything out," he recalls. "But after that each scene came together fairly quickly."

Although very happy with the final result, Kochinski admits that it could probably be done better if the episode was made today.

"While that explosion sequence worked well for its time, we're already way past it in developing more effective methods. The problem with working on a show like this is that we always want to top ourselves!"

doesn't fit anything," he explained.

Initial tests of the cruiser showed that the lighting angles were too dark. Without the benefit of the usual blue nebula seen in much of *Babylon 5* (the battle takes place in our solar system), the ships could not be silhouetted against a bright backdrop.

Thornton wanted to keep the lighting on the cruisers dramatic, so rather than increase the light, he added self-illuminated windows to the model that helped define the shape of the craft without actually seeing any more of it.

The Starfury model needed the most detail, since the script called for numerous closeups of the fighters being destroyed. A high-resolution version was created for these shots, while less memory-intensive versions were used for background ships. This was necessary to help balance rendering times, since the detailed version took longer to generate.

Foundation Imaging Roll Call

It is well-known that Foundation Imaging was founded by Ron Thornton, visual effects supervisor, Paul Beigle-Bryant, systems manager, and producer Shannon Casey.

However, locked in a dungeon and strapped to a couple of Video Toasters are the unsung heroes of the growing company.

Mark Kochinski, animator/technical director: Mark has worked in computer animation for seven years and film/video production for 10. In addition to his contributions to *Viper* and *Babylon 5*, he has worked on features with the company Fantasy II and games shows with Pasetta Productions.

John Teska, animator/technical director: For the past five years, John had been leading a dual life. By the light of day, he has created monsters and miniatures on such films as *Demolition Man*, *Death Becomes Her*, *Alien 3* and *Wolf*. By night, he was mastering computer animation on his Amiga. After completing several freelance projects, a call to Foundation Imaging led to a position working on *Babylon 5*.

Steve Pugh, systems engineer/programmer: Steve has been program-

ming for the last five years and involved in special effects for almost 10. He currently holds more power at Foundation than should be allowed. He oversees the rendering and delivery of special-effects shots, is the author of Foundation Imaging's render engine-controlling software and writes timesaving utilities. He also maintains the data network.

Tim Wilcox, animator/technical director: For the past year Tim has been working at Foundation Imaging on *Babylon 5* and also contributed to the pilot episode of *Viper*. Previously,

he spent several years making industrial and commercial videos as well as working on numerous computer animation projects. He got started in 3D in 1988 when he bought an Amiga 2000 and tackled the daunting task of learning Sculpt 3D/4D.

Mojo, animator/technical director/Elvis archivist: Mojo's work helped win an Emmy award for the *Babylon 5* pilot, yet he humbly refused a statuette of his own. He is amazed that he actually gets a paycheck for animating. Apparently, so is everyone else.

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John Teska, animator/technical director

Mark Kochinski, animator/technical director

Tim Wilcox, animator/technical director

Steve Pugh, systems engineer/programmer

Mojo, animator/technical director

The initial test also revealed an unforeseen problem: an empty cockpit. Although the fighter itself looked great in closeup, it could clearly be seen that there was no pilot inside the computer-generated model. It was decided that a 3D pilot was needed, and Foundation animator Tim Wilcox took on the project.

Over a two-week period, he constructed a fully articulated, spacesuited fighter pilot, complete with image maps of a face and the actual spacesuit used by the actors. The fighter pilot was animated via hierarchical movement with bones controlling finer actions.

Other details, including a seat, were also added to the cockpit, and several red lights were used to illuminate the miniature model-within-a-model.

It may be hard to see the detail inserted into the cockpit, but the consensus was that viewers would readily notice its absence (the opening sequence of the episode *Soul Hunter* episode demonstrates this).

However, if *Sky* is watched carefully, you can see the miniature pilot throw his arms in front of his face moments before Sinclair attempted to ram the Minbari warship.

This level of detail and care is unusual for a weekly television series, often due to the hectic pace of TV production. *Babylon 5* insiders consider this to be the first time in television history that a weekly, low-budget program has been able to tell a story so visually exciting with so few restrictions.

This is due, in part, to the cost-effective, digital special effects produced with the Toaster and other personal computers. Programs such as *Star Trek*, which have always used traditional and expensive special-effects techniques, have been very limited in how they tell stories.

Quite often, space-faring action is described by characters rather than shown, something *Babylon 5*'s creator wants to avoid.

Thanks to Foundation, Straczynski thinks he has more freedom in his storytelling than most science fiction shows of the past.

"Knowing what we can do with the computer graphics, we have broadened our sense of what we can and can't do with the show," mused the *Babylon 5* creator.

"Before, I would often call and ask if we could or couldn't do a shot. Now I

feel that almost whatever we can describe can be realized one way or the other, so in that respect [the computer animation] has had a very freeing effect on the show," Straczynski said.

Assisting the effects team is a more flexible schedule. Straczynski has generally alternated effects-heavy stories with less complicated ones, giving the Foundation crew more time to work on the detail that helped make *And the Sky Full of Stars* such a memorable episode.

Production

The first major shot of the Battle of the Line involved the unveiling of the Minbari warship. It eclipsed the sun and began to engulf the Earth Alliance fleet in a blaze of destruction.

Even though it consisted of just a few lines in the script, this shot took several days to orchestrate. It started simply enough, just a Minbari cruiser slowly moving from right to left, gradually passing in front of a lens flare designated as the sun. That was the first problem.

Since the cruiser was moving in front of the sun, it meant the light came from behind the ship, making the camera's view quite dark.

I had no choice but to do what TV people call cheating. I set the light source to show only as a lens flare and not cast any actual light.

I then created a new light source placed at an extreme angle to the warship, but not directly behind it.

This revealed a rim light along the edge of the cruiser that, although technically wrong, looked right. Fortunately, we had established a light-blue fill light (since the battle takes place near the earth), which helped illuminate the rest of the object.

Then things got tough. After all, it was a battle scene, and I wanted to fill the frame with as much action as I could. I couldn't get *Return of the Jedi* out of my head and began the long, arduous task of peppering the scene with Minbari energy beams and zipping, exploding Starfuries.

The Minbari death ray was loaded and parented to the cruiser so they would move together. I then positioned the head of the beam on top of one of the many gun ports located around the ship, so it would appear to be emanating from that spot.

I figured the beam should be on-screen for about 15 frames, so I set a dissolve envelope to make it visible for only one half-second at a time.

For added impact, I also placed a light at the head of the gun port that would flash on with a lens flare for three frames when the gun fired. This was further enhanced by giving the light intensity an envelope synchronous with the flare.

A sharp falloff on this light meant it would only illuminate the area around the gun port, and everything was timed with the envelope for the beam dissolve.

Of course, these steps needed to be repeated for every instance of the beam firing and for every beam that was in this shot. That would be five beams and about 20 shots or a lot of tedious work—but the end results were worth it. Without the constant, rapidly firing beams, the sequence would have lost a lot of its kinetic value.

Next were the exploding ships. I had several fighters either already in frame or zooming into frame throughout the shot.

The *Babylon 5* mythology is very clear that the Earth Alliance never stood a chance. I wanted to exemplify this by having the big, hulking Minbari cruiser effortlessly wipe out everything that came near it—like swatting flies.

My favorite moment in this shot took place when the Starfury that had rocketed up from off-screen swoops towards the cruiser (as if on an attack run) and just as it got close was destroyed.

For a brief moment, light from the explosion bathed the lower part of the warship, revealing a little more of what the ship looked like. The distant explosion was created through a combination of single-point polygons (commonly referred to as particles) and a lens flare. Two sets of particles had their size set to zero and were parented to the fighter along with a light (with an intensity enveloped to zero). These elements traveled with the fighter until the previously mentioned beam dissolved in and intersected with the ship, simulating a hit.

At this moment, the particles (approximately 30 frames worth) were expanded

to a size (about three or four times the diameter of the fighter), and the light intensity with its lens flare was enveloped up quickly and brought down slowly (to look as if the explosion was dying down). The particles were also dissolved slowly to give the appearance of dying sparks. The motions and envelopes for each set of particles were then offset by about five frames, simulating a multilevel explosion.

During the explosion, while the lens flare was at its brightest, the fighter object was dissolved out over a few frames. This light also needed a proper falloff, so as only to illuminate part of the cruiser; otherwise, it would have bathed the entire ship with light and lessened the sense of scale.

