THE DESKTOP VIDEO MAGAZINE

VIDEO TOASTER® USER

an avid publications magazine

Oct/Nov 1992 • $4.00 US/ $5.00 CAN

CHANGING THE WORLD OF VIDEO

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REVIEW: SONY EVO 9650

REVIEW: STEADICAM JR.

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"The MegAChip 2000/500 should be standard equipment on every Video Toaster System."

Jim Plant - Publisher/Editor Video Toaster User

"The MegAChip 2000/500 is a must own for anyone that wants to use Toaster Paint™ or Multitask with the Video Toaster."

Lee Stranahan - Former NEWTEK employee & writer of the tutorials for the Video Toaster 2.0 manual. Featured in the Desktop Images Video Toaster Tutorial series.

"I would advise Toaster users who make use of Toaster Paint or LightWave™ to add DKB's MegAChip 2000/500 to your system as soon as possible."

Tim Doherty - Video Toaster User

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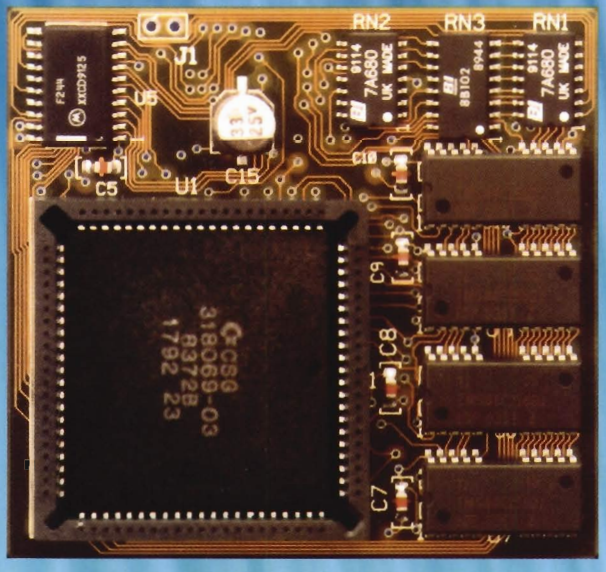

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VIDEO TOASTER USER

OCTOBER/NOVEMBER 1992 ISSUE NUMBER 8

This issue marks the debut of a dramatic change in Video Toaster User. You'll discover in the following pages a complete redesign which we feel more accurately reflects the vitality of the evolving Video Toaster market. For those of you who have had the opportunity to get to know NewTek, you'll recognize the significance of the cover image. Atlas with the world on his shoulders is a favorite figure around Topeka. Our adaptation has Atlas with the world on his shoulders in a television monitor, the 20th century means of viewing the world.

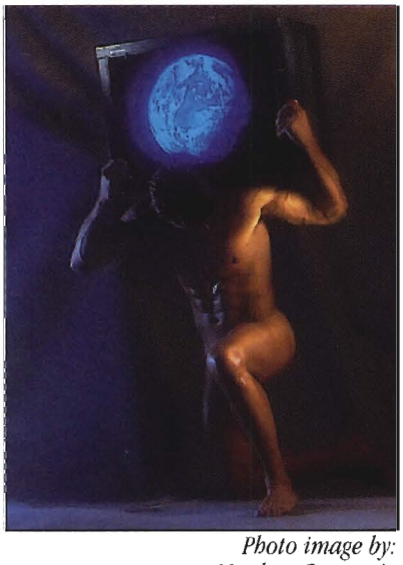

Photo image by: Matthew Farruggio
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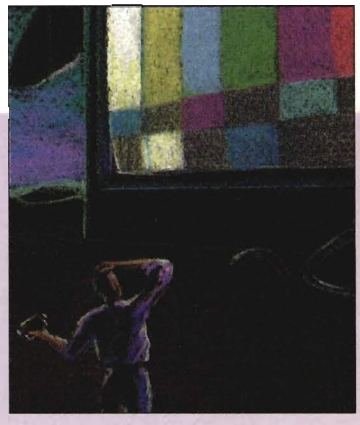

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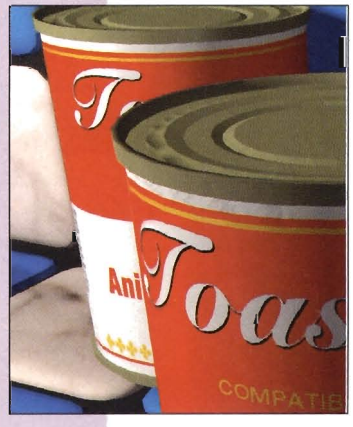

Letter from the Publisher

As phenomenally successful and popular as the Video Toaster has been, it should have come as no surprise that a magazine that focused on it would be equally successful. But how could anyone have predicted that the 4-page newsletter that Lee and Kathy Stranahan started just last year would blossom into a 128-page magazine in only eight issues? AVID Publications assumed responsibility after issue #3 and in the process of dealing with this explosive growth, an important lesson has been burned into my brain: when you're dealing with the Toaster, you must start by throwing out all the rules. You have to forget traditional limitations. You learn to recognize that anything and everything is possible. This goes for video production with the Toaster as well as magazine publishing.

In addition to our increase in page count, this issue represents a quantum leap forward in quality. Using a coated paper stock throughout the magazine gives us the ability to properly showcase the stunning graphics the Toaster is capable of outputting. We've also worked hard on a massive overhaul of VTU's internal layout to make the magazine more attractive and easier to read. As each ground-breaking issue hits the stands, we find ourselves challenged to improve the next issue even more. Yes, it's a vicious cycle, but we think you will profit from our dilemma.

While I and the rest of the staff here at AVID Publications are proud of what we have managed to accomplish in such a short time, we are by no means satisfied. The current issue represents merely a minimum standard that we must aim to exceed in the following issue. Here are a few of the improvements we have planned for upcoming issues of Video Toaster User:

1. More Toaster-specific editorial material.
2. More general desktop video information.
3. More late-breaking news from the video production industry.
4. More full-color Video Toaster graphics.
5. More! More! More!

Our ultimate goal is to make Video Toaster User the most valuable information resource in your studio. Not just the most valuable Toaster resource, but the most valuable resource, period. We are excited about facing this challenge and we hope you enjoy the ride as well.

Jim Plant-Publisher

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Back Issues are available for $5 each, supplies may be limited.

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

QUESTIONS AND TIPS
Direct your Toaster-specific questions to John Gross. Direct your general video questions to Rick Lehtinen.

NEW PRODUCTS & UPDATES (PRESS RELEASES)
Specific product information or press releases should be sent to the Editor by mail or FAX 408-725-8035.

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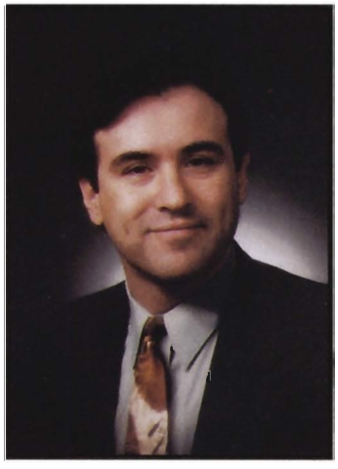
TOASTER TALK

By James Plant



In the muddy waters of desktop video's infancy, it is easy to understand how our vision of the future can be clouded and obscured by the lightning swift pace of technological change. As a rapidly growing number of people begins to understand the awesome communicative power flowing out of the desktop video revolution, an equally growing number of companies is racing to provide their own interpretation of the DTV solution. As this dizzying array of often markedly different hardware and software hits the market, it is all too easy to fall victim to the dreaded Glaze Factor

Most DTV pioneers have already experienced the Glaze Factor many times. This is simply the mental state reached when a staggering amount of DTV data and technical specifications overloads the brain circuits and causes your eyes to glaze over. In this confused condition, it's all too easy to make a critical purchasing mistake or simply become so confused that it's impossible to make a purchasing decision at all. As the desktop video market grows, and more and more companies look to cash in on this growth, we will find ourselves increasingly victimized by this malady. Since it is obvious that the time spent in the clutches of this debilitating ailment is otherwise productive, not to mention potentially expensive, time lost down the drain, it is in our best interest to do as much as we can to minimize the inevitable brain lock that results from overexposure to this torrent of confusing and conflicting information. We need a way to filter out the unnecessary garbage and capture only that which will truly help us become more productive and produce better videos.

I have discovered a very effective way of dealing with this problem which I will share with you. Start by asking yourself a very simple question: "By what means will my message be communicated?" If you said "videotape," then give yourself a gold star because your "glaze" problems are about to disappear.

My basic premise is a simple one: by far the largest chunk of video production work is ultimately viewed on a VHS VCR. It is not viewed in a 2" by 2" window on a computer screen. It is not viewed in HDTV format. It is viewed on the now common VCR. How common? Well, currently, there are over 100 million VCRs in the United States connected to almost 80% of this country's homes and businesses. If you want to communicate efficiently with video, and you want to reach the largest possible number of people, you had better make sure that your end product is a VHS-format videotape.

Is VHS the best technical solution available? Of course not. There are plenty of higher quality, more compact, more efficient recording and viewing formats. This, however, is clearly not a technical issue. Rather, like so many other components of our lives, it is a complex combination of sociological, political and economic elements. The technical aspect, in many cases, can be surprisingly insignificant.

Take the aforementioned HDTV, as an example. Most of the purely technological issues of HDTV have been addressed and resolved. Still, we won't see HDTV in this country until (at least) the end of this decade for primarily economic and political reasons. For one, we haven't figured out how to pay for every broadcast studio in the country to convert from the current NTSC format to HDTV. On top of that, no politician wants to approve a system that's going to force every household in America to buy a new TV set. Many years will pass before all of the various agencies, government and otherwise, come to an agreement on how to implement HDTV. And after all that, we will probably still end up with a system that is a compromise. History, as is often said, tends to repeat itself.

We have (for better or for worse) a well-established infrastructure in place to broadcast, receive, record and replay the NTSC video signal. The videotape is at the hub of that delivery system. This is not to say that HDTV, compression and other digital video schemes are not the wave of the future. They are. The question is, "When?" While I find these technologies fascinating, I never let them interfere with today's A/V reality.

If you don't completely understand what I'm getting at here, or if you're just skeptical, ask yourself this question: what happens when you give your mother a QuickTime-based message on a disk? Nothing, and that's exactly the point. If, however, you give her a videotape, she'll know exactly what to do with it and your message will be communicated.

The bottom line is this: if you want to communicate effectively and make money with desktop video today, and you also want to drastically reduce the Glaze Factor in your life, look for desktop video solutions where a videotape is the result of the process. DTV solutions like the Video Toaster, where the output is a broadcast-quality, NTSC video signal, are your most direct route to effective audio-visual communication.

VTU

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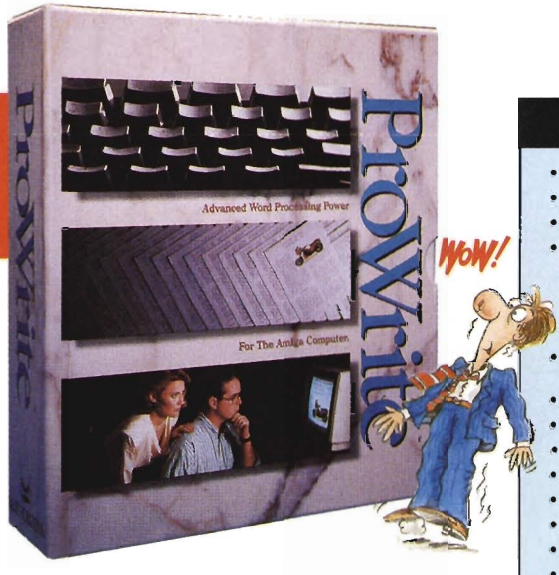

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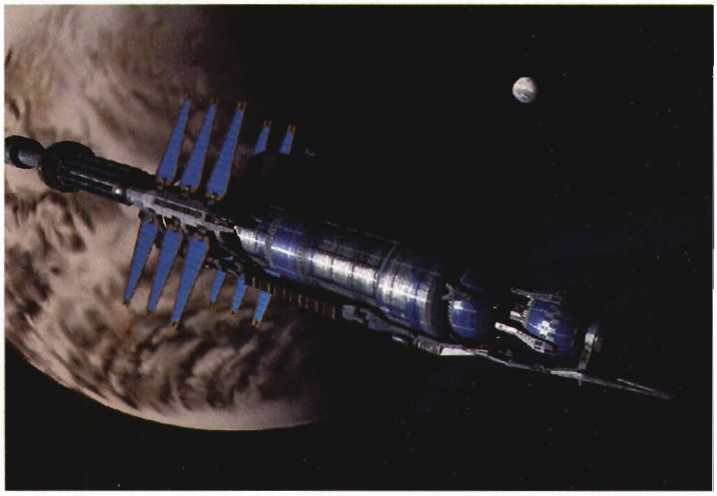
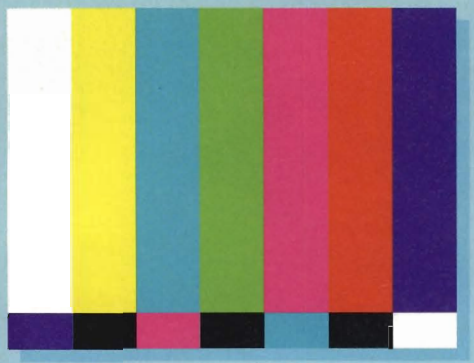
PRIMETIME

Since we featured his artwork on the cover of the April/May 1992 issue, Ron Thornton has become a household name among Video Toaster users. Everyone under the sun has been copying his technique of adding surface detail to spaceships with complex texture maps. Ron and his production company, Foundation Imaging, have spent many long hours producing compelling 3D visuals for the new television series Babylon 5. Ron was kind enough to provide us with some examples of his most recent work-in-progress. Ron uses Modeler and LightWave for just about all of his work and provides an inspiration to us all. VTU





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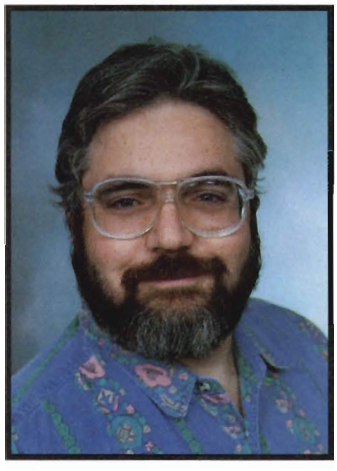
by Rick Lehtinen



Welcome to the first installment of a new regular column in Video Toaster User. Dr. Video will under-take to answer general questions on all topics related to general 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 will take on all comers.