Numerous keyframes and envelopes were needed to choreograph each explosion, and three of them occur in this particular scene. Several test animations were also run during the course of this shot and usually limited to a small area of the screen to check the timing of an explosion.

Keep in mind that this complicated process is more or less the day-to-day life of a special-effects animator. As of this writing, a two-part episode of *Babylon 5* is being produced that calls for more than 100 special-effects scenes like this one.

However complicated creating shots like this may be, it is still only an intermediary step. Afterward, the shots are rendered and delivered to the production company.

Post-production

Part of Thornton's original vision of the Battle of the Line was that it be in slow motion, accentuating the drama and visually establishing that it was a flashback.

However, instead of normal slow motion, he felt the look of step-printing would be more appropriate. This process shows every other frame twice, giving a pseudo slow-motion, dreamy quality to the film without actually slowing down the action. It wasn't actually slow motion at all, but gave the film a soft strobe that triggers a similar emotional reaction. Step printing actually made life easier for Foundation Imaging, since it meant that only every other frame needed to be rendered. Each frame was then recorded on video twice, so it would play back at a normal, 30-frame-per-second rate.
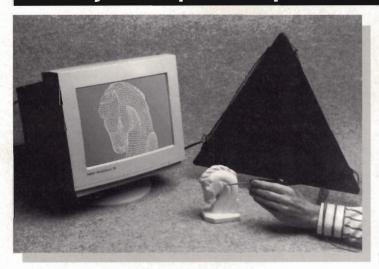
It was established at early production meetings that the live action footage of the fighter pilots would also be step printed, assuring that it would match the look of the special effects. However, this did not happen and was the cause of some confusion within the production. Some felt that the switch between normal and step-printed scenes was too jarring, while others seemed less affected by the difference.

"They couldn't come up with a live-action effect that [worked well visually when] intercut with our footage," explained Thornton. "Initially they were going to step print it, but apparently it didn't look good."

Thornton confessed that the sequence would have worked better for him had the live action been altered, although Straczynski offered insight as to why it was left untreated. "When you're looking at small objects on the screen," he explains, "a step print gives it a very slight, jarring look

which is very nice and dreamlike."

He felt that while this effect worked well, it was problematic for the live action. "When you go in close on someone and their face fills the frame, you suddenly get these very weird smears that are very noticeable and very distracting from the action. It got in the way of the story," he said.

After the episode was finished, Straczynski reasoned a fair justification for the discrepancy between scenes. "[The step-printed footage] is Sinclair's conception of what was happening around him because, in reality, he couldn't actually see it. His point of view is inside the ship. When you are inside the fighter, seeing what he actually saw... it is sharper. So it worked to our advantage by making clear what is his point of view and what is his recollection," he explained.

Problems like this are not uncommon in the hectic world of television production. *And the Sky Full of Stars*, as well as the entire first season of *Babylon 5*, has had its share of challenges, all of which were met and learned from. The entire crew, as well as the cast, now look forward to drawing upon these experiences

to make future episodes of *Babylon 5* even more exciting.

Coming up Next

Although Straczynski makes the final decisions, it is undeniably a team effort which thrives on input from every member of the staff. From producers to production assistants, *Babylon 5* could not exist without the contributions of so many talented people.

Thornton clearly enjoys this opportunity to help shape this fictional future. Over the course of *Babylon 5*'s five-year story, there are visions of his own that he would like to create for the series.

"I want to see some worlds. I want to see something different," contemplates the futurist. "Like a working asteroid mining and smelting complex. Say you were going to take advantage of a planet's mineral resources—how would you dig up all that stuff and get it into space? That would be a great hardware design problem to show all these huge, earth-moving pieces of equipment. It would sum up the general philosophy we've had about the earth technology in *Babylon 5*—it looks less like it would be
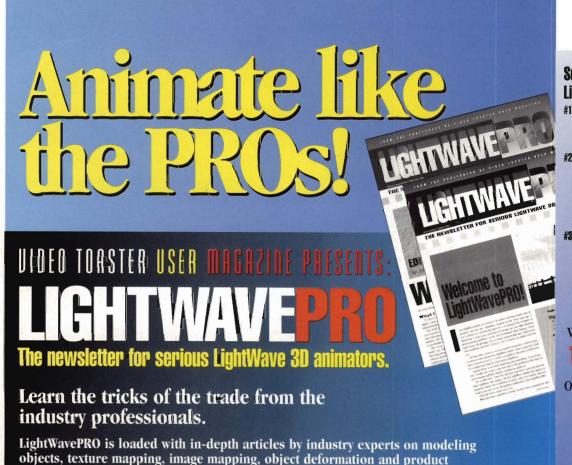
made by Lockheed and more like it would be made by Caterpillar—stuff that looks like it really works."

Although there will definitely be a lot more special-effects hardware in *Babylon 5*, Straczynski stressed that his show will always rely on storytelling to convey his epic.

"The extent to which the effects serve the story is, in my mind, unparalleled and I am very happy with that," he states. "But it is not an effects-driven show, nor will it ever be an effects-driven show—it is a story-driven show," he said.

Regardless of what drives *Babylon 5*, if the current combination of stories and special effects are any indication of what is in store for the future, viewers can certainly count on a terrific ride.

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Mojo's life was already chronicled in this story, and he refuses to divulge any more information. However, he would like readers to know that he has yet to receive any fan mail. Lee Stranahan may be the World's Smartest Toaster Guy, but is he the cutest? Let's all show Mojo we care by dropping him a postcard in care of VTU today!

Looking down the

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Information Highway
What It Means for You

by Rick Lehtinen

M y first action after receiving this reporting assignment was to gather and research all the unique material I could find about the much-touted National Information Infrastructure (a Washington, D.C. term for the information highway). Then I attempted to form it into a coherent, informative package.

Then it hit me: It's not as important to write about what the information highway *is* as write about what it *means*. Facts would be easy to organize yet boring to read (after all, many *VTU* readers are cyberspace pioneers). Instead, I want to pack a heavier punch and offer an analysis on how the information highway can affect the desktop videographer.

I hope this article will help Video Toaster users answer two main questions. First, will the information highway run us over? Second, if the response to the first question is no, can the info highway help us make more money? However, before we reach our final destination, it's important to make a few observations—some of them hopeful, some caustic.

Observation 1:
The potential for the information highway is huge.

Review of the Numbers

To see how important the information highway is, we will compare its market share to that of the existing video marketplace. The information highway has the potential to turn over the video production industry. Growing as predicted, it could create a demand for certain forms of video production that is 100 times larger than any market in operation today. I'm not saying that it's time to buy something you can't afford in anticipation of your new monthly income, but the time is ripe to explore new opportunities. Let's get started by estimating this Total Available Market (TAM), and then predict what it means for us.

Broadcast

One of the market segments that pays the most for video production today is broadcasting. There are about 1,300 full-power VHF and UHF TV stations in the United States. Being generous, let's throw in 700 low-power TV stations (LPTV), which are essentially translator stations that have been given the right to run independent programming. That's 2,000 TV outlets.

Production companies feed programming to these outlets. Most of this programming is commercial advertising, although there may be some locally produced full-length programming as well. It used to be a rule of thumb that for every three TV stations in a city, you could find two production houses. With the advent of the Video Toaster and other low-cost production tools, that number has increased. Let's say that today there are three production outlets for every two TV stations. That makes 5,000 outlets for all of broadcast TV and production combined.

Cable

Next comes cable. Cable systems pass roughly 90 percent of the television homes in America, although less than 70 percent of homes actually subscribe. Not all cable systems do a great job of living up to their requirement of providing community access programming (a la Wayne and Garth's *Wayne's World* show). The recent Cable Act, however, requires cable systems to allocate in equal thirds their capacity to carry local TV outlets, local-access programming and whatever else they want (likely premium services such as movie channels and pay-per-view sporting events). In other words, a 36-channel cable company that may have once grudgingly sacrificed a single channel to the community will now have to cough up 12. A 112-channel system will have to deliver 38. The information highway's touted 500-channel system will have to make more than 150 channels available for local access. This means a mountain of new programming is needed.