Q What is a terminator, and how is it used?
D.W.,
Louisville, KY.

A Everyone knows a Terminator is a slick metallic guy with a mean streak! But I have a hunch that you want a more precise answer. In video parlance, a terminator is a 75-ohm precision resistor that you use at the end of a run of loop-through connections. Usually these are made into a BNC connector, so you just click them into place.

Think of a video signal as the gas pipeline running down your street. It connects to all the houses in the neighborhood in serial order. If the last house leaves the line uncapped, no one has gas. A terminator is like the cap. It terminates the line by providing the right impedance to the video signal flowing down the wire.

Instead of an uncapped line, you may have the opposite problem of too many users. In this case, there isn't enough gas to go around. This is analogous to having two terminators in a line, a situation appropriately called double-termination.

If a video line is unterminated, the voltage on the line will be about twice the correct level. This makes the signal look white and washed out. If a line is double-terminated, the video will be muddy and dark.

The rule of thumb is: terminate any video line only once, near the end. If any of your equipment has internal switch-controlled terminators, leave them off. If a piece of gear is single-ended, that is, it doesn't loop through, put it at the end of the line.

As a Toaster sidelight, at one time the Toaster was going to sense if an input line was improperly terminated, and fix it with an amplifier stage. This would have been a handy feature.

Q Can I clean the heads on my editing VTRs with paint thinner?
D.S.,
Seattle, WA.

A ARRGHHH! It pains the doctor to hear such talk! To clean heads is only minor surgery, but you must be careful. Stand by for more on head cleaning next issue. For now, my Rx is for you to go buy an inexpensive VTR head cleaner kit at your local Radio Shack or its equivalent. Use it every two weeks or so until you get your next VTU.

Q My dealer says I need a TBC to use two VTRs on my Toaster's C & D inputs. Do I really?
D.T.,
Pfleugerville, TX.

A Your dealer is wrong. To connect two VTRs to the C & D inputs will require two TBCs. Although dual-channel TBCs are available, you still need one per channel—with one exception. Back when TBCs cost about the same as houses, many TV stations simply couldn't afford more than one. Erstwhile station engineers whipped out their soldering irons and fashioned small A/B switches. This allowed them to share one TBC among two VTRs. If any readers are interested, Dr. Video will hunt up some suggestions.

Q Are there any tricks to lighting a stage for video?
T.I.,
Reno, NV.

A You bet there are! I spent every Saturday for five years taping a variety show at a television studio, and had plenty of opportunity to observe LDs (Lighting Directors). I am still convinced it is magic. It's costly magic as well, with plenty of arcane equipment and complex control panels.

But take heart, it doesn't have to be expensive. When NewTek shot the Penn and Teller video, they used nothing more complex than K-Mart style yard lamps. For the barn doors (the metal flaps that direct the light), they used the boxes the lamps came in, held in position with duct tape. That is certainly cheap enough, and the tape speaks for the results. VTU

Got a question? Write to Dr. Video, c/o Video Toaster User, 21611 Stevens Creek Blvd., Cupertino, CA 95014.

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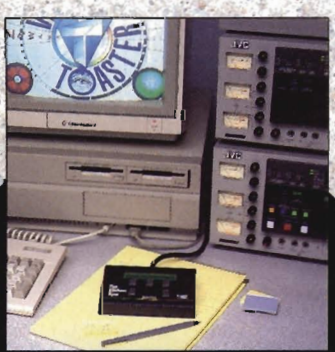

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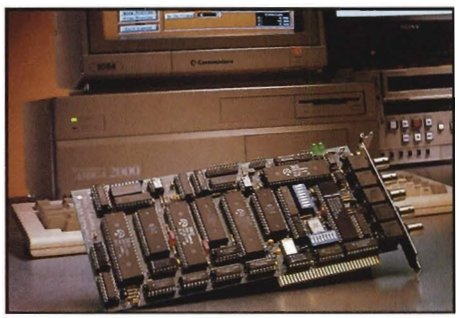
NEW PRODUCTS



Wizard in OZ Pilots Toaster, VTRs

If your video production suite were a restaurant, the edit controller would be the maitre d'. After it greets you, it runs to the back room and gets things moving. If there is a minor problem ("What do you mean there's no more ice cream!?"), it takes care of it ("Here's a five—run across the street and get some—hurry back!"). If there's a major problem ("When did you first notice the freezer wasn't working?"), it gets back to you and politely informs you that this would not be the best night for fish. In all cases, the user—you—interfaces with a conscientious, obsequious servant, which then barks out the orders on your behalf. In editing, as in running a restaurant, it takes uncommon skill to keep everything working together while making it look easy.

OZ, from Videomedia, San Jose, California, is one such product. OZ software is built on the philosophy that computers need numbers, but people don't. OZ allows users to shuttle easily to edit "In" points using onscreen controls, and then enter these points into an edit decision list simply by clicking the mouse. OZ comes in both PC and Mac versions.

OZ uses a special video local area network (VLAN) to control tape machines, audio mixers and video switchers like the Video Toaster. Using VLAN, Toaster users can configure high-performance reasonably-priced edit control systems. Videomedia also offers a simpler setup using a PC-compatible OZ-PC board. This board links OZ to two VTRs for A/B editing.

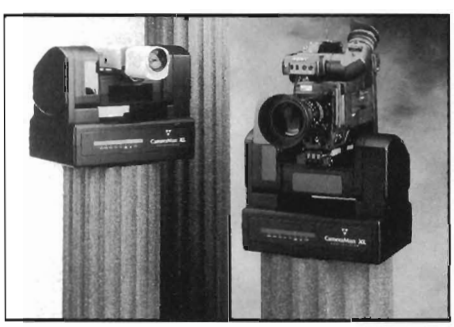
For Toaster users who need machine control more for automation than for editing, Videomedia offers Animax, an animation control board for PC-compatible and Amiga computers. Animax can also be configured as a VLAN transmitter for frame accurate control of up to 31 networked devices.

Contact:
Amy Gomersall / Videomedia, Inc.
175 Lewis Rd.
San Jose, CA 95111
(408) 227-9977 Fax: (408) 227-6707

CameraMan XL

Ever wanted a camera that would point where you want it without you having to point it? ParkerVision, Jacksonville, FL, has just introduced the CameraMan XL. Using a wireless microphone which doubles as a control unit, CameraMan XL's patented autotracking technology senses the wearer's location, and follows with the camera. This allows Toaster users to work keeping the camera on the subject without having to leave the keyboard.

An enhancement to CameraMan is the CameraMan Wand, a one piece combination stick microphone, tracking and camera automation control unit. With the Wand, users not only have autotracking, but the Wand can control camera zoom, record and pause. CameraMan XL also features a serial interface that will allow it to work directly with the Toaster as well as other computer platforms. Finally, with the Wand, users can remotely steer the camera to desired locations, and store preset shots.



CameraMan XL can handle cameras of up to 15 pounds. It is targeted specifically toward Toaster users who wish to use professional camera equipment. For lighter duty studios, ParkerVision provides the original CameraMan.

Contact:
Bill Mecabe / ParkerVision
8493 Baymeadows Way
Jacksonville, FL 32256
(800) 532-8034 (904) 737-1367 outside US
Fax: 904-731-0958

Toaster Cozzy Allows Video Toaster Owners to Use the Amiga 3000

Did you ever want to trade your big and gawky Amiga 2000/2500 for a svelte 3000 model? If you do, be ready for a surprise—your Video Toaster won't make the change. Not only does the Toaster board not fit the 3000's chassis, the 3000's power supply is notoriously—well lets just say "brawny" is not a very apt description. This means that until now, Toasters were strictly a 2000 series add-on.

However, a Columbia, MO, company, Heifner Communications, is out to change all that. Their product, the Toaster Cozzy, is an Amiga video bus adapter. The Cozzy sits snugly on top of your 3000, and provides power and space for the Video Toaster and other add-on cards. Cozzy also provides five black burst outputs for genlocking cameras, VTRs, TBCs and other video appliances.

With the addition of a Cozzy daughter board, Toaster Cozzy can toggle between the Video Toaster and a second video board, providing it does not require a Zorro slot. Cozzy accommodates cards that need Zorro slot compatibility by adding a wire from the Cozzy to the 3000. Hosting multiple graphic adapters in this way offers users greater flexibility in their choice of video output devices, without having to remove cards from their machines.

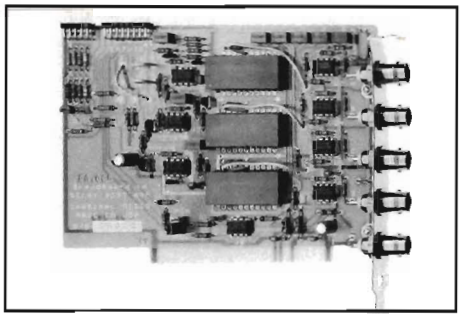
Contact:
Ivan Moore / Heifner Communications
4451 I-70 Drive, N.W.
Columbia, MO 65202
(800) 445-6164 Fax: (314) 445-0757

Enhance Toaster Functionality with the BreadBoard

As powerful as the Toaster is, there are still times when it may best be used in tandem with another switcher. This is especially true if the Toaster is used as part of a larger, conventional video, facility. Such systems require certain "hardware hooks" to lace equipment together, and the standalone Toaster doesn't yet offer these.

Now, the BreadBoard, by Cardinal Video Products, Grass Valley, CA, makes it easier to tie a Toaster into another video switcher. With a BreadBoard, users can operate either device independently, or seize the advantage of operating them concurrently, using the strongest features of each.

The BreadBoard uses the Toaster's feature connectors for several functions. First, it can delay



the Toaster's input signals to match the program output. This allows a Toaster to share inputs with another switcher. BreadBoard can also provide an analog output of the Toaster's alpha channel. This enables the Toaster to provide external key signals. In this way, the Toaster can be used as a stand-alone character generator workstation. Additionally, these signals allow the Toaster to serve as a wipe/pattern generator, effectively transferring some of Toaster's production power to the external switcher.

Finally, Breadboard allows Toaster users to use the Toaster as an online device one minute, and to let Toaster render a scene or do some other internal task the next minute, while the other switcher carries the load.

The BreadBoard also provides users with extra copies of the Toaster's Program and Preview outputs. These are handy in larger facilities, because one can be used for monitoring, another for the VTR feed, etc.

BG100: Easy Graduated Backgrounds

I remember once overhearing two computer graphic artists discussing the best way to render a fade to black. It hit me then, and I thought it again when I found this product, that there are several video effects for which real time video hardware is simply the best solution. For instance, how much time do you spend in ToasterPaint creating, storing and recalling again simple ramped color backgrounds?

Now there is the BG-100, from Cardinal Video Products, Grass Valley, CA. This simple, but powerful device automatically provides ramps between any two user-selectable colors. The ramps can be horizontal, vertical, or at user-selected angles. Further, they can repeat several times in each frame. This flexibility in creating graduated washes makes creating exciting visuals a snap.

The colors output from the BG-100 are within FCC regulated limits. This means that if you use them in a commercial production, the TV transmitter will produce a clean signal without the "sparklies" or buzz that sometimes accompany over-saturated colors.

The output of the BG-100 is jumper-selectable between RGB (at NTSC line rates), Y/C or composite NTSC.

In addition to backgrounds, the BG-100 also provides a convenient way to adjust the Toaster's horizontal and subcarrier phase timing. This often spares users the expense of providing a dedicated sync generator when using the Toaster in professional video facilities.

Contact:
Ralph Barclay / Cardinal Video Products
Barclay Research Group, Inc.
POB 2617
Grass Valley, CA 95945
(800) 356-8863 (916) 477-2905 outside US
Fax: (916) 272-1528

Render Farming with Amiga Client Software by Oxxi

Although Amiga is *still* the only true multitasking PC, unfortunately, there is strength in numbers, often meaning that users of other platforms get goodies first. One of the most important is a Local Area Network (LAN). Novell, Inc. is a LAN industry powerhouse, and until recently, if you wanted onto a Novell net, you needed a PC, Mac or workstation. Toasters need not apply.