However, before you imagine cable operators ringing your phone off the wall, realize that the cable industry may soon be in an uncomfortable position. By the time these words are printed, a direct satellite TV service should be transmitting from a huge facility just outside of Denver. If all goes as planned, subscribers could watch via satellite most of what the cable companies currently offer. They will be able to cherry pick, however, meaning that if they want the Financial News Network, they subscribe to it without dragging along and paying for 12 other choices. This is a competitive pressure that will force cable systems to realign their rates. The information highway may bring more demand for programming, but there may be less revenue to fund it.

Let's chalk up 10,000 cable outlets, although there may not be as much revenue in the future.

Corporate and Industrial Video

Many video users are found in the business and industrial sectors. For our purposes, we will include medical, educational and governmental (including military) video. These outlets are harder to define, because you can't just look for red and white antennas. You can get an approximate size of this market, however, by looking at the circu-

lation of several magazines that serve it, and then guesstimating the average size of a shop. I'll save you the math; add 35,000 corporate and industrial sites.

Desktop Video

The installed base of Video Toasters, and two other desktop video systems that work with real video, not just computer facsimiles of video, are the next largest step on the ladder. Rounding up slightly, there are approximately 80,000 Toaster users, 10,000 Fast Electronic's Video Machine users and 1,000 Matrox Studio Users. It is possible that some facilities have more than one system, which lowers the number. There are also conventional desktop solutions which raise it. To keep it easy, let's round up to 100,000.

For Old TAM's Sake

That's the whole picture. Everybody who ever opened up a dealership, displayed in a booth at NAB or Image World, or printed up business cards or advertised in a magazine is chasing after someone in this marketplace. Let's see what we've got so far:

Broadcast	5,000
Cable	10,000
Corporate and Industrial	35,000
Desktop Video	100,000
TOTAL	150,000

Now, some of these are program consumers, and others are program producers. We can mix apples and oranges in this manner if we realize that everybody in this figure is either a potential customer, or else they are a facility that has a customer. Either way it gives us a handle, if not a completely scientific understanding, of the market.

New TAMs Are a Comin'

Now let's assume that video communications will be at least part of the traffic on the information highway. How big is this highway? As computers are the main tool for motoring right now, let's start by figuring out how many computers are available. Intel estimates there are about 160 million 80X86 PCs worldwide, with new sales expected to bump that total up to 220 million by the end of next year. This number is augmented by those computers with 68040 processors. Together, this puts computers in the same realm as telephones and TVs. Industry sources show Apple to have been the leading shipper last year, followed closely by IBM and then the big name clones (Leading Edge, Compaq, Dell, etc.).

Very few of these computers are coal-burning relics. United Press International reports that revenues from the sales of personal computers in 1993 were up 16.2 percent to $66.3 billion. This means that nearly 25 percent of the world's computers were sold last year and roughly 20 percent the previous year. They are certainly powerful enough to travel the information highway. Also, sales should remain brisk.

The Intel Pentium chip is now in mass production, allowing prices to drop on the 486, while at the same time, the Pentium's successor, P6, has been announced. Further, the PowerPC chip is coming along, and the

promise is that it will allow large-scale upgrades of existing machinery.

Let's say that about half the desktop computers are in the United States. If only 10 percent of these computer owners are interested in video applications, that's 15 million computers. We earlier estimated that the market for all forms of video production was about 150,000 facilities. Note that this is just one percent of the coming market.

We can now go on to estimate the rate at which these new users will come on-line. This can help tailor our service to meet their needs.

On-line Services

The information highway will reach consumers first via the on-line services. The United States is currently served by five on-line services, which have a total subscriber base of nearly five million. Writing in the Washington-based *Information and Interactive Services Report* newsletter, analyst Gary Arlen reports that the number of subscribers to on-line services jumped 31 percent last year to 4.5 million. More than 700,000 new users signed up during the holiday season alone. If the pace continues, the on-line industry could double within 18 months and end up as a $1 billion business.

At this point, only two services, Prodigy and Compuserve, boast more than a million members. Genie and America Online both have about 500,000 subscribers each and Delphi comes in at about 100,000.

The industry has undergone some growing pains. On Feb. 1, America Online president and chief executive officer Steve Case sent an open letter to his subscribers in which he apologized that "hypergrowth" from 300,000 to 600,000 subscribers in just a few months meant that some users had to attempt access more than once before connecting. Case went on to explain that new software was being installed to ease the problem.

Prodigy seized the opportunity to call a telephone press conference, in which they talked up their "intelligent network" (they use servers in more than 200 cities, and nine out of 10 requests are handled locally), and indicated that their network had gracefully handled similar growth over a similar time span. Prodigy spokespersons expressed confidence that their network could handle up to 40 million users.

Delphi, a distant sun known primarily as an Internet-gateway-for-hire, recently got a shot in the arm. The company was purchased by Rupert Murdoch's massive information conglomerate, The News Corporation. Now part of a $10 billion media company, Delphi has nearly endless opportunities to develop new information products.

In fact, throughout the industry, deals are beginning to fly, including several linkages between such giants as Microsoft and Nippon Telephone and Telegraph, on-line providers and cable networks. Already, some analysts have discussed the possibility of video delivery via on-line services before year's end.

Internet

Despite the double-digit growth offered by commercial on-line services, the Internet still serves four times more subscribers and is poised to grow exponentially. This loosely affiliated network of networks began under the auspices of the Department of Defense and has continued under the National Science Foundation. It began as a means of linking universities and other research centers and has since taken on the characteristics of a bale of hay wire stretching from coast to coast.

Views about the Internet are mixed. Some users claim to relish the freedom of information exchange and the ability to find tidbits of information and stimulating forums in unlikely places. Others feel it is an unruly mess that is undocumented and disorganized.

Within the past two years, the Internet has exploded. While gaining access has been difficult for some, gradually more corporations started showing up, along with access-for-hire service providers such as Delphi. Recently, it has become possible for almost any group to sign on (there is even talk about a @NewTek facility). Some analysts now bet that all on-line services will support full Internet access within 18 months. Most services support Internet messaging already.

As more people sign on, there is some doubt that the unstructured backbone can handle the load. This is, in fact, one of the reasons behind the need to nationalize the network.

Education

One of the goals of the information highway is to provide educational facilities with easy on-ramps. Although education networks, such as the Mind Extension University and California's Coast Community College, have existed for years, there is an apparent trend for even conventional educational facilities to use networked computers.

San Francisco's California Polytechnic State University (Cal Poly), for instance, recently announced plans for its "virtual university." The system will provide students with on-demand access to full-motion video lectures, demonstrations and self-paced tutorials, electronic mail and conferencing. It will also give faculty access to multimedia components, such as video clips and sound bites, to develop the network courseware.

According to university administrators, the new system is not designed to replace faculty and traditional classrooms. Instead, the system will add another dimension—"education-on-demand"—capable of delivering real-time, two-way interactive video and multimedia course materials to students at home, in the workplace or on campus.

Dartmouth College already has a sophisticated network for higher education. All freshmen are required to purchase Macintosh computers, and all campus buildings, dorms included, are on the network. The student center even has drops in the lounge areas so students can sign in from laptops.

Dartmouth students can turn in assignments by E-mail and access library references. More than 70,000 messages travel daily over Blitzmail, as the network is known. That society needs to become acclimated to such hi-tech information systems was evidenced early this year, when an anonymous hacker impersonated a department secretary and canceled a midterm exam. Nearly one-half of the class failed to show up.

Educational use of the information highway represents mainstream acceptance. This is important to *VTU* readers, because it represents an important initial market for video productions.

Games

Just as some folks are today confused by computers in general, there will likely be several technologies coming soon which will cause even the cyber-experienced to balk. (Biotechnology, for instance, is said to offer some network possibilities that are both wondrous and chilling.) At first glance, such techno-fear might seem to damper the growth of information-highway applications. However, game vendors are aware that the key to the future lies with the citizens of the future. (The power of gaming as a means of breaking down fear-of-technology is apparent to any parent whose kids own a video game.)

The info explosion, in fact, includes video games. Newer toys will be network compatible. Atari, for instance, will soon roll out a futuristic game machine that uses 64-bit technology, called the Jaguar ($200). Jaguar features 24-bit color and can create 3D graphics in real time, including shading and texture mapping. The audio system is 16-bit stereo, and includes life-like voice processing. There is also an available double-speed CD drive peripheral.

The Jaguar has a built-in on-ramp to the information highway. An expansion facility is provided that will someday couple the unit into telephone or cable systems.

Entertainment

For those who are not easily electrified by games, there is a second path—entertainment. Philips Media—a company that supplies Compact Disc-Interactive (CD-I), has plans to distribute 30 films from the Metro-Goldwyn-Mayer Inc. and United Artists libraries on CD-I. Sanctuary Woods Multimedia in Vancouver, B.C., says it has signed a licensing and development deal for CD-ROM comedy software with the Comedy Central cable network.

According to the Software Publishers Association, more than $100 million worth of CD-ROM software was sold in 1993. About 50 percent of that consisted of games and home-education software. Many of the playback devices required for this media are capable of driving the information highway.

A Call to Action

By its sheer mass, the information highway will have an accelerating effect on the desktop video production industry. The trick to finding the high road will be two fold. First, anticipate the needs of definable segments of users. This is not hard if you review where the growth will be, and then put yourself in the situation of the average user.

For instance, video clip acquisition and playback will be a large portion of the information highway traffic. Video clip production requires desktop video production in three ways:

1. Someone needs to shoot the footage.
2. Someone needs to edit the footage.
3. Someone needs to provide "continuity"; that is, jazzy

openings and closings, which follow the theme of the presenting organization.

This type of production is not necessarily as satisfying as producing videos that right wrongs, expose perils and make the world a better place, but the market could be huge.

Observation 2:

One of the primary tools for gathering images for the information highway is the camcorder. One of the primary tools for editing these images will be the VCR.

Of the 97 million households in the United States, 21 percent have camcorders. One in five people on the street record and play back images on videotape. Twenty million Americans can't be wrong; it is hard to find any other handheld video acquisition device that can record as high a quality an image, for as long a time and for as low a price as a camcorder.

Unfortunately, not everybody shoots straight. Some scenes turn out worse than others and need to be shot again. Also, related events may occur on different days. This means that no matter how carefully one shoots, recorded images on tape may end up out of sequence and need to be edited.

There are 92 million VCRs in the United States. (Ninety-one percent of households have one.) VCRs are selling at a rate of about 12 million per year. This means, unlike computers, that most of the decks in service are not the latest generation. If we assume that to successfully edit video requires better-than-average equipment, then the odds are good that there is a pent-up demand for editing videotapes.

Enter the Competition

While the computer industry seems fully aware of the potential impact of the information highway, the video industry is like the poor guy who was thinking of adding a banquet room on his diner just off Route 66. There are short-term profits in the manufacturing of equipment for video production, but the winners over the long haul may be the computer folks and their telecommunications cousins.

One solution is to adjust to the times and tailor your work to meet the opportunities the information highway will bring. Another is to take heart and know that for the next little while video equipment will offer superior images at better prices than anything most computer systems can do. And when the time is right, you will still be able to join the computer crowd with equipment du jour, armed with image acquisition phase skills (computerese for being a good shooter), and a good eye for editing.

A final note: Nowhere here have I advocated fighting against the times, denying that there will ever be an information highway, or pined for the good old days when video was king and broadcast engineers were princes. To plant our heads in the sand in this manner would be the first step in burying ourselves.

Most of the preceding information was presented to demonstrate the potential impact, by its sheer mass, of the information highway on the video production marketplace. Next month we will consider some of the other ramifications of life along this highway.

Digital Sound Track and Sequel

by R. Shamms Mortier

G reat video is a combination of sight and sound, so it's no surprise that Amiga producers pay as much attention to audio as they do video. These media of communication have an inextricable bond similar to the relationship of rhythm to jazz: It's difficult to sustain one without the other.

In this article we'll take a look at two very different sound programs for the Amiga. One offers a fast and sharp way to write sound effects to tape, while the other is a comprehensive music program that can accommodate a composer's wildest dreams.

Digital Sound Track from Visual Inspirations

Creating an entire list of utilities for the Amiga, Visual Inspirations' Digital Sound Track (DST) is the company's entry into the Amiga audio spectrum. DST ($99.95) is best described as a model of simplicity, from its screen design (which should take about 20 minutes to master) to its load/save attributes (which will add about another two minutes to the learning curve). However, that very simplicity hides a wealth of useful productivity options beneath the interface's surface, all waiting to pop up and meet your needs.

The Interface Screen

There are two main parts to DST, each with its own section of the interface screen. The top of the screen displays 10 rectangular areas, each dedicated to one of the 10 Amiga keyboard function keys. Ten separate samples (whose length is dependent only on your RAM capacity) are loaded into each of these boxes representing macros for the associated function keys. The associated sample's waveform appears in the box as well. From there, by depressing the actual function equivalent on the keyboard or by placing the cursor and clicking the left mouse button over one of the screen areas, you trigger the sound loaded into that area.

Since the Amiga is able to play four sounds at the same time through its double stereo sound channels, you can create an audio landscape with sound levels layered upon each other simultaneously (as long as the samples are 130K or smaller).

Below each sample area are two readouts. One is a volume readout (0 to 64) changed by a slider beneath each panel. The second is a timing readout that tells exactly (in hours, minutes, seconds and frames) how long in SMPTE the sample is. Sounds can be looped by simply pressing the Shift key at the same time a sample is activated. DST plays sampled sounds and also SoundTracker/NoiseTracker/ProTracker MOD files. It's quite an auditory experience to hear a crow sound its call into infinity. Clicking once on the sample box ends the loop.

Samples larger than 130K (such as entire song tracks) can be faded out in four to five seconds by using the space bar. The 10 sound boxes are arranged consecutively in stereo pairs, fostering stereo recording too.

But that's only the half of it. The bottom portion of the screen is dedicated to making the audio aspects of DST slave the videotape and associated visuals. If you have the new OpalVision modules or own an IV24 from GVP, you can select a picture display of the running tape in a reserved window at the bottom left. Obviously, this makes the neck craning usually associated with insert-sound editing a thing of the past.
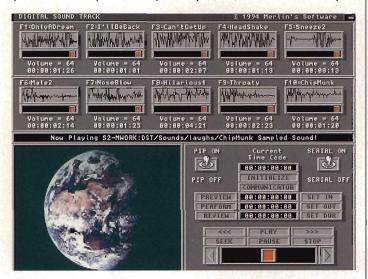
Two associated scripts are written to the S directory on your system's hard drive that allow DST to communicate with either board. This PIP display is turned on and off by a toggle switch graphic at the bottom right of the DST screen. Those working with non-Opal or IV24 systems can still use a monitor attached to the Out line of their recorders.

DST is fully capable of interfacing with your recorder through the serial port. Another toggle switch initiates the connection, allowing you to have complete control over serial-connected decks right from the software. The Initialize command strings that interface with different decks are referenced in the manual. I use the Sanyo GVR-S950, which is one of the decks supported by the software.

You can even bypass the DST software and talk directly to the deck using the Communicator button. Standard commands like Fast Forward, Rewind, Play, Pause and Stop are supported.

More esoteric commands suited to specific decks can also be typed in. Seek allows you to type in the SMPTE reference code to access any point on the deck, and the machine's jog shuttle can be controlled from the screen (forward or reverse) as well.

To top it all off, you can set the insert In, Out and (when necessary) Duration points. You would only use Duration if you were unsure of where to set the Out point in an edit. A separate Preview module allows practice edits before committing to record, while Perform sets the record process in motion. Review performs an actual playback. A Config file in your S directory can always be updated, so the next time you

Digital Sound Track's interface display is simple but very elegant, showing a picture-in-picture frame from a video while at the same time keeping a loaded bank of 10 separate sound samples ready for instant insertion into the soundtrack.

use DST the same sound files are automatically loaded in case your edit session is long or interrupted.
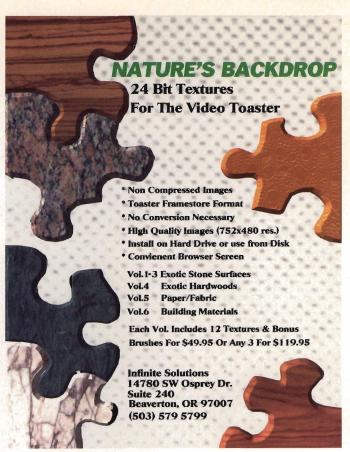
DST's manual is only a dozen pages, but no more is needed. A separate disk loaded with sampled sounds accompanies the program. This is one of the strongest utilities around for inserting sound over video, especially if you're a Sanyo GVR-S950 owner.