Not anymore. Now Oxxi, Long Beach, CA, has announced its new Amiga client software (ACS). ACS adopts any standard Novell NetWare network to allow Amiga computers to sign on as workstations (become clients).

With ACS installed, Video Toaster users can enjoy the same network capabilities available to other platforms (file management, shared archives, print spooling, network security, etc.). This means you can parcel out a big rendering job over a whole "farm" of Toasters if you wish. After rendering, the network server gathers up all the completed frames. They then play back through one Toaster. This provides continuity of video quality and settings.

A standardized network architecture frees users to focus on the work being done, not on the means of doing it. It also means that passing files between different platforms is greatly simplified—to the network a computer is a computer— even if it's a Toaster.

Contact:
JoAnn Houston / OXXI
1339 E. 28th Street
Long Beach, CA 90806
(310) 427-1227 Fax: (310) 427-0971

Y/C PLUS Expands Toaster's Video Quality, Choice of Formats

Did you ever get tired of critics who drone on endlessly about how the Toaster is not Y/C (S-VHS and Hi8) capable? Now you can put their complaints to rest. The Y/C PLUS, from Smith Audio Visual, Topeka, KS, gives the Video Toaster Y/C inputs and outputs. Y/C operation offers improved horizontal resolution and reduces the encoding artifacts (moiré, dot crawl, cross luminance) that frequently plague even the finest NTSC devices.

Using the Y/C PLUS, users can connect up to four Y/C inputs to their Toasters. For users who wish to retain NTSC input capability, Y/C PLUS can be easily configured for mixed composite and Y/C inputs. Any unused inputs on the Toaster board automatically become composite outputs for monitoring.

Y/C PLUS installs quickly and easily. It mounts in an Amiga PC slot, and connects to the Toaster via the Zorro slot and special header plugs. This keeps all the wiring inside the Amiga case. A special fixture is included to speed troubleshooting.

Y/C PLUS offers two Y/C program outputs, and one composite out. Regardless of whether a Y/C or composite input is selected, special signal processing, using Faroudja Labs technology, results in an improvement in the Toaster's video capability.

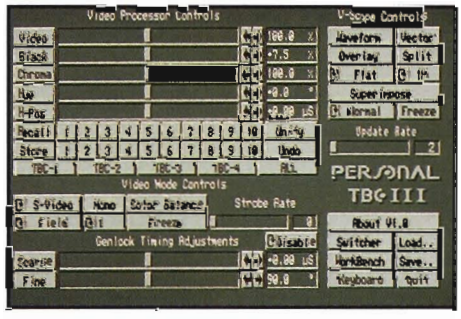
Contact:
Larry Heilman / Smith Audio Visual
1410 South Kansas
Topeka, KS 66612-1335
(913) 235-3481 Fax: (913) 235-3485

Getting Stable—New Toaster-Mounted TBC Features Special Effects

The Model VT-2500 is the latest in a family of time base correctors (TBCs) for desktop video production. Made by Digital Processing Systems, Florence, KY, the VT-2500 joins other members of the DPS Personal TBC III series. A hallmark of the TBC III family is its ability to mount in any IBM PC compatible or Amiga 2000/3000/4000 computer.

The VT-2500 offers both composite and Y/C (S-Video, as in S-VHS or Hi 8 inputs). This allows Toaster users to have flexibility of input options. The VT-2500 also offers special effects capabilities including rock solid freeze (field or frame), variable strobe and forced monochrome (black and white on demand). A software-controlled proc amp allows Toaster users to have complete control over video input. This is just the thing when you need to save a muddy scene or calm down some highlights. It's also handy for tweaking colors that have gone awry.

An available multi-channel remote control allows you to control the proc amp from the desktop without interrupting your Toaster session.



Contact:
David White / Digital Processing Systems
11 Spiral Drive
Florence, KY 41042
(606) 371-5533 Fax: (606) 371-3729

SunRize AD516: Digital Sound Studio on a Card

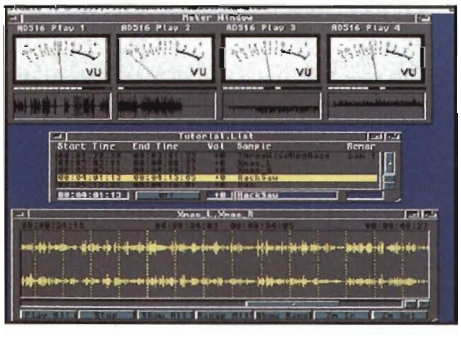
Time was that a high-quality, multi-channel, audio tape recorder was about the size of a washing machine and the price of a car. Now SunRize Industries of Campbell, CA, has begun shipping the AD516, an eight-track 16-bit audio board for use in an Amiga 2000 or 3000. This is a boon for Toaster producers, because it provides a path to Toaster audio without having to buy an extra computer.

The AD516 records, edits and plays back directly to hard disk (multi-disk operations are available with 16-bit samples at up to 48,000 samples per second). The system can also act as a multi-track mixer and editor. Bundled with the AD516 is Studio 16, a non-destructive editor featuring drag and drop cut, copy and paste. It can even do simultaneous playback and record, mixing multiple playback tracks down to a two-track recording.

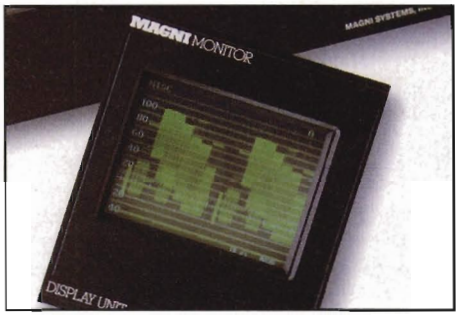
A 10-MIPS sound accelerator chip (an Analog Devices 2105 DSP) allows the card to provide real-time mixing and fading. There are other capabilities as well, including delays, chorusing and flanging, among others.

The AD516 includes an on-card SMPTE time code reader with chase capabilities. This lets users synchronize audio effects to video cue points. In Toaster applications, users will typically either create a sound bed to which they can edit pictures, or a video edit over which they will dub sound. When the tape plays, time code from the editing system (e.g. AmiLink) triggers the AD516 to trigger the audio transitions and effects at the appropriate times. Switching as needed between the Toaster and the AD516 allows Toaster owners to add multi-track audio to their existing setups with a minimum of new hardware.

Contact:
Anthony Wood / SunRize Industries
2959 S. Winchester Blvd., Suite 204
Campbell, CA 95008
(408) 374-4962 Fax: (408) 374-4963



Magni Monitor: Low-Cost Alternative Measuring Device



One of the most critical requirements in any video production facility is the need for a clean undistorted video signal throughout the entire processing path. The Magni Monitor helps accomplish this by offering a dedicated waveform monitor or a dedicated vectorscope or both in combination. The modular approach means you only have to pay for what you can use. For input, it accepts NTSC or PAL; the waveform monitor also handles component analog video signals. There's no built-in display; the unit can output to any NTSC or PAL monitor or an optional LCD display unit, which helps eliminate heat problems. Ease of use is another major plus.

Contact:
Keith Holznagel / Magni Systems, Inc.
9500 S.W. Gemini Drive
Beaverton, OR 97005
(503) 626-8400 Fax: (503) 626-6225

MediaEditor: Low-Cost Infrared Editing Control

Interactive Microsystems has been in the Amiga video market for several years with their MediaPhile desktop video system. The system includes hardware and software that can perform automatic editing with a wide range of video equipment. Just out from Interactive is a $50 infrared controller that plugs into the Amiga's second mouse port. Interactive's MediaEditor program operates the controller along with MediaPhile, Future Video, and others. The Video Toaster can be controlled for A/B effects.

Contact:
Interactive MicroSystems, Inc.
9 Red Roof Lane
Salem, NH 03079

Instructional Video Aids New Videographers

Thinking about getting a Toaster? *Designing and Building Your Desktop Video System* is a new videotape that could prove helpful when it comes time for decisions to be made. The 45-minute video guides you through the overwhelming choices, demonstrating and comparing the capabilities of dozens of products and systems. Sections include overview, a comparison of the Amiga vs. the Mac and PC, an extensive look at software options, and more. Also included is a 30-page manual with additional material including price comparisons and a glossary.

Contact:
First Light Video Publishing
8536 Venice Blvd.
Los Angeles, CA 90034
(310) 558-7880 Fax: (310) 558-7891

MorphPlus: Morphing Alternative

Morphing is simply changing one shape to another. Thanks, in part, to Michael Jackson, it is also the hippest thing going in Hollywood for special effects. Now there's a new way to do it on the Amiga. ASDG's MorphPlus provides cinematic-quality, full-motion morphing and other visual effects. According to ASDG, it's faster and works better than other Amiga morphing software. Mark Swain, an animator working on Babylon 5, claims that the shapeshifting is the most realistic he's seen. Additional effects available with MorphPlus include DVE tumbles and fly-bys, mapping images onto rotating spheres, and more.

Contact:
Gina Cerniglia / ASDG Inc.
925 Stewart Street
Madison, WI 53713
(608) 273-6585

ARexx Cookbook Helps Avoid Burnt Toast

The ARexx Cookbook by Merrill Callaway is a tutorial guide to the ARexx language on the Amiga. The Video Toaster is ARexx-compatible, which means that you can become a real power Toaster user by learning how to write ARexx scripts for it. Become fluent in ARexx by following the tutorials, studying the examples, and modifying existing ARexx programs. Of particular interest to videographers is the included ADPro Scale Utility, which lets you use Art Department Professional to modify both an image's pixel aspect and its image aspect, so you can fit it into a particular space without distortion. If you've been longing to take full control of your Toaster system, this book will help a great deal. VTU

Contact:
Whitestone
511-A Girard S.E.
Albaquerque, NM 87106
(505) 268-0678

Compiled by Rick Lehtinen and the VTU Staff

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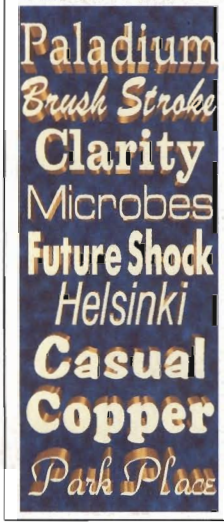

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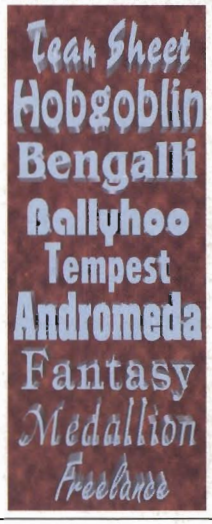

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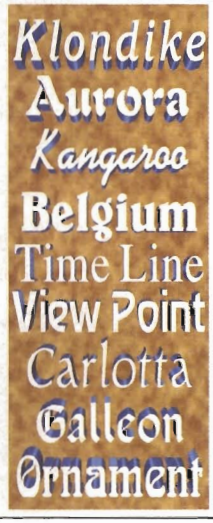

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PRO•FILES

The Photo-Classified Channel

Joel Tessler is one of this country's leading Video Toaster authorities. No doubt you've read his reviews on subjects like TBCs and genlocks - not to mention the Toaster. Tessler has completed several unique projects, from JumboTron production to medical imaging, with this expertise.

One project in particular is the Photo-Classified Channel (PCC) in Boca Raton, FL. "I was really excited when the PCC came up. I knew it was going to let me push the Toaster to its limits," Tessler says. "The channel is a 24-hour, seven-days-a-week cable station devoted to real estate presentation in the greater Boca Raton area. What a challenge!" PCC is totally produced with the Toaster and controlled with Tessler's "Toaster Oven," a proprietary presentation generator. "Listings are tumbled, spun, warped and revealed - complete with music and voice-overs," he explains. "Each display includes a picture of the property, price, realty company, listing agent and address."

PCC has been on the air now for well over a year without a break in programming. "The Video Toaster has allowed me to create high quality 24-bit artwork in a field where mediocrity has been the rule and high quality the exception," he remarks. "With the Toaster, I can provide exceptionally high quality work at a price cable operators can afford."

Occasionally, Tessler finds time when he's *not* writing, training or producing. Right now he's using that time to map out a general video information service - a sort of really cool classified ad channel people can use to sell cars, boats, etc. "With the Toaster, all things are possible. I haven't yet come across something that I haven't been able to do with it," Tessler says.

Joel Tessler
Miami, FL (305)/944-5656

Video Law Services

Michaela Miller-Pence and Don Pence are President and Vice-President, respectively, of Video Law Services (VLS). Based in Jacksonville, FL, VLS specializes in accident recreations and demonstrative evidence.

Pence first saw the Toaster at Siggraph in Atlanta. "I'll never forget it," Pence remembers. "I was stunned as I watched this thing move video around. I knew that this was going to be a big deal. Everyone else said, 'Oh, that's just vaporware - It'll never ship.' It was too late for me. I had seen the future." Pence continued to work at his set design store, *The Scenic Route*, always keeping an eye out for the soon-to-be-released Video Toaster. Meanwhile, the future Ms. Miller-Pence produced television news and ran a small event videography service.

Pence bought his first Toaster in March of 1991, a year after his marriage to Michaela. They are a classic working couple: he, with his display expertise and a business administration degree; and she, with her videography and journalism skills. "Don knows more about the business end of the company. He helps me focus on the direction of VLS," Ms. Miller-Pence explains.

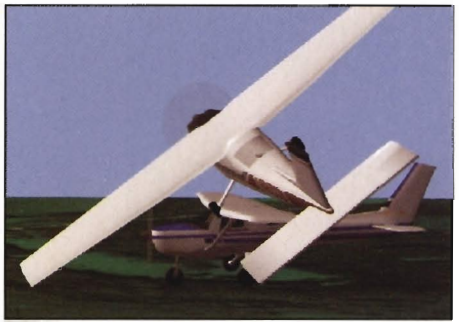
VLS's first project was a documentary on video in trial law. Finding little information available, the idea developed into a series of tapes teaching how to effectively use video documentation in a courtroom environment. "The reaction to our tapes was surprising," recalls Pence. "Attorneys instantly saw the potential of video in litigation." Instead of buying the tapes, law firms wanted to hire VLS to *do* the videography they were teaching. "We still have about 400

Post Video Effect

Dan Nessel and Ted Barszewski's ultimate goal is to make video as easy as possible. Nessel and Barszewski are the co-presidents of the New York based, Post Video Effect (PVE). Since founding PVE in October 1991, they've come a long way toward fulfilling their goal.

A self-described "...life-long computer geek," Nessel first read about the Toaster in *AmigaWorld*. "At first, I didn't really think it could exist," he remembers. "Seeing it released in late '90, I knew this was a great opportunity for me to turn my hobby into my dream job." When Nessel first bought his Toaster, he used it to produce several short videos for his friends and family. "I have to admit, I was probably guilty of over using the effects on the first few videos I produced," he laughs. "Working more and more on the Toaster, I found my first reaction - to use it to make my dream job - a real possibility. Finally, I called my friend Ted to pitch him on the idea of going into business together to become 'Desktop Video Experts'."

"When Dan first called and told me what was on his mind, I was skeptical," Barszewski recalls. Nessel sent him a package, along with a tape he had produced using the Toaster. "I got the package with the tape and thought, 'He's not kidding.' I watched the video and was blown away. The next day, I went into a bookstore and saw an issue of a business opportunity



copies of the series stored in a warehouse." Don laughs, quickly adding, "We find them great teaching tools for videographers wanting to get into litigation support."

"With the Toaster, I'm able to create hyper-realistic re-enactments, and depositions quickly and easily," Pence comments. "Occasionally, the opposition will get a glimpse of my preliminary work in a video proposal for settlement. Seeing the point-of-view, for instance, of a pilot - based on that pilot's own deposition - will often be enough to settle the case right then and there, saving everyone the time, money and effort involved in bringing a case to trial."

The future looks bright and busy for VLS. Even with the purchase of their second Toaster, they are still booked at least two months in advance. In addition, the Pence's are being invited to speak at engagements across the country to spread the word of video courtroom presentation. Networking is high on their agenda. "We're always on the lookout for other videographer/animators working in the legal environment," he remarks. "Just last week, I received my long-awaited BBS software. A BBS network will allow other courtroom presentation support specialists to share ideas, objects, etc. By coming together and forming a pool of experience, the field of video litigation support will thrive and grow."

Video Law Services
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Jacksonville, FL (904)/399-8825
BBS: *VLS Graphics* (904)/396-0746

type magazine. On the cover, in big bold letters, was '*Desktop Video: The #1 Small Business Opportunity of the 90's*'." Post Video Effect was born.

Steps taken to make video as easy as possible included setting up PVE's price sheet like a menu. For instance, a client may order a "Video Short." For $45, PVE will edit three quick skits, each about 15-40 seconds long. To help cater to clients' tastes and needs, PVE developed a questionnaire asking for music preferences, the age of the viewers, and so on.

Barszewski comments that, "While the response to our home video editing service has been very good, the hottest item on the menu is the 'Video Photo'." Photographs are frame grabbed and edited together any way the client wishes.

"Just recently, we took this idea a step further by offering Video Photos as an additional service to photo outlets," Nessel explains. "We are already in one chain in New York and have generated much interest in many others."

Additional PVE projects include real estate videos, sports videos for corporate leagues, and video production for non-profit organizations. The duo plan to continue work through developing interactive video displays, producing a video magazine, and setting up video interviews for employment agencies. "We enjoy the challenge of bringing video into situations where it wouldn't normally even be a consideration," Nessel says.

Barszewski agrees, "PVE's whole direction is to cut costs, eliminate confusion, and bring technology to everybody."

Dan Nessel, Ted Barszewski
Post Video Effect
For a free demo tape, call
(212)/348-7243

Compiled by VTU staff.

Tech-Train

Formerly the base locksmith at the Naval complex in Pensacola, FL, Steve Young gave it up to do what he knew he could do best: teach locksmiths how to get into cars on video.

Young recalls, "One day, I was standing in front of the time clock and said to myself, 'If I keep hanging around here, I'm going to end up looking like the rest of these guys.'" He first got the idea for video training in September 1987, and was able to quit his "day" job January 1989. "I'd always been interested in video," Young comments. "After a lot of research, I took the first steps toward my dream of video production." Steve has produced over 25 tapes so far and has plans for many more now that he has his very own Video Toaster. "The Toaster has added so much to my videos," he says. "In fact, the studio I rent editing equipment from has seen what I can do and asked if they can borrow it."

Over the years, Steve has made good friends with the car dealers in town. Whenever it's time to make a new tape, he goes down to a dealership, picks out a car, and drives it out of sight. With help, he carefully removes the inner door panels, and figures out a way to break in. "It can get pretty comical at times," he laughs. "Once, we were working on an Alpha-Romeo. All we were trying to do was roll down the window. Ten minutes later, we were referring to the owner's manual."

The other half of Young's business is the manufacturing and selling of the locksmith tools he develops during a shoot. "Introductory models usually require adjustments to the tool I made just a year before," he explains. "I try to keep the number of different tools to a minimum, but I always seem to end up adding about a tool a year."

Unlike other videos for locksmiths, Young's tapes are sprinkled with graphics and humor to help keep the viewers' attention. His ads also reflect his somewhat rogue-ish nature. As a matter of fact, his most recent ad was rejected from the ***Locksmith Ledger*** (the industry's leading trade publication) for being too suggestive. The ad featured a young lady dressed in a bikini standing in front of an obviously locked car. The caption read: "Don't you wish you had X-ray vision?" "I guess the model was showing a little too much leg," he jokes. Young admits his videos aren't for everyone. "If you're a layman, my tapes can become tedious after about 10 minutes," he warns. For locksmiths, however, they are the keys to success.

Steven Young
Tech-Train
Pensacola, FL (904)/476-7197

SLICES

By James Hebert

Before we get into the column proper this month, I'd like to climb up on my soapbox for a moment. While conducting the training courses that he has been producing, Lee Stranahan learned some incredible facts. The majority of people who attend his sessions do not come prepared. They have not worked through the tutorials in the Toaster manual, nor have they gone through the reference section of the manual. These are Video Toaster owners who have had the product anywhere from a few weeks to almost a year and a half.

OK, I know people are busy these days. But what this means in the context of training, over the course of many hours, a few experienced Toaster owners patiently sit and squirm "waiting for the good stuff" while the rest of the group learns what each button does. Without some form of background, the concept of teaching is reduced to introducing. This is a waste of time for everyone involved. Don't waste your money or your time being introduced to the Video Toaster. If you own a Toaster, you've been introduced to it! You've been sold! Start using it! OK, now back to the regular stuff.

Product News I: Y/C Plus

Dedicated Super-VHS fans take note. Soon to be released into the video revolution is the Y/C Plus adapter board for the Video Toaster. This is a plug-in S-VHS conversion board that accepts four S-VHS video inputs to the Video Toaster, and provides two S-VHS program outputs. The circuitry was designed by Gary Krohe, the senior broadcast television engineer who advised NewTek during a portion of the Toaster's development, and by Yves Faroudja, whose credits in the video industry are hefty to say the least. (Hint: Look at the underside of any 8mm camcorder manufactured by Sony, including Kyocera, Fuji, and Ricoh. The sticker that says "Technology licensed by Faroudja Laboratories, Inc." ought to tell you something. Hey, if Sony uses Faroudja's circuitry....)

Watch for this board early in 1993, with a list price of about $800.00. This product will be advertised in VTU.

Product News II: Toaster Cozzy

For those of you who may not know, the Toaster Cozzy is an expansion chassis that sits atop the Amiga 3000. It allows Amiga 3000 owners a hassle-free way to add a Video Toaster to their computer. I've been given a pre-production model to work with for a time, and its performance has been impeccable. I have four expansion cards inside the 3000 (three full size cards and one half-size) in addition to the Cozzy (taking up the video slot, the remaining half-size expansion slot) which is as full as the 3000 can get.

It's fairly well known that the original Amiga 3000 power supply became gremlin-infested when users installed additional devices: TBCs, larger hard drives, and additional RAM on their systems. Many systems could not run under these conditions. Furthermore, the Video Toaster was not designed to fit under the hood of the Amiga 3000, at least not without violating a warranty. The situation was untenable.

The Cozzy addresses the issue nicely. It includes its own power supply, a 5-output black burst generator, an internal video slot (for a Video Toaster), and additional space (for another video slot, maybe a pair of TBCs, or a SyQuest or CD-ROM drive) not yet utilized.

Heifner Communications also obtained assistance from Gary Krohe. If you're as dedicated to your A3000 as you are to the Toaster, take a look at this product. *Editor's note: For more on the above two products, see this month's New Products section.*

Hot Tips: Viewing Framestores With Ease

If you own the Toaster Toolkit and either DiskMaster II or Directory Opus, you're in for a pleasant surprise. Even with the Toaster shut down, you can view any System 2.0 Framestore on your hard drive just hy clicking on it. Not in color, but in gray scale, which is handy enough to search through your saved images to locate a frame quickly.

Included with the Toaster Toolkit is a command called QuickFS, which when invoked displays a gray scale image of any System 2.0 Toaster Framestore. The original DiskMaster allows you to configure up to ten buttons as commands. Both Directory Opus and DiskMaster II can be customized so that you can

(a) double-click on a single framestore filename and view it in gray scale, or

(b) configure a button to view one or multiple frames in gray scale. Credit for this idea comes from several sources: Bob Stratton of NewTek Technical Support, Sean Riddle of the Byte Factory (makers of the Toaster Toolkit), and John Gross of Alpha Video. I thank them for their insight and advice.

What you'll need installed on your hard drive: Toaster Toolkit, and DiskMaster II or Directory Opus. The Toolkit disk contains a directory called Commands. Within this directory you will find a command called QuickFS. This must be copied to your hard disk's C directory so that your system can use it.

DiskMaster (the original)

The original DiskMaster has one button in the center button column with ten optionally configurable functions.

1. Click the right mouse button on this button until you come to a function saying "Cmd #." This is an unconfigured button.
2. Hold down the right mouse button and access the second drop-down menu at the top of the screen. Highlight the item Cmd # and let go of the mouse button. A dialog box appears.
3. Type QuickFS %s in the field and press return.
4. Save the configuration file.

Now you can select Framestore files, then click the QuickFS command button to view them.

DiskMaster II (creating a button or menu item)

To display either a single image or a series of selected Framestores, you will need to create a command window item or a drop-down menu item. Unfortunately, I cannot go into detail about where to add this command, since DiskMaster II is so highly configurable that the burden of knowing where to add it falls on the user. However, I will tell you the command to add, so that if you want to use it you can.

16 Bit Desktop Audio

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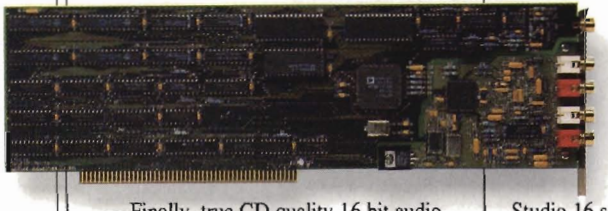
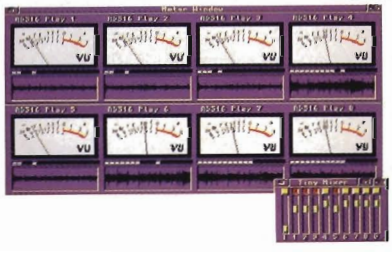


Finally, true CD quality 16 bit audio is available for your Amiga! SunRize's new AD516 gives you eight tracks, plus a time code reader and a DSP chip. Included with the AD516 is Studio 16™ version 2.0. This new release of our popular 16 bit editing software puts a complete sound studio on your desk!



AD516

The AD516 hardware provides stereo in/out connectors, plus a SMPTE in. Just plug your VTR, CD player, radio, tape deck, or other audio source directly in. Then record in stereo, direct to hard disk, with 16 bits at sampling rates up to 48,000 samples per second. Plus, the AD516's efficient design allows 8 track playback direct from hard disk. The AD516 can synchronize and chase SMPTE time code at 24, 25, 29.97, and 30 fps (drop or non-drop frame). Designed to exceptional audio standards, the AD516 offers 15Hz to 22KHz frequency response and 85dB dynamic range.