I used the software on an Amiga 4000 with a Retina board, so I needed an extra monitor to test edits. Flawless operation ensued. If I had my wish, the software would support Retina PIP as well and perhaps the newer video cards. It would also be great if it addressed other file formats (MIDI, SMUS, etc.) in the future, maybe with a direct link to the One-Stop-Music-Shop synthesizer from Blue Ribbon SoundWorks.

My recommendation is to buy this package now if you have needs that include audio insert editing or if you have the OpalVision extra modules or the IV24.

Sequel from Diemer Development

With Sequel software, a MIDI controller and interface, you can compose and record whatever your sound modules support. I use a KAT Mallet system, Yamaha MIDI sax and an old Casio 1000 as a "dumb" controller. These devices allow me to control the texture and rhythmic

components of the sound going into the software.

The sound modules these units control varies and includes at various times the One-Stop-Music-Shop, a Yamaha TG-33 synthesizer, a Midia Musicbox and a Roland Sound Canvass. These units produce the sound going out to the recorder. Sequel ($89.95) can sit comfortably right in the middle of these hardware elements, shaping the harmonic and structural elements of the music being composed.

Having also sampled more than 500 8svx Amiga sounds in the past few years, I always look for software that allows me to mix Amiga-sampled sounds with those accessible only through MIDI.

The MIDI Connection
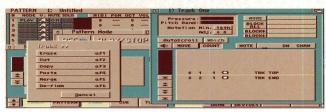
To help you realize that the signals from your controller are being read into the system, Sequel adds a small blinker that notes the signals passage through both In and Out. Anything played through the MIDI connection can be instantly recorded into the system and passed on to the Output

The Sequel interface has many useful facets.

device which holds the actual sampled sounds. From there, the signals are passed to the recorder when you're ready.

Sequel records sound signals to any one of 32 tracks which has an associated Tempo Map. These 32 tracks and the Tempo Map make up a pattern, which are then sewn together to form songs.

At any point, you may preview your creations by pressing the Play button in the Sequel Transport window. If

you don't like a track, erasing it and rerecording is simple and intuitive. Tracks can consist of several merged takes, so redoing sections adds to the final polished result. Sequel offers the opportunity to choose the sounds desired on your sound module, allowing you to test them throughout the process.

MIDI instruments and sound modules have 16 separate sound channels which produce unique instrumental voices, and all can be preselected and tweaked with this software. A large counting clock marks your location as far as measure and beat are concerned.

If you desire another color mode on-screen, Sequel allows you to choose from a series of palettes. This is not a peripheral decision; for many composers, it is a necessity. Creating a comfortable on-screen environment is as necessary as selecting a good chair.

Sequel's 32 separate tracks are listed in the Track window, and can be accessed with the mouse or intuitive keyboard equivalents. Any track can

play Amiga (internal samples) and MIDI voices or both. Each notes' velocity (how hard it is struck upon playing) is shown on a separate Velocity Meter. Separate Octave positions can be chosen as well, leading to further options for the music's texture.

The Amiga Connection

Sequel makes it as simple to access Amiga sounds as it does MIDI parameters. Amiga samples can be panned left, right or made to play in stereo with settings that address both channels in a mixed range from two to 128. Octave and volume levels are also available for the Amiga samples.

The Sequel interface has control panels along the right side of the screen that have power over MIDI Out/In; it even has a way to turn both off in case you want to run another program that needs the serial port, though this is not advised. In case a note refuses to be quiet, you can select the All Notes Off option, graphically recognizable by its scratched out note icon design.

Sequel also easily handles difficult tasks—like keyboard splits. A split makes your controller act like two inputs at once, the lower half triggering one MIDI or Amiga parameter and the upper half another. This feat is accomplished in Sequel with far less pain and confusion than I have seen in other software.

More Magic

By deftly setting MIDI delays, you can create effects such as echoes, chorus and reverbs. Every arcane attribute of your MIDI wishes can be addressed by Sequel, from Pitch Bends to Note Pressure settings to sending System Exclusive data. This is no surface program, but rather a deep and well-designed piece of software.

Recording can be Linear, Looped (where each pass can provide opportunities to change what is played) and Layered (my favorite). In layering, you can thicken the recording with each pass of a segment, winding up with very complex and beautiful results. Sequel can be synced to external time sources as well, making recording to video a snap.

Standard Notation

Most software in this class opts to give you only standard notation (DMusic) or some variation of graphic/numeric notation (MusicX). Here, the Notation List shows both numeric data and standard note equivalents. This is an attribute I find extremely useful, especially when editing a track.

In addition, Sequel incorporates a special Draw mode that allows you to graphically design embellishments. You can even grab the shape of any loaded Amiga sample and reconfigure its sound.

The Final Analysis

I am not a stranger to Diemer Development, having used and written about their Casio interface software some years ago. It is obvious that Diemer has studied the competition well, and this package has taken several years to develop. All of that, however, would evoke no sympathy if the package fell short of expectations. It doesn't.

My main reason for enjoying Sequel is it simplifies the most difficult tasks in a quicker fashion that its competition. It has all the bells and whistles and then some, and yet none of that complicates its use and easy learning curve.

I recommend it to professionals who desire building soundtracks from their unique compositions, and also to the novice who wants to be seduced gently into the world of MIDI and Amiga sound. At some point in the future it would be nice to see this software sport a high-resolution interface, but the present design is completely functional.

VTU
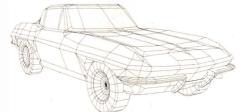
EDITORIAL EVALUATION		
Circle number on Reader Service Card		
I found this article:		
Very Useful	Useful	Not Useful
Circle 034	Circle 035	Circle 036

LightWave Steps Part II
Build Your 3D Skills

by Victor & Geetha Ramamoorthy

As a LightWave novice, it's easy to be intimidated by this powerful 3D animation program. However, there are some basic steps that can be followed to gently ease your way into understanding and working with LightWave.

Steps one through three were presented in the May issue of *Video Toaster User*. This month, we present the final three fundamentals: surfaces, lights and LightWave's numerous parameters.

Step 4: Scratching the Surface
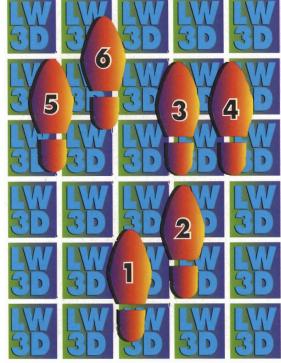
Though the geometry of an object is important, it is the surfaces that create the illusion of a physical object. A surface is a stretched skin between points of an object, and also serves as an abstraction.

The interaction between lights and a surface is a problem well studied in the past—and in the present—but there is a long way to go for photorealism. Creating realistic surfaces is serious business.

Any object with a surface that has microscopic undulations—micro facets—affects incident light in strange ways. Separate parts of the light get reflected on a surface, absorbed and transmitted. Some surfaces are shiny, and some are dull with an even glow. Modeling all these variations is far from trivial. LightWave approaches this problem by parameterizing different visual appearances in terms of eight controllable parameters and seven texture maps (Figure 5).

Since creating a synthetic surface model is tough, a surface image is captured by a camera and stretched over the object as a surface. This image—a clothed surface, in technical lingo—is said to be texture mapped. The texture maps can be procedural, algorithmic or a projection map. Depending on the way the image is projected, there are several ways to stretch an image over an object.

But texture or projection mapping is not precisely positionable in LightWave, and you do not have controls to align a polygon to a specific part of the texture image.

As shown in Figure 6, there are five different projection maps and eight different procedural maps. They are all helpful tools and work predictably, which makes the creative process a lot easier.

Step 5: Switching the Lights

The final item of importance in creating a good scene is lights. We use lights every minute of our lives, yet they are not easily understood.

A light source behaves differently with distance, fog and surfaces. They create diffuse as well as sharp shadows. Sometimes they travel straight, and other times they bend around corners. They diffract and shower a rainbow to the viewer. Not all these properties can be modeled precisely.

LightWave offers a good, but limited choice of controls when it comes to creating a synthetic light source (Figure 7). A light can be a point, spot or distant light. A distant light sends a parallel beam of light rays, while the other two types issue non-parallel beams of rays. Almost all the global aspects of a light source can be controlled. Lights can be shadow mapped for quick rendering without ray tracing.

You can also view through a light to make sure that it is being directed at the right spot of the object in the desired manner. The lens flare option is the one that catches attention immediately.