Video Production

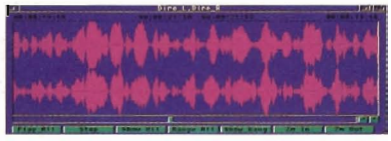
The Video Toaster goes a long way towards solving your video problems. But what about sound? Do you want to do ADR or voice-overs? Do you need to synchronize background music with your productions? How do you add footsteps, door knocks, and other sound effects to your video or animation? Do you need to fade, cross fade, or eliminate sections of audio? Can you edit your audio, or are you stuck with the first take? Studio 16 solves all these problems by turning your Amiga into a complete sound studio. With Studio 16's cue list and SMPTE support you can lock sounds frame accurately with your video. Audio triggers reliably, at the same spot, every time. Or you can slip your audio effects, trying them at different spots. And since Studio 16 plays directly off hard disk, the number of sounds you can trigger is unlimited.

Mixer and Meters

Each of Studio 16's eight tracks can be metered and mixed. Unlike two track systems, Studio 16 can combine multiple tracks with no generation loss. And it can record two tracks while playing up to eight!

Waveform Editor

The Studio 16 sound editor graphs the audio waveform and allows you to cut, copy, and paste audio. Up to eight samples



can be edited per window. And edits can be non-destructive or permanent. Zoom, scale, fade, reverse, echo, normalize, loop FFT, resample, and many other functions are available. Named regions can be defined and used in the cue list or transport modules.

DSP Supercharger

The AD516 includes a special sound coprocessor - the advanced 2105 DSP. The DSP allows Studio 16 to handle those eight tracks while performing real time mixing. The DSP can also do high quality 16 bit effects such as echo, flange, delay and chorus.

Low Prices, High Performance

Studio 16 2.0 comes with either the AD516 (16 bit, 8 track, stereo, $1495 list) or the AD1012 (12 bit, 4 track, mono, $595 list). Also available is the DD524 digital I/O card for direct interface to DAT. **Call today for a free Studio 16 information packet. Tel: (408)374-4962. Fax: (408)374-4963.**

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(See the DiskMaster II manual for details about changing other aspects of this command line, such as button color.)

To add the command to a command window (which gives you a button on the screen), add this line:

```
AddCmd ShowFS, 20, SYS:C/QuickFS %s
```

To add the command to the Tools menu (which gives you an item on a drop-down menu), add this line (to place it within a different drop-down menu, use a different menu name in place of Tools):

```
AddMenu Tools, ShowFS, 20,
SYS:C/QuickFS %s
```

With each of these commands, you will be able to highlight one or more framestores, then select the menu item or button, and view them.

DiskMaster II
(the double-click method)

This method is more awkward due to the rather bulky command, but it's worth it.

For DiskMaster, here's the information you will need to be able to double-click on a file to display it. This, too, is not a difficult procedure to set up, but you should be familiar with editing text files. If not, I recommend you have a knowledgeable friend do so for you.

1. Start your text editor.
2. Load the DiskMaster configuration file. (As always, when editing a file, you should be editing a copy of the original file so that any mistakes do not wreak havoc with your system.)
3. Move the cursor down toward the end of the file. There is probably a set of commands that begin with the word AddAutoCmd. Place the cursor just above the first of these.
4. Add the following command (it's pretty lengthy, must be all on one line, and must be exact):

```
AddAutoCmd
FORM????ILBMHD????????????????????
??????????????????????????????????
??????????????????????????????????P
LTP,External DH0:C/QuickFS %s
```

There must be 84 question marks in that long stretch. There should be a space after the word AddAutoCmd, after the word External, and after the QuickFS command itself. Otherwise, run everything together as shown. Some text editors will appear to <return> automatically while you are entering such a long line. Generally, this is fine. Since you did not press the Return key it is considered to be one line by the editor program.

5. Save the file.
6. Run DiskMaster II.
7. Go to the Framestore directory and double-click on any System 2.0 Framestore image. After a second, you'll see it displayed in a gray scale format. Click anywhere on screen to return to DiskMaster II.

If for some reason this does not work properly, double-check that you have entered the line correctly. Another possibility is that there is a previous AddAutoCmd in the file that looks for a FORM ILBM file. If so, place your new command just above it in the configuration file. Sometimes the specific order of these commands in the configuration file affects the program adversely.

This double-click recognition-and-display command may be workable within Directory Opus as well. Some creative adaptation may be necessary for it to work, but it can be worthwhile. If any VTU readers of this column take the time to rework the command for their systems, I will gladly reprint their versions here for all Toaster users to benefit from. Send your version to me care of VTU's main office address.

Note that if you use Toaster Toolkit's Framestore Compressor program on your frames, you will need to add a secondary command to the one above so that compressed files may also be recognized. Place this

Figure 1

command just below the one you entered above:

```
AddAutoCmd
FORM??????????????????????PLTP,
External DH0:C/QuickFS %s
```

There must be 24 question marks in a row in that long stretch. There should be a space after the word AddAutoCmd, after the word External, and after the QuickFS command itself. Otherwise, run everything together as shown.

Directory Opus (creating a button)

Here's the information you will need able to set up a button that will display multiple files.

1. Run the program.
2. Enter the configuration program.
3. Select the Gadgets menu button.
4. Select an empty gadget (a blank button) from the button display.
5. For the name of the button, enter ShowFS
6. For the button's command, enter SYS:C/QuickFS {F}

Do not select any of the other options at the bottom of the screen.

7. Click on OK, and save the configuration file.
8. Go to the Framestore directory, select a framestore, and click on the ShowFS button. After a second, you'll see it displayed in a gray-scale format.

Directory Opus (the double-click method)

Here's the information you will need able to double-click on a file to display it. This is not a difficult procedure, but you should be familiar with the Opus configuration program. Otherwise, I recommend you have a knowledgeable friend do so for you. Note: Ignore any buttons on screen that are not mentioned in the instructions below. They should not be altered.

1. Run the program.
2. Enter the configuration program.
3. Select the File types menu button. You are presented with a screen showing the currently assigned file types that Opus knows about.
4. Click Add. You arrive at the file types creation screen.
5. Click the button at top center (function type) until it says Double-Click.
6. For File Type, enter Toaster Framestore
7. For file pattern enter *.FS.*
8. For call function enter SYS:C/QuickFS {f}
9. At the bottom of the screen, click the checkbox labeled Directory Opus to front
10. Click OK, save the configuration, and return to Opus.
11. Go to the Framestore directory, select a framestore and double-click on it. After a second, you'll see it displayed in a gray scale format.

Transparency Mapping In LightWave

Last issue I included a tutorial on creating highlight glints in LightWave animations. I closed with a challenge to Video Toaster User readers to experiment with using transparency. How would you create an object so that it is semi-transparent on one end, while fading into complete transparency on the other? Here's the trick. This is an advanced tutorial, meaning that you need to know how to operate the Modeler very well, and LightWave and ToasterPaint fairly well. Intermediate and advanced users should be able to follow along without requiring basic explanation of each button.

The secret to achieving this is to use transparency mapping with a gray scale color ramp as the mapped image. Have you seen the bumper for Star Trek: The Next Generation? A still image with the blue logo, extruded into space and fading into nothingness as it extends into the distance? This is an excellent example of the effect.

Transparency mapping looks at the different brightness values within the selected image map and assigns each value a level of transparency. It then applies this varying transparency to the surface of an object when rendering. With a two-color image, 100% black and 100% white, one color or the other will cause portions of the object that correspond to the image map to be totally transparent. The remaining portions will appear as they should. Of course, using the Negative Image button, you can reverse which end of the luminance scale becomes completely transparent.

Take a moment and study the TextureExamples scene that is included with System 2.0. Load and render the scene. There are two valuable demonstrations of transparency mapping there. The fourth cube in the first row looks as though it consists of clouds. Here, fractal noise is mapped onto a luminous gray cube. The fractal noise pattern has been assigned through the Transparency button, so it is mapped with varying degrees of transparency. Wherever the noise pattern would normally appear, there is either empty space or some amount of semi-clear cloud material.

To understand how this works, let's change the scene a bit. Select the Cloud Cube surface, and look at the texture assignment using the Transparency button. When you exit the menu, click on Cancel Texture. Now click on Surface Color, then click the Texture button to enter the surface color texture mapping menu. Select the Fractal Noise texture, and enter the following settings:

Texture Size (for all three axes) 0.18

...Continued on Page 101

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Q&A AR JOHN

By John Gross

Greetings! This is a regular column in Video Toaster User that covers a broad range of general Toaster-related topics. I also endeavor each month to answer specific questions from readers about Toaster usage. If you have any questions about any aspect of the Video Toaster, please send them to me at the address below. Meanwhile, enjoy the column!

Lately I've been hearing from a number of people interested in grabbing framestores on the Toaster and converting them to Macintosh formats so they can be used in Mac graphic programs or output to hard copy. Even though I have written about this before (see AVID Vol 3, issue 7), I've had enough people interested that it bears discussing again.

First, you need to convert the image into a Mac-compatible file such as TIFF, PICT, etc. In order to do this, your first step is to load the captured framestore or other Toaster image into ToasterPaint and save it as an RGB file. This is a standard Amiga 24-bit IFF format. Once the image is saved, it is ready to be converted. All of the good Amiga image processing/file conversion programs such as Art Department Professional (ASDG, 608-273-6585) and Image Master (Black Belt Systems, 406-367-5513) can load 24-bit IFFs and allow you to save them in different formats. Make sure you check with your dealer to insure that the program you use will convert to the needed format.

Once converted, the image needs to be moved over to your Mac. There are quite a few options here. Since a Mac can't read an Amiga formatted disk, you need to get creative. One solution is to use Central Coast Software's Mac-2-DOS program. With this program and an external Mac drive hooked up to your Amiga, you can read and write 400K and 800K Mac disks. This works fine if your files will fit on a floppy, but often they won't. In this case you could JPEG the files onto the Mac disk assuming that the Mac software you'll be using can read JPEG files (both Image Master and Art Department Pro on the Amiga support JPEG). Art Department Professional also ships with a small program that will let you divide a file into pieces that can be sent over to a Mac and then reassembled into the complete file.

Another surefire way is to modem (or null modem) the files from the Amiga to the Mac. Of course depending on the modem speed, this option could be rather painful. Transfer could be sped up by installing a DoubleTalk board (Progressive Peripherals, 303-825-4144) into your Amiga and hooking it up to your Mac through a standard AppleTalk network. Amiga-to-Amiga networking can also be done using DoubleTalk boards, although it's not close to the speed of an ethernet network.

Finally, using System 7 on the Mac, you have the ability to read and write MS-DOS formatted disks. Using either DOS-2-DOS (Central Coast Software, 512-328-6650) or CrossDos (my preference—Consultron, 313-459-7271) on the Amiga, you can read, write and format MS-DOS disks, transfer your files to them and then use the Apple file exchange on the Mac to read them. If you have a newer 3000 or 3000T, you may have a high density drive (undocumented in the manual—check with your dealer) and you can write to high density MS-DOS disks using CrossDos. The Apple File Exchange can also read and write high density MS-DOS disks.

The best choice of all, however, is not listed above. ToasterLink for the Mac will be shipping soon (hopefully by the end of October but don't hold me to it). Using ToasterLink, you'll have the ability to grab a framestore in the Toaster, press a button on the Mac screen and automatically convert the file into PICT format and shoot it over to your Mac. You'll be able to go the other way also. ToasterLink will be able to work on any color Mac. It is a software/hardware (software on the Mac and software plus hardware on the Amiga) high-speed SCSI hookup between the two machines. I've seen some beta versions of this product and I am impressed with its capabilities.

It's interesting to note that the Toaster is already capable of converting images loaded into ToasterPaint into Mac PICT files assuming you are running version 2.0. There are two commands that are shipped in the Toaster drawer called ReadPict and WritePict. Their use is well documented in the TIO (Toaster Input/Output) appendix in the Toaster manual.

Well, enough ramblings about that subject. Let's get into the mail for this month.

Q I've been using ToasterPaint for about a month now (I think I've gotten used to the scrolling screen) but I have some questions about grabbing frames from the Switcher using the Grab Field option. What's the difference between grabbing one field and grabbing four fields? Also, I've been told I should always save my images as frames and not RGBs. Is this true?