Step 6: Pushing the Envelope

LightWave is a synthetic graphic system that is dynamically controlled by numerous parameters. Most of these are normalized to take values between 0 and 100 percent. Since an animation consists of painting a sequence of frames, you may want to vary all these parameters as you go from one frame to another.

Since the parameter variations are smooth most of the time, it is worthwhile to create keys only at the valleys and peaks where you want to change the parameters abruptly. This is the idea behind the keyframe animation technique. The values

between the keys are interpolated with spline functions. This idea and the parameters that can be keyed in this fashion are illustrated in Figure 8. You need to input only a few keys, and the system completes the rest of the data.

Objects, bones, camera and lights are also stored in the keyframe format. There is a motion editor to fine-tune the positions of any of the above four categories.

LightWave also supports scene scripting commands through an ARexx port. (ARexx is an interprocess control language that comes along with the Amiga 4000 computer.) With ARexx, you can load scenes, objects and make complex data-dependent animations. They are great for creating data visualization animations.
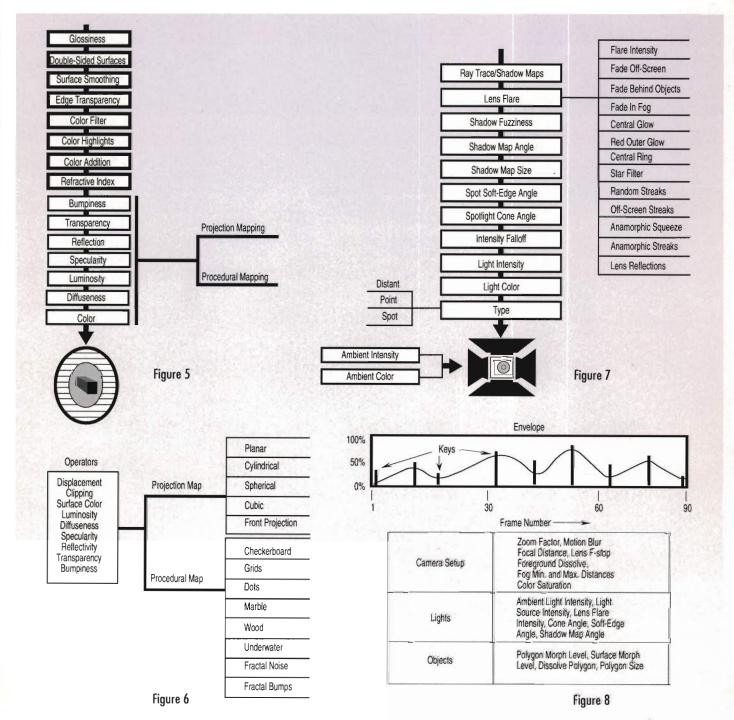
Following these six steps should provide a basic foundation from which you can build your LightWave knowledge and skills. Explore the program and experiment. Hands-on effort can't hurt; it can only help.

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 walkthroughs.

Figure 5

Figure 7

Figure 6

Figure 8

CYBERSPACE

investment. The Supra 14.4 fax modem and the U.S. Robotics 14.4 Sportster fax modem can both be purchased for under $200, are very fast, and give you fax capability with additional software. Log onto the different BBS numbers you'll find in this column and download their file listings. The next time you need an object, look through your file listings, and when you find what's needed, get back on the BBS and download it. It's advisable to let them store the objects for you, as there are literally gigabytes of objects available. I can also recommend the Syndesis 3D-ROM if you have a CD-ROM player. It is well-organized, and most of the objects are very good quality.

Follow-up

In my March 1994 column, I wrote about animation utilities and left out one of the best—MainActor by German programmer Markus Moenig. It offers multiformat conversion through load and save modules (it can load and save Anim 5,7, 8 FLC and FLI animation formats and load DL, PCX and GIF), has full Anim editing, Picasso II and Retina support, and lots of great batch-conversion capabilities. (It uses Art Department Professional and other image processors through its ARexx implementation.) Previous versions had no save feature, and it is my policy not to write about crippled software. The version I just received (1.21), however, now has the save feature fully implemented. It's a great shareware program and worth the effort to hunt down, as it is well-written and of definite use to those doing animation.

VTU

For the curious, short of time or currently modemless, I've placed everything I've talked about this month (including AmigaGuide, The Big Dummy's Guide to the Internet, PDial and the latest copies of the digital publications) on a disk, which you can have by sending $5 to: Geoffrey Williams, Digital Information Disk, 1833 Verdugo Vista Dr., Glendale, CA 91208. You can also get a copy of MainActor from me for the same price, as it takes up an entire disk. You can always drop me a line through Internet at GWilliamskajrc.

SOUND REASONING

of cut, while on graphic EQs it may only be -12dB.

If that does the trick, try reducing the amount of reduction; instead of -24dB, try -18dB, -12 dB or -6dB. The less reduction used the better, because when you cut 60Hz you're probably also eliminating some desired bass frequencies in the original signal. This is especially true for music recordings.

If the hum has a buzzy quality, then eliminating 60Hz probably just removes a portion of the problem. When hum overloads an audio system, it creates clipping (a situation where the wave reaches a point of saturation, and the electrical signal can go no higher). As a result of this change in wave shape, harmonic frequencies are created. These are multiples of the original frequency: 120Hz (2x), 180Hz (3x), 240Hz (4x), 300Hz (5x), etc.

Filtering out the hum artifacts may require filtering all of these multiples, as well as the fundamental 60Hz pitch. If you have limited filtering capabilities available, note that the odd harmonics are often stronger than the even ones; if you've only got two filters, and one is already tuned to 60Hz, you might get better results setting the second to 180Hz (3x), rather than 120Hz (2x).

Finally, a basic rule of EQ control is to accentuate the good and de-emphasize the bad. Besides eliminating objectionable hum, you should also try to find the dominant pitch in the desired signal (such as someone's voice) and set your equalizer to boost this pitch. This helps to improve the overall signal-to-noise ratio.

As you gain experience with the hum demon, you should be performing such fix-up operations with less frequency. Your recordings should be hum-free in the first place. When they're not, having some decent audio EQ gear on hand never hurts.

VTU

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

TOASTER GALLERY

▲ Sergio Parada ▶

A senior at Comstock High School in Kalamazoo, Mich., Parada created *Gazebos* (right) with an Amiga 2500, an '040 accelerator and 16MB of RAM. The image took about 15 minutes to render and used about 10,000 polygons. *Altar* (above) includes 20 objects and nearly 20,000 polygons. Parada can be reached at (616) 388-3298.

▲ Alan Chan

Glamour Shots was designed as part of a project for a national store chain specializing in high-fashion photography. The image, which features 40,000 polygons, was created on a dual-system Toaster 4000 and Toaster 3.1 and rendered in about 14 hours. Chan is the graphics/animation design director for Vision Video Systems, based in Norman, Okla. He can reached at (405) 447-0021.

William R. Keller ▼

In 24-bit RGB format, *A Room with a View* uses more than 6,000 polygons and was rendered in nearly four hours. It was completed with an Amiga 4000, an '040 accelerator and 18MB of RAM. Keller is the proprietor of V.I.P. Video Productions in Bethlehem, Pa. He can be contacted at (215) 867-9793.

lowel

VIP (V-light, i-light, Pro-light) VIDEO LIGHTING SYSTEM

Lowel's ViP system of high-output, low-wattage lights takes full advantage of today's video cameras to help make high-quality, low-budget shooting a reality. Designed specifically for the video industry, they are capable of 55 to 500 watts of power, can be powered AC or DC, camera or stand mountable. They are all convection cooled and some have adjustable light beam. They are the winners of the Gold Medal SMPTE Award and the AMPAS Technical Achievement Award.

V-light
Efficient enough to light a small room yet small enough to fit in a large pocket, the V-light can be used as a broad, key light, back light or fill light (with umbrella or gel.)
- Extreme wide-angle multi-use halogen source
- 500 watt. AC powered light
- Can mount on stand, clamps, boom, wall, window or door-top.

i-light
The tiny, battery powered i-light provides essential fill light, eye-light, high-lights, and contrast control in news and documentary shooting without overwhelming available light.
- Multi-use halogen source
- 55 or 100 watt, DC powered light
- DC power can be 12 or 14 volts.
- Includes cigarette lighter connector or optional 4-pin and 5-pin XLR connectors

Pro-light
The tiny-versatile Pro-light can be used as a low-level key or accent light, fill light (with diffusion), backlight or background light.
- Multi-use halogen focusing source
- 125 and 250 watt AC powered light or 100 watt at 12 volts, 200 watt at 30 volt DC powered light
- Optional light controls include expandable barndoors, scrims, diffuser, dichroic filter, snoot and umbrella, gel-frame and flags.
- Optional cigarette, 4-pin and 5-pin XLR connectors.