Wallace Russo
Hawthorne, NE

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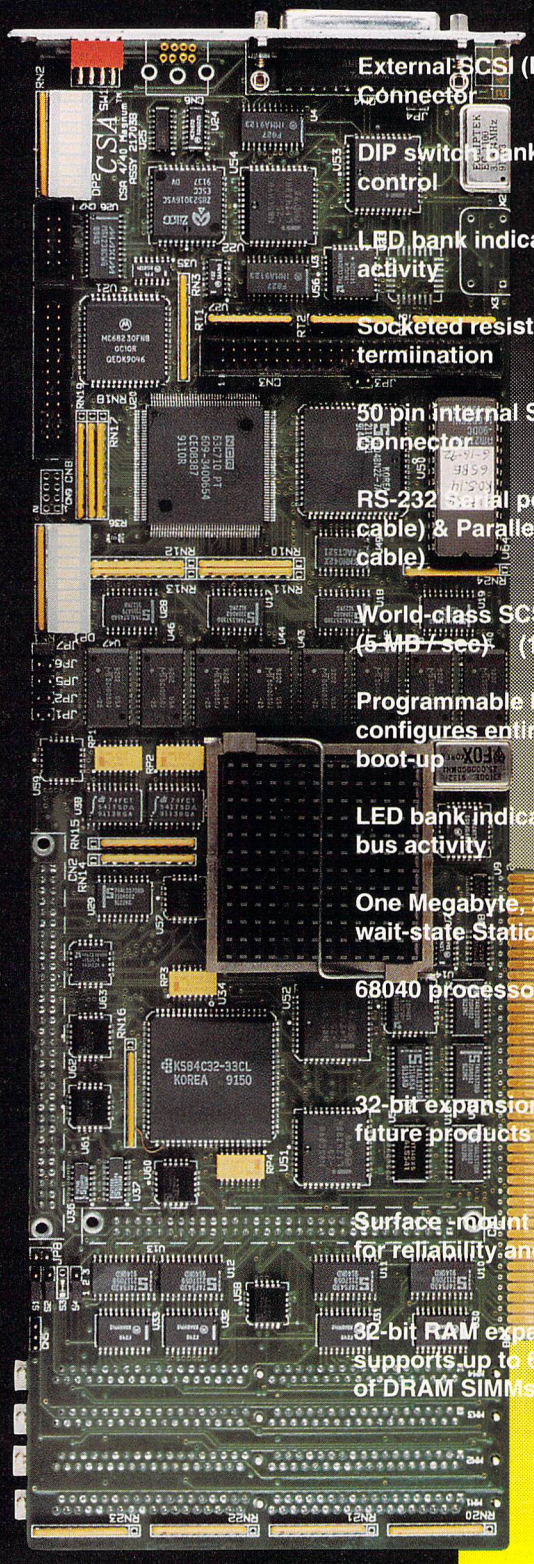

A Grabbing fields from within ToasterPaint is a great way of bringing in images without having to save and reload the framestores. The difference between one-field and four-field grabbing is mainly a difference of resolution. Four-field grabbing is used primarily when you have a still image in the frame buffer. An image created in LightWave, a CG framestore page or frozen video that was still or had motion removed are perfect examples of when to use four-field grabbing. If you grab four fields from a moving video source, you get "motion lines" in the area of the image containing motion when the image is loaded into Paint. One-field grabbing is used on an image in the framebuffer which includes motion. When you grab one field from within Paint, motion disappears but you end up with a one-field image that has resolution loss. It is generally more noticeable in the areas of the image which contained motion. A great way of getting the best of both worlds after freezing an image with some motion is to first grab four fields into Paint and then go to the spare page (keyboard equivalent j) and grab one field from the same framebuffer onto the spare page. You can then use RubThru mode to combine the best parts from each image.

The difference between RGB and frames is fairly simple to explain. RGB files are computer files that can be used by other programs for image processing/manipulation or imported into desktop publishing programs and printed out. RGB files are the same as 24 bit IFF files. If your purpose is to go out to print and/or other programs you need to save your images as RGB files. If you intend to go out to video (and what kind of Toaster user would you be if you weren't?) you eventually need to save your image as a frame. I say eventually because it is a good idea to save work in progress as RGBs and thus maintain truer color information. When you are ready to go to video, save it as a framestore image.

Q I've been frustrated about finding my CG pages. Sometimes I can find them and sometimes I can't. Even pages I know I saved tend to disappear or not turn out the way I saved them. Can you suggest anything?
Doug Fritchie
Burlington, NC

A When talking about CG pages, it is important to make a distinction between normal CG pages that are usually saved as part of a project and buffered CG pages that are saved from within the CG itself. To save a book of 100 pages (whether empty or not), you need to save a project file from the Preferences section (F10 from Switcher screen). In order to do this, you must exit the CG by pressing the Escape key. If you press Shift-Escape you will remove CG from memory and lose all the pages you have been working on. Once a project and the included CG book are saved you can access the CG book at anytime by loading the project. You can also load just the CG book from any project containing one by double-clicking on the Load Book icon (to the right of the Save Project icon). This icon only appears when the CG is loaded into memory. Loading just the book saves time by not having to load all the effects used by the project.

A buffered page is a either a key page or a framestore page (usual case) that is saved from within CG by pressing Alt-F9. This page will load as quickly as a framestore when accessed by the Switcher. These buffered pages are saved in a special directory called Pages which can be found in your framestore directory. It's important to note a few things about buffered pages: 1) Buffered pages which can be identified by the little lightning bolt next to the name can only be accessed by loading them from the small CG button (located over the Load Frame button) that is visible when the CG is loaded into memory. 2) Since buffered pages use the current project number as part of their name, they can only be saved as buffered pages by overwriting the project using the same number as before. Since in most cases, this is opposite of how you normally save projects, it may be a good idea to get into the habit of creating new projects before you go into the CG and create a bunch of buffered pages. 3) Buffered pages can be deleted accidentally by changing something on the buffered page such as changing a font's color or removing a font from the book that was used by the buffered page. Anytime you make the lightning bolt disappear from the menu strip, you have automatically deleted the buffered page. If you are afraid you might do this, you should render the page to the framebuffer then escape out of CG and save the image as a normal framestore.

Q I've been trying to make a birdcage in LightWave but I don't want to make all the individual bars. I thought I could use a transparency map but it didn't work out right. Do you have any ideas?
Eddy Timlin
via Compuserve

A Try modeling the solid shape of a birdcage and then turn on Outline Only in the Surface panel for the birdcage surface. The more polygons in the model, the more bars in the cage. This is different from rendering in wireframe because the outlines will still be shaded with light sources. This is also a great way of making wireframe globes. VTU

John F. Gross is a Video Toaster graphic artist employed by Alpha Video in Minneapolis. He has been using a Video Toaster every day since they were released and is still trying to catch up on his sleep.

Questions can be sent by mail to:
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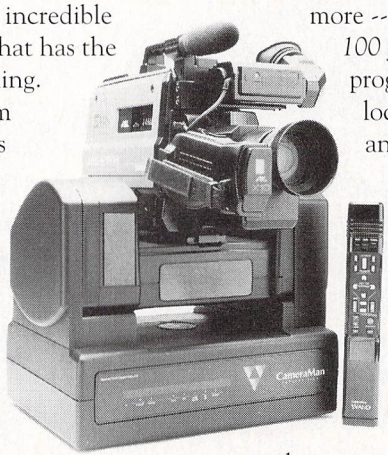

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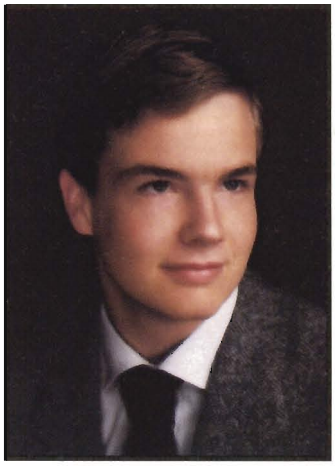
TAMING THE WAVE

By David Hopkins



Welcome to Taming the Wave. For those of you reading this magazine for the first time, and I know there are a lot of you, this is a monthly column about LightWave 3D, the part of the Video Toaster package that I like best and use most. LightWave 3D and its companion Modeler program are designed to let you create realistic 3D images and animations completely within the computer, although of course you have to take additional steps to view a LightWave animation. Taming the Wave gives hints and tips for using LightWave and Modeler, as well as an occasional hands-on project so that you can learn about the software by following along. This column is intended for all LightWave users, so please send your questions and suggestions to me at the address below or via the VTU editorial office—I want to hear from you!

Are you aware of the impact that the Video Toaster's 3D package, LightWave 3D, is having on the graphics marketplace? Babylon 5, an upcoming major television movie/series set in space, features an enormous amount of LightWave animation by expert Ron Thornton. LightWave brought a wireframe animation of the Enterprise to its bridge in Star Trek VI. Many national broadcast commercials are in the works using LightWave as their creator. We're on the edge of something really big. And you can be a part of it. Just start Taming The Wave...

Over the last few months I've been doing a lot of rendering. I mean *a lot* of rendering. My LightWave training package, Taming The Wave: Exploring NewTek's LightWave 3D, contains hundreds of animations illustrating the results of each option LightWave offers. Quite a bit of rendering! In the course of all this rendering, I've discovered plenty of nifty tricks that you'll probably be interested in.

Custom Defaults

Do you experiment with surfaces much? If you don't, you should, but that's not the point. Before you load anything, go to the Surfaces requester. The current surface is Default, which means that every surface setting is turned off. If you save this Default surface in your surfaces drawer, the next time you want to clear all the settings from a surface, just load Default.

This same concept goes for the entire scene as well. When I am building a scene, I usually prefer to work on a solid black backdrop than LightWave's default sky and ground. I like previewing my scenes at Medium Resolution with no overscan. I also get very tired of resetting them all to my liking every time I start working. My simple solution was to set up a scene with nothing loaded and then save it as a scene file called Default.

Have you ever loaded two different objects and found them to have surface names in common? Fonts, for example? If you want the surface names to be different on each object, try loading the first object with that surface and rename it. Save the object back over itself. Now you can load the other one and each of them will have their own surface names.

Portable Scenes

Sometimes you may need to set up a scene on one Toaster, then render the animation on another. Unless your hard drive set up is identical on both machines and you put things in their correct places, LightWave's not going to be able to load your scene properly. There are a few solutions to this, and you can choose the one you prefer.

1) Before you move any files, make directories on your floppy (or other transfer medium) for Objects, Scenes, Images*, and Motions*. The * items should be created only if your scene requires them.

Go into LightWave and re-save all of your objects. You can't do this using Save All Objects, however! Go to each object, click Save Object, then point the file requester to your "portable" Objects directory. The name of the file can remain the same. Since LightWave already has that in the requester you need only click OK.

When you have saved all of your objects like this, save the scene. Of course, you'll want to save it in your portable Scene directory.

Now, go back and save all of the motions into the portable Motion directory, if you have any named, saved motions. If, on the other hand, you had been defining motions and just allowing them to remain unnamed, and then saving the Scene, you don't need to do this!

Unfortunately, you'll have to move the images over manually using the Workbench or a directory utility. You'll also have to re-identify them when you try to load your scene on the other

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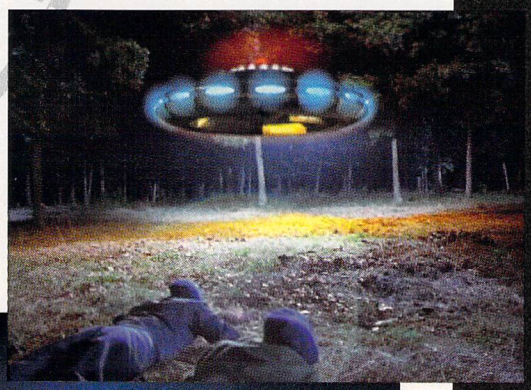

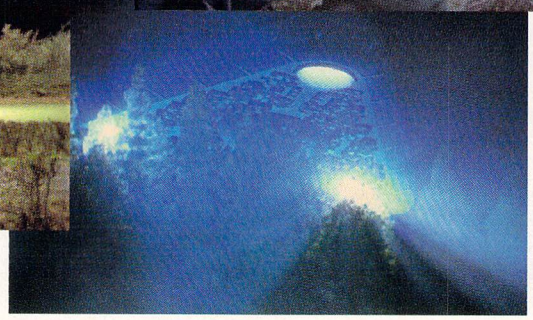

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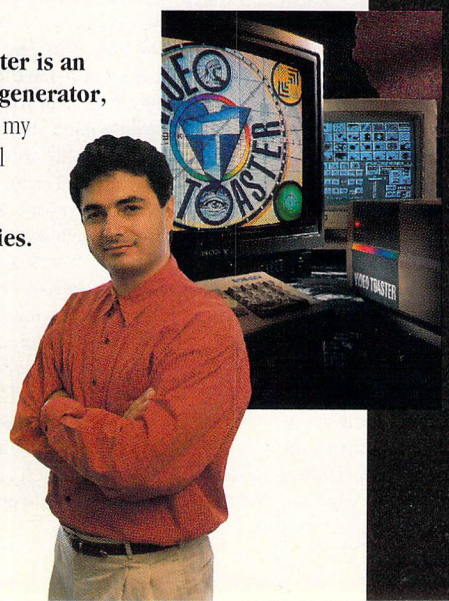

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machine.

2) Again, before you move any files, make directories on your floppy (or other transfer medium) for Objects, Scenes, Images*, and Motions*. The * items should be created only if your scene requires them.

Use a directory utility to move all of the files into the appropriate portable drawers.

When you load the scene on the other machine, before or after you've moved all this stuff onto the other hard drive, LightWave will present a requester asking where each saved file is. Simply point each requester to the file's new location.

3) Build the scene on a floppy in the first place! If you intend to work on the project in this manner (multiple machines) from the beginning, this is the most logical way to go. Large, complicated scenes may take up more than one disk, however. I prefer this system using the DMI 21MB floptical drive. I've yet to build a scene that overflowed 21 megs of data, but this may still be small for people like Ron Thornton and Todd Rundgren.