Canon L2

HI-8 CAMCORDER WITH VL MOUNT FOR INTERCHANGEABLE LENSES, RC TIME CODE AND DIGITAL EFFECT FOR UNLIMITED CREATIVE FREEDOM.

- 1/2" CCD with 410,000 pixels delivers over 450 lines of horizontal resolution. VL Mount System allows use of a full range of interchangeable lenses from extra wide angle to super telephoto plus, optional EOS-VL adapter allows mounting of over 65 Canon EOS 35mm Autofocus lenses.
- Records RC Time Code while shooting and can also "stripe" RC Time Code to tapes already recorded on other equipment. With RC Time Code the L2 can be connected to an edit controller with RC Time Code capability for frame accurate editing.
- Advanced encoding functions mean the L2 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. Also has 8-blade iris for precision exposure control.
- Provides stunning AFM stereo with the choice of auto or manual level control. To match the audio with video the L2 has a high performance stereo/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 to make it a highly sophisticated edit deck. Includes a full-function shuttle dial allowing easy selection of a range of forward and reverse playback speeds for swift, precise scene location.
- Automatic exposure plus manual control lets you lock the aperture at any setting from fully stopped down to fully open.
- Variety of digital effects. Add an extra dimension to your productions with digital image manipulation and striking transitions.
- **Close-up** — instantly doubles the magnification of the lens, giving you a 30:1 zoom
- **Slow shutter** — four slow shutter speeds allow recording in light levels as low as 0.5 lex 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 picture leaving sound recording 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.

NRG

CAMPAK Power Packs

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

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

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

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

PERPETUAL POWER BELT SERIES

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

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

970 Power-MAX
Same features as 880 Power-Pro + Belt *Plus*–
- Highest capacity quick-charge capable 12 Volt 14-AMP sintered nicad power pack (removable).
- Rugged high-grade, black leather belt case; chassis assembly with dual 3-pin XLR inputs for pack interchange without shutdown.
- Belt with cellpack weighs a comfortable 7.5 lbs.
- Includes Power-MAX belt and power chassis, 14-amp cell pack in 12V or 13.2 volt configuration, model 600 overnight charger, comprehensive owner's manual. Fits waist size 29"-44".
- Also available in 13.2-Volt 14-amp version. The 13.2-Volt version offers 15-20% longer runtimes because industrial VCRs shut off at higher voltage levels. By not shutting off the Power-MAX is allowed to fully discharge, thus the longer running time.

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

650-III Fast Charger
When power can't wait! The 650-III Quick Charger provides a safe, full recharge in under 2 hours and up to 70% charge in as little as 45 minutes. Charge one pack while working with another. A custom system microprocessor chip samples hundreds of pack parameters continuously to assure the fastest charge possible with no loss of cell life. When charge is complete, the charger switches to condition mode and indicates amount of power replaced. And for world travelers, the 650-III includes 110-120V/220-240V voltage selection.

VERSALITE PRO
Professional AC/DC On-Camera Light

The Versalite is a high efficiency AC/DC light at an affordable price. Proportioned for mid- to full-size camcorders, the Versalite Pro integrates many features into a package well-suited to the serious videographer.
- AC/DC capability in unmatched bulb wattage ranges (20W, 35W, 50W, 75W, 100W DC, and 150W, 250W 300W AC) and patterns (flood, medium flood, spot).
- Front housing snaps open for instant bulb exchange.
- All-metal construction for years of use.
- Unique dispersion grid eliminates hot spots.
- Dichroic-coated bulbs assure accurate color.
- Includes 150W 120V AC lamp, 50W 12V DC lamp, clear dispersion grid, AC power cord, and DC cigarette lighter converter.

VARI-LITE PRO
Professional DC On-Camera Light

The revolutionary new NRG Vari-Lite Pro combines the ruggedness, light efficiency and versatility of NRG's best selling Versalight Pro (DC only though) with a sophisticated electronic light management system. Thanks to on-board control IC's using NRG's Light-Gate technology, light intensity can be infinitely adjusted by the user within a range of 10% to 100% of the lamp's rated power. Now instantly adjust light output to exactly meet changing light requirements. Best of all, the Vari-Light Pro virtually eliminates color shift and dramatically conserves precious battery power by using only the power required for the selected light level.
- Accomodates bulbs from 20W to 100W DC.
- Prismatic dispersion grid provides smooth even light ouput and reduced glare without changing light intensity.
- Sturdy all-metal click tilt mounting bracket with ratchet action. Eliminates shake under action shooting conditions.
- Optional barn doors enhance light control capabilities.
- Front retainer assembly pops off for instant bulb access without the bother of screws.
- Rugged milled aluminum light head disperses heat and provides years of service under adverse conditions.

POWER STATION SERIES

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

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

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

POWER STATION-2 SERIES

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

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

SENNHEISER
MKE-300 Short Shotgun

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

SAMSON
MR-1 Wireless System

- The MR-1 micro receiver is a professional VHF wireless receiver measuring less than 4" long and 2" wide
- FCC licensed in 14 channels from 174 MHz to 213 MHz.
- Truly switchable balanced mic level (600 ohms) to unbalanced (-10 dBm) output.
- dbx noise reduction to simultaneously increase dynamic range and eliminate noise.
- Receiver squelch, level & headphone level output controls.
- Can be powered by a 9V battery for 10 hours.
- SH-2 hand-held transmitter can be used with mic elements like Shure SM 58 dynamic mic or Audio Technica Pro 4.
- ST-2 (L) body pack transmitter can be used with leading lavalier mics like Sony ECM-144 or Audio Technica 831.

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

Hand-Held Systems
- SH-2/PR4 Audio Technica Dynamic mic element & MR-1 Receiver **367.50**
- SH-2/58 Shure SM58 Dynamic mic element & MR-1 Receiver **434.95**
- SH-2/85 Shure SM-85 condenser mic element & MR-1 Receiver **592.50**

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

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

Sony ECM-144	......507.95	Sony ECM-44	......544.50
Sony ECM-55	......653.50	Sony ECM-77	......724.95
Sennheiser MKE-2			747.95

MACKIE

MicroSeries 1202
Ultra-compact 12 channel audio mixer featuring the same specs and performance as the proven CR-1604. In less than 1 sq. ft. of work space it provides 4 low-noise/high headroom mic inputs with +48V phantom power, 4 balanced, mono inputs, 4 stereo inputs, 2 AUX sends per channel, 2 stereo effects returns, 4 channel access inserts, tape in/out, 2 band EQ, headphone/monitor w-level control, 12 LED peak meter display, sealed potentiometers, rugged steel construction and built-in power supply.

CR-1604
Sixteen-channel audio mixer designed to deliver exceptional performance in a wide range of situations, including studio recording, live recording, live music PA systems, broadcasting studios, and high quality installed systems. Exclusive mix amp technology delivers 2X more headroom than ordinary mixers, along with the lowest distortion and highest possible S/N ratio. Convertible design allows physical format to be changed between tabletop, picks-to-top and rack mount with jack and rotated 90° to back. Rack mount brackets included.

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**The Amiga Video
Graphic Society**
Roger L. Elowitz
32 Duncan Dr.
Morganville, NJ 07751-1649
(908) 536-4786
Meets on the second Friday
of the month, 7:30 p.m.

**Pittsburgh Commodore
Group No. 346**
Robert W. Peach
P.O. Box 16126
Pittsburgh, PA 15242
BBS: (412) 396-5483
Meets on the third Sunday of
each month at Duquesne
University's Mellon Hall
(except July and August).

Amuse
151 First Ave.,Ste. 182
New York, NY 10003
(212) 460-8067
Fax (212) 290-6747
BBS: (718) 539-3338
Meets on the first Tuesday of
the month at:
NYU Main Building
32 Waverly Pl., 8 p.m.

**Fine Art Productions
User Group Society
Network**
Richie Suraci
Fine Art Production
67 Maple St.
Newburgh, NY 12550
Voice/Fax (914) 561-5866
Call for information.