4) Move all of the stuff using a directory utility, then modify the Scene file with a word processor as I mentioned last month.

These are the four most workable solutions I've found. Of course, if all of the other machines that these files are traveling to have their hard drives set up identically, there would be less fuss. Simply copy your items out of each directory and dump it into its twin.

LightWave Lighting

Switching to lighting hints for a moment...Do you find that your images never look quite as "realistic" as those from people like the above mentioned Ron Thornton or Jim Robinson? One of their secrets (out of thousands I don't know) is in the lighting. A lot of people never really pay much attention to lighting in their scenes. I've seen many an animation that suffered from this problem.

Learn to use the different types of lights for their appropriate situations. The default type of light source is Distant. This means that light flows in the direction the light points, but not just a little light. This is a tremendous wall of light, over which you have control of only the brightness and color. Distant is best used for outdoor scenes.

The next type of light source is Point. Point lights give you a bit more control than Distant, offering the option for Falloff. Falloff is the rate at which light dissipates as it moves away from the source. This option defaults to 0, which means that light continues infinitely in all directions from the light source at full brightness. By raising the percentage you can create much more "natural" scenes. Point is great for a huge number of things: light bulbs, glows from explosions, fires, sparks, you name it.

The third type of light source, Spot, offers the most options for lighting control. As its name implies, it is a spotlight. It casts light from a point in a directed beam. Not only can you control the Falloff, but you also can adjust the diameter of the beam and the beam's soft edge. The beam is made smaller by lowering the Cone Angle. Raising the Soft Edge Angle makes the light less well-directed, with a broader "halo" effect.

The image which accompanies this column is a "work-in-progress" from James Robinson. It's been in progress for a long time, as a matter of fact. You've probably seen an earlier portion of James' massive animation, *Please Don't Feed The Daisies*, on NewTek's demo reels and brochures. He still won't release all of the details, but we know it involves a curious bee's exploration of a house. I, for one, can hardly wait to see this animation finished.

Image World Show

A lot has been said lately about the new Todd Rundgren animation, *Theology*. I got a chance to see it at the recent Image World show here in Los Angeles. It runs about four minutes long and features some of the coolest animation I've ever seen come out of LightWave. Todd worked with Till Kreuger and Eric Meyers using a souped-up LightWave which, according to rumor, may see the light of day in the not-too-distant future. Among the incredible displays of textured environments and motion, you'll find a number of exciting new techniques in evidence. Brilliant shafts of light cause lens flare on the screen. Surfaces evolve, and there are the best burning candles I've ever seen. This is a must-see animation, but for now, you can only do that at shows. Todd and his team have decided they need to change a few things, so you won't be able to get it in your hot little hands for a while yet. According to one source, "Todd created *Theology* to prove to himself that the Toaster was the way to go." Rumor has it he's convinced.

Speaking of the Image World show, I was really disappointed. It was a very small show, with just about nothing of any real interest except the tape NewTek was showing. Besides *Theology*, the tape also featured new animations from Babylon 5, which are pretty astonishing. That's going to be an incredible show! I wish there was something else positive I could say about Image World, but that was about it. Oh yeah, NewTek's new show handout brochure talks about the ToasterLink/Mac. The word I've been hearing is that most Mac people are upset with the way the system works. They want a card that fits inside their Mac, not a machine that sits beside it. Professionals, on the other hand, realize that it is a tool they need, regardless.

Ever use an image map, wood for example, only to find that the color of the image isn't quite what you want? You could go off into ToasterPaint and re-color it or something, but another alternative is to use the image as a diffusion map only. When you deal with the problem this way, you have your surface color available. Simply set that to the color you wish the surface to appear and let the diffusion map give it the light and dark values.

Contest Time

Last month I gave you an informal challenge: Create a working waterfall with LightWave 3D. I also mentioned that there may be a cool prize for the winner. Well, it's definitely going to be a cool prize, because I've talked NewTek into sending the winner a surprise. Plus, if you can believe this, Unili Graphics is going to drop a complete Master Pack of Broadcast 3D Fonts in your lap! So, for those of you who missed it, let me fill you in on what you need to do.

The mission, of course, is to create as realistic a waterfall as you can manage with LightWave. The scene can be anything you want, but the waterfall is the key. Put some animation on a VHS tape, put a framestore on a floppy, and include an explanation of your technique. Send all three items to:

Mach Universe
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All entries must be received by November 23, 1992. Entries will not be returned, so make sure to keep a copy for yourself. The Mach Universe "panel of experts" will select the best entry and publish the Framestore, with credits, in an upcoming installment of this column. Now listen, folks—NewTek is interested in the possibility of using the winning entry in future Video Toaster promotional videos, so this is a great chance to get your work seen by a *lot* of people. Good luck to you all! Note: Employees of Mach Universe, NewTek, Unili Graphics and/or AVID Publications are not eligible for this contest. The judging panel's decision is final.

If you'd like to drop me a line with your hottest LightWave or Modeler hints, tips, tricks, suggestions, comments, etc., you can send it directly to me at:

Mach Universe
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Attn: David Hopkins

This column is here to help you. You need to let me know what you wish to have help with. Everyone has something that they haven't really gotten the hang of, so write and give me a clue!

See you next month... VTU

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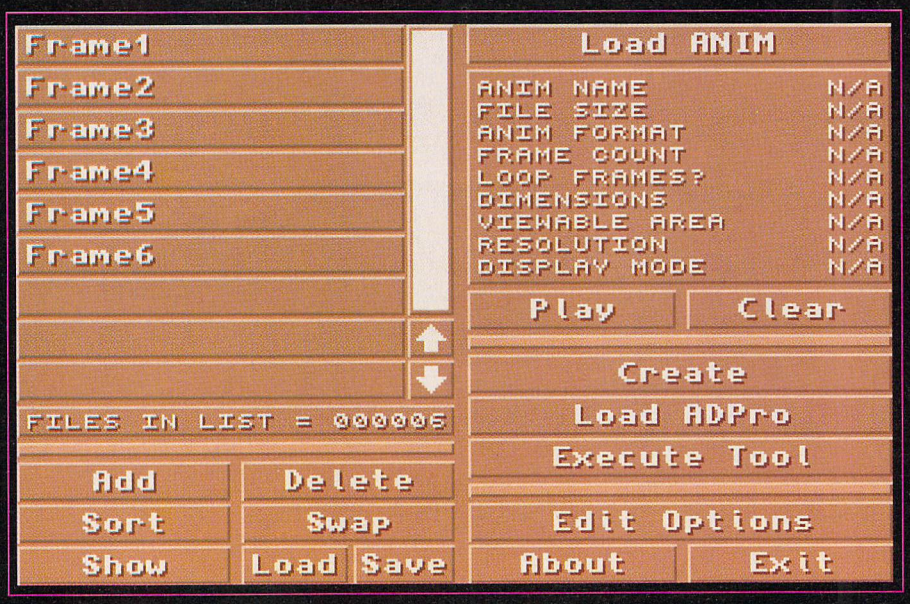

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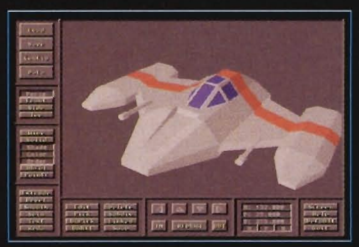

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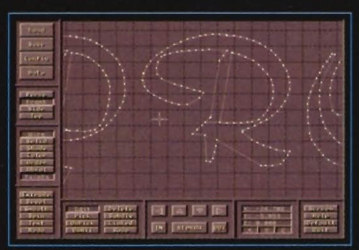

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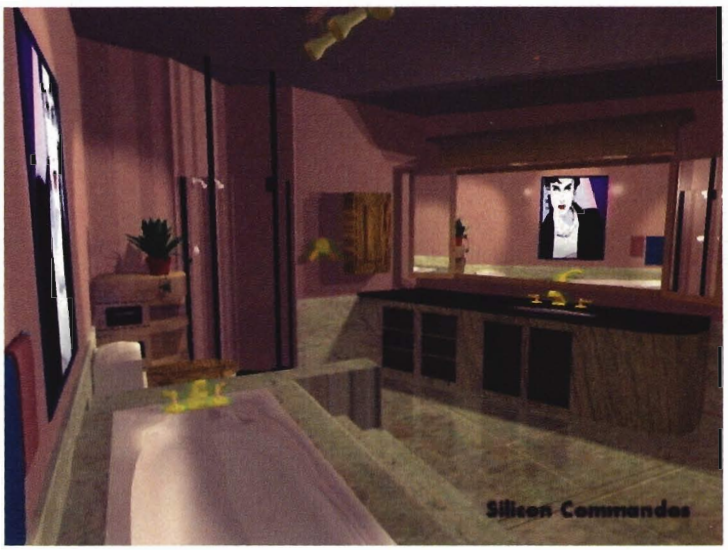
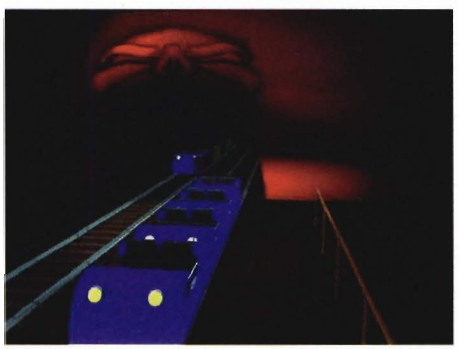
GALLERY

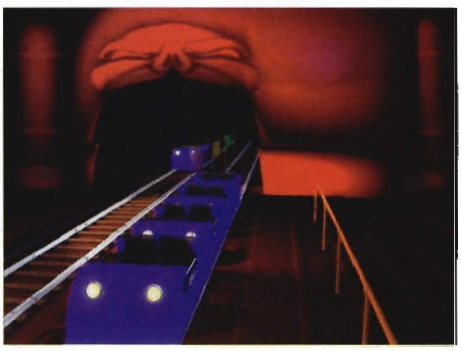
Company Name: SRF-Silicon Commandos, 10 Pickwick Dr., Commack, NY 11725, Phone: (516) 543-0204. Company Profile: SRF is a 3D animation company using Amiga computers and Video Toasters to create corporate and consumer animations. We have been using Amiga computers since the Amiga 1000 back in 1985. All of our work is done completely on the Amiga and Video Toaster. Image information: The bathroom1 picture is a test rendering for a demo we are working on. As you can see some of the surfaces have to be fixed and the walls are not quite finished. All of the objects were modeled and textured by Seth Greif except the toilet and cabinet which were created by Richard Maglick. The textures were created by Ron Seifried and Felix Kupis with a camera and ADPro. The final rendering was done by Felix Kupis on an RCS 68040 and took 3 hours a frame with ray tracing.



Roller Coaster was created by Joe Glaser of Vinyl Cherry Productions. The picture shown here in two different stages is a scene from the upcoming film, Joe's Nightmare Amusement Park. The image was rendered in LightWave and all of the textures were hand drawn in ToasterPaint.

The second picture was retouched in ToasterPaint. Sections of the image were selectively lightened, two walls were added to the scene and a lens flare effect was created on the headlights of the roller coaster cars. The flares were created using ToasterPaint's lighten mode. "On still images I'll use ToasterPaint for things like lens flares and fog." says Joe Glaser VCP's resident artist. "We also use it constantly to create original art. We try to utilize as much of the Toaster as possible—we really like having everything in one package." Vinyl Cherry Productions can be reached at 413-747-1711.

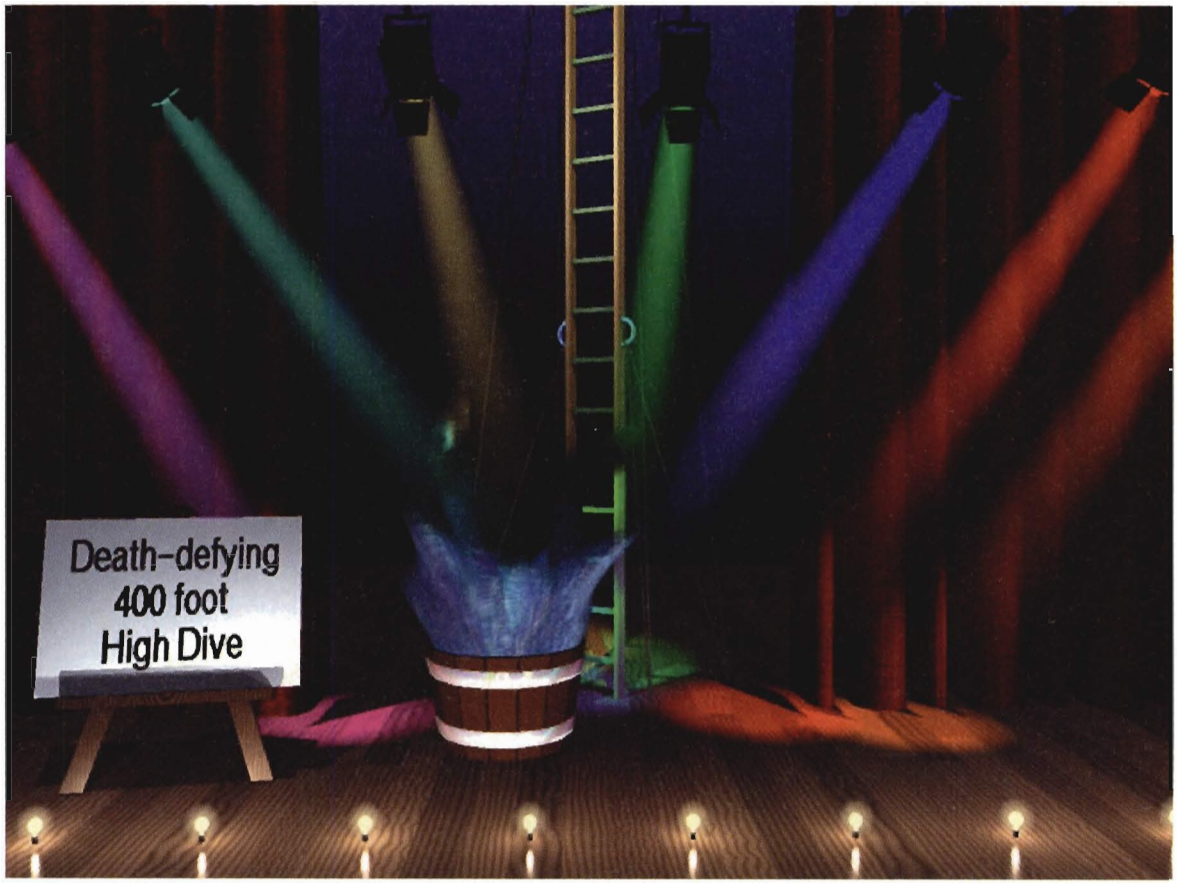




Created by David Johnson & Jody Reimers in LW3D 2.0 Rendered in hi-res Full Size Image Save. Map created by Jody in ToasterPaint.