**MicroWave
User Group**
Art Baldwin
3670 Delaware Ave.
Buffalo, NY 14217
(716) 873-1856
BBS: (716) 873-9262
Meets on the first Wednesday
of the month 7-9 p.m.

Suffolk Video Club
Attn: William Pinto
15 Columbus Ave.
Brentwood, NY 11717-2506
(516) 273-4876
Meets on the second and
fourth Thursday of the
month (except July and
August).

**Toasterholics
Anonymous**
Armato's Pro Video
Chris Hendrick
6716 Myrtle Ave.
Glendale, NY 11385

(718) 628-6800
Meets on the second
Thursday of the month,
7 p.m.

LightWave User Group
System Eyes Computer Store
650 Amherst St.
Nashua, NH 03063
(603) 889-1234
Meets on the second Tuesday
of the month, 7 p.m.

South

Vision VT Users Group
Vision Commuications
Interactive
Sam Young
4000 Piedmont Pkwy.,
Ste. 131 High Point, NC
27265 (910) 841-6988
Meets every six to eight
weeks for five hours on
Saturday mornings.

VA Toaster Forum
Tidewater (Norfolk, Virginia
Beach, Hampton)
George Triolet
902 Tabb Lakes Dr.
Yorktown, VA 23693
(804) 867-9056
Meets the first and third
Wednesdays of the month
7 p.m.

**WV Video Toaster
Users Group**
Destiny Images
Jamie Cope
P.O. Box 4631
Charleston, WV 25364
(304) 925-4741
Meets on the second Tuesday
of the month at Computers
Plus in S. Charleston, 7 p.m.

**A-TUG Border States
Amiga Group**
Micro-Tronix
1614 Towson Ave.
Fort Smith, AR 72901
(501) 782-4048
Meets on the second
Saturday of the month,
9 a.m.

**Arkansas Toaster
Users Group**
David Settlemoir
AG&FC Video Productions
2 Natural Resources Dr.
Little Rock, AR 72205
(501) 223-6352
BBS: (501) 223-2516
Meets on the second
Thursday of the month,
6 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) 574-2469
Call for information.

Midwest

**Channel Z Toaster
User Forum**
Brian Plante
492 Sheridan Rd.
Evanston, IL 60202
(708) 332-1710

DMAAUG
Des Moines Amiga 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 Video Systems
Daniel Ablan
3250 S. Harlem Ave.
Riverside, IL 60546
(708) 442-0009
Fax (708) 442-5290

**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

Video and Graphics SIG
Charles Meier
P.O. Box 811
Bridgeton, MO 63044
(314) 739-5181
Meets last Wednesday of the
month. Call for details.

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
Dahlia St., Denver, 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
Fax (818) 552-5025
Meets on the second
Saturday of the month from
noon to 5 p.m. at 10844
Acama St., No. Hollywood.

**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., 7 p.m.

**Amiga LightWave
User Group**
MG Software & Video
Mark Miller
6660 Reservoir Ln.
San Diego, CA 92115
(619) 463-0545
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
Call for information.

**Toaster Professional
Forum**
Filmclips, Inc.
25C Mallard Rd.
Don Mills, Ontario M3B 1S4
Canada
(800) ON TOAST or (416)
441-1661
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 p.m.

Video Toaster Group
Jean-Francois Boisclair
Maison du Logiciel
Softwarehouse
2466 Jean-Talon Est,
Montreal, Quebec H2E 1W2
Canada
(514) 374-3614
Fax (514) 722-0627
Meets on the last Tuesday of
the month, 7-10 p.m.

Far East

OvenRange
Katutoshi Takahashi
201 Sundoear
1-21-9 Kouenji-Kita
Sugmami-Ku Tokyo 166
Japan
BBS: (Orange-2)
81-3-3733-9816

DR. VIDEO

action when you finally see someone cashing in on your work big time.

On the technical front, there is good and bad news. The trick is to insert something into the signal that causes a videotape recorder to have difficulty making a good recording, thus protecting yourself against piracy. The bad news is that whatever you insert has to trip up only recorders, not players, monitors or TVs.

You can purchase copy-protection equipment or request that your dub house use it. However, the copy-protection technique is a protected process, and you have to pay royalties for its use. (It is no good trying to pirate the antipiracy system.)

Another way to protect your work is that once an image is set on videotape, it isn't much use for anything besides video. Second-generation VHS tapes look pretty bad, so most copying is self-limiting and probably can be thought of as a few sales lost rather than as inventory stolen. But any facility capable of making high-enough quality dubs to be a market threat will probably be able to get past the guard signals in short order.

Video Health Note:

Tektronix, of Beaverton, Ore., makes a really neat pair of videotapes on reading waveform monitors and vectorscopes. Both of these tapes contain important information, and it is straight from the source. (Tektronix is one of the oldest and most reliable monitoring equipment companies in the business.) Best of all, they are free. To keep from overloading the shipping clerks (and to get your request to the right person), simply drop the doctor a note at the address below with your name, address and phone number. I will pass your request to Tektronix. Allow about six weeks for delivery.

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

LAST WORD

The Dream Studio

Stranahan's Strategy for Pleasant Slumber

by Lee Stranahan

I've spent a large amount of time in the past few years working out a little mental puzzle. It's a brain diversion that I never seem to finish—I'm constantly trying to figure out my dream studio. I'll let you in on a little personal trivia: When some people lie down at night to go sleep, they count sheep. I figure out what equipment I want to buy and how I'd hook it up. It never fails to put me to sleep with a smile on my face.

I realize how sad that is, by the way.

At any rate, it's a fun way to pass time, and I don't seem to be the only one who thinks about this kind of thing. I have some rules for my game. First, I try to get as much bang for the buck as possible. Versatility is very important—the days of the dedicated box are over. That's why PC-based solutions make sense.

Second, I'm trying to put together a realistic studio, capable of producing a lot of money-making program-

On the road to building a dream studio

ming, from talk shows to sitcoms on the video side. I'd also like the studio to be flexible enough to produce books, music CD-ROMs and other media.

Third, it's got to be really cool.

One other note before we get underway. This is my fantasy, so none of the gear I mention is the "right" stuff to use. It's just what I like. You might pick other gear and more power to you. So let's play a round of dream studio.

The thing to realize about my ideal working studio is that I wouldn't be the only one working there. It takes many professionals to put a TV show together, although I don't believe it requires nearly as many people as Hollywood producers hire for projects. Not all the work

involves video production either—scripts need to be written, print materials created and office work done.

I'd put a Macintosh on everyone's desk, from the receptionist in the lobby to the graphics studio in the back. (More on that next month.) I like the Mac quite a bit as a business computer, and they are quite easy to network, which allows the lifeline of the business—information and images—to flow easily between departments.

The Mac also has a bunch of software that I use. ClarisWorks is a powerful, integrated suite of software that includes word processing, drawing, spreadsheet and database functions. (Every word you've ever read of mine was written in ClarisWorks.) I also use Aldus' TouchBase and DataBook to keep track of phone numbers and my schedule. Finally, QuickMail is a strong electronic mail system to keep the information flowing freely. (One other note: I can be found on America Online. Look for me under the screen name STRANAHAN.)

A working video studio can actually end up producing as much paper as video, especially for the creation of items such as video cassette box sleeves and promotional materials. I'm not alone when it comes to appreciating Adobe Photoshop and Fractal Painter X2. These are powerful image processing and paint programs, and it's no wonder they've become industry standards. (I also use Photoshop occasionally with a scanner for LightWave image maps.)

An area where Mac software really helps is scriptwriting. Writing for movies or TV can be very little fun because of the strict formatting rules. That's why I use a program called Final Draft. It does all the formatting automatically, including inserting page breaks and creating revised pages. Final Draft even lets people put helpful little script notes into the manuscript, making editing easier.

Another important organizational tool for video production is a stack of index cards. People use them to plan segments and shows, and writers rely on them to hash out the beats of a story. Mac Toolkit, the company that makes Final Draft, also produces a program called Corkboard that replaces those index cards with... well, something more expensive.

Corkboard offers much more flexibility than those 3x5 cards ever did, allowing you to have cards with text, pictures or even Quicktime movies. And you can stack those cards in a variety of handy ways. When I learned scriptwriting, I learned to think on index cards.

That's the front office. Next month, we'll visit the back rooms and talk about my dream studio's audio and video setups.

VTU