This scene was done by Jody Reimers in LightWave 3D. Images were scanned with a Sharp JX100 scanner and then touched up in ToasterPaint. The scene was rendered in hi-res and saved with the "Save Full Image" option. It was then JPegged at 100%. Render time was 1 hour and 28 minutes on an Amiga 2000 equipped with a 28MHz PP&S 040 with 16 megabytes of32 bit memory and 5 megabytes of 16 bit ram.

The crayon drawing is a family portrait done by my 5 year old son, Joshua.



Mark Thompson

I did High Dive some time ago (LightWave 1.0, actually) as a test of motion blur techniques which where applied to the legs of the diver and the spray of water shooting out of the bucket. While the composited blur was accomplished entirely within LightWave, it could also have been done with any of the existing image processing packages currently available such as ADPro, Imagemaster, or GVP's new ImageFX. If you don't have one of these packages or would just like to avoid using another program for motion blur, here is a quick and dirty summary on how to do it in LightWave. Three features of LightWave, Foreground Image, Foreground Dissolve, and Image Sequence make motion blur possible. First, setup your scene and define motion paths for your blurred objects to follow. These paths may be any number of frames in duration but the more there are, the smoother the blur (and longer the render time). Now render the first frame to an IFF file. Next, load an image sequence and specify the filename prefix you just rendered. Then specify a foreground picture using the image sequence and specify a foreground dissolve of something like 50%. Then give the image sequence an offset of -1 and start rendering at frame 2. Now each successive frame will be composited with the previous ones and the moving objects will be blurred across their paths. The process is rather simple to implement and is not too difficult to extend to animation. High Dive was done with only 5 frames because LightWave 1.0 render times on this image were astronomical (there are 17 light sources and 1.0 could not disable shadows for individual lights).

Grant Boucher

This is a still scene from *The Scorcerer's Familiar*, an animation by Grant Boucher. In this scene, a little dragon named Sparkle gets his first close-up look at a crystal ball on his master's work table. Grant Boucher is a freelance animator with Larry Mitchell and Associates based in Orlando, FL.

The Toaster Gallery is a regular feature in Video Toaster User that showcases the work of artists who use the Video Toaster. If you would like to submit your work for possible inclusion in this section, please send images on Amiga format 3.5" floppy disks in Framestore, IFF24 (RGB), or JPEG format to: Video Toaster User, 21611 Stevens Creek Blvd., Cupertino, CA 95014. Please include a text file on the disk containing image names, your name and phone number and a short description of the images and any special techniques used to create them. Images should be created with LightWave 3D, ToasterPaint or both. VTU

Two-time Grammy nominee and MTV award-winner Paul Goldberg says:
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Paul Goldberg
Hollywood, New York

"Truly the next generation of Toaster tools."
Video Toaster User Magazine

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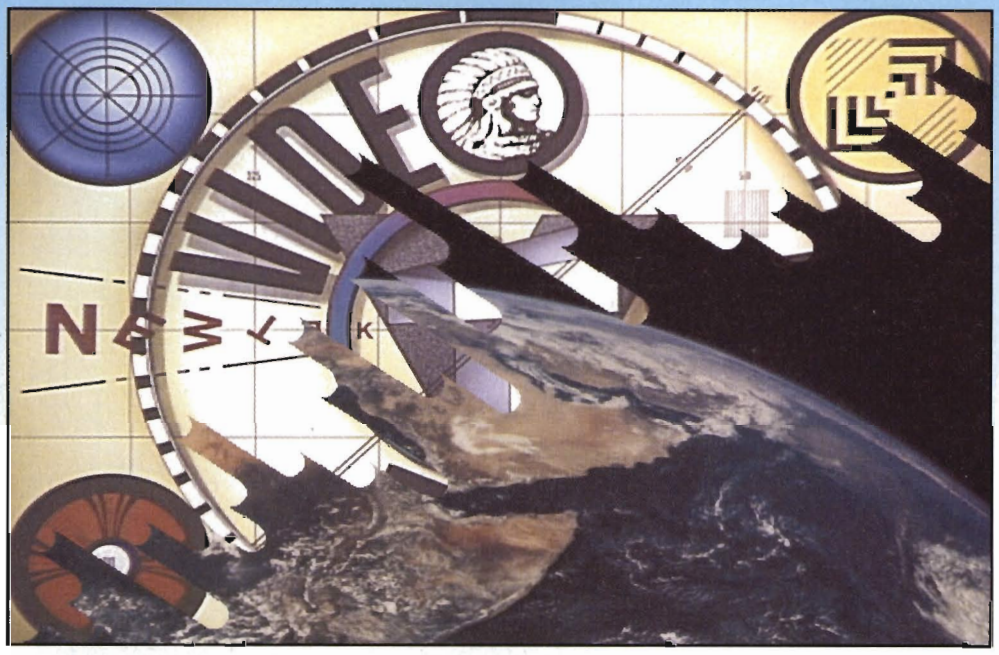

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Framestore Cruncher - The fastest framestore compressor available • compress (by as much as 80%) AND decompress framestores with no loss of quality (Compressed frames are loaded faster).

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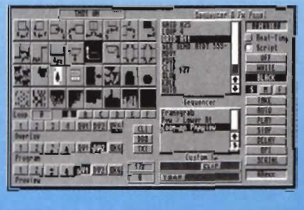

ToasterVision is available at your Video Toaster and Amiga dealer or directly from:
Byrd's Eye Software 9001 Northgate Blvd., #135 Austin, TX 78758 (512) 835-4811

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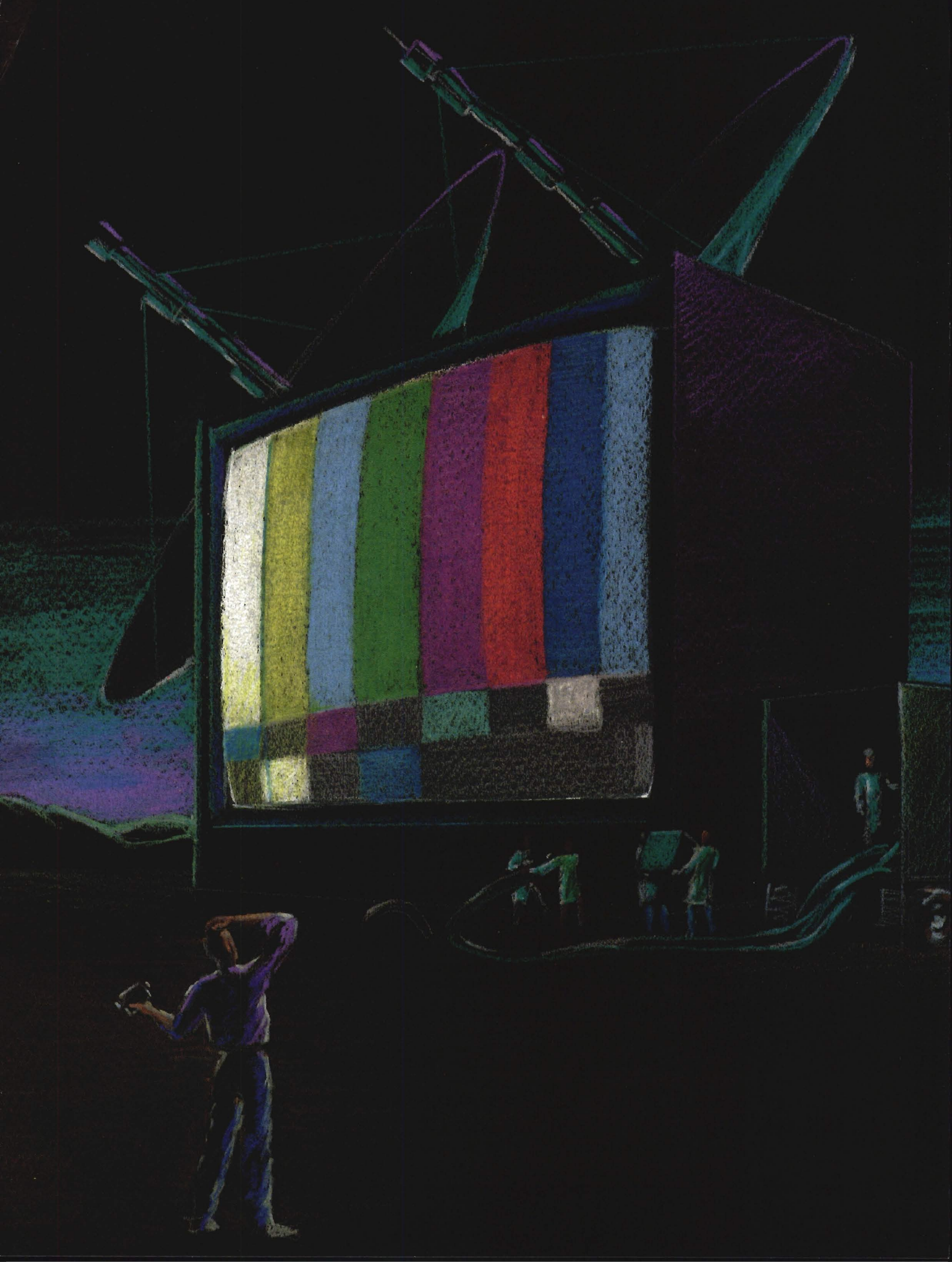


FROM HOME VIDEOS TO HOME BOX OFFICE

by George Avgerakis

A BEGINNER'S GUIDE TO PROFESSIONAL PRODUCTION QUALITY

"Toaster? Video Toaster?" My partner exclaimed, throwing my purchasing request back at me. "I'd never buy anything with a name like that. Every toaster I ever bought burned toast," She laughed. "Why should we get burned?" I answered, "Enhanced Production Value." I proved it with a demo, we bought the Toaster and we haven't gotten burned. To the contrary, we've warmed up a considerable loaf of clients! The clients come—and stay—however, not so much because of the Toaster, but because of its ability to easily become part of an Enhanced Production Value System. Regardless of where you stand in the spectrum of professional development or where you wish to go, production value is the single most important criterion to success in any motion picture, be it a wedding video or a feature film. Production value is also an important criterion which separates the amateur from the professional and the good professional from the great professional. This short article, directed to those entering the field of professional video production, briefly describes ways in which you can enhance your own production values. Before we consider the actual production, let's talk about the producer: you. If you don't own any equipment, don't worry. Many professionals make lots of cash working out of a briefcase. They're called "Briefcase Producers" and they do feature films, television shows, high-budget industrials, commercials—you name it. If you have equipment, you're more committed. It will be either shoot equipment, edit equipment or both. All producers begin with the pre-production phase. Even if you're operating out of a briefcase, we'll assume you have the basic business tools of a telephone, a typewriter (preferably a word-processor), and an

answering machine. This last is very important. Don't expect professional respect if there's no answer or a six-year-old answers the phone. A copier, fax and other basic tools are good too, but for starters you can rent these from a local store.

The most important aspect of producing is to relate to your client. No one is going to establish a professional relationship with someone they don't trust, so building trust is the first step. Be honest, be creative, try to figure out what your clients want and then explain how you think you can give them what they want.

Don't make the mistake of thinking anyone is impressed with you, your gear or your knowledge. In fact, most people are either intimidated by video technology or think they know more than you. To avoid the disasters of both possibilities, avoid talking too much about the technology. Start from the basic question, "What do you want and how can I make you happy?" Then shut up, listen and take notes. You'll find that this approach is usually so rare, so unique, that you'll make a great impression, gain trust and move closer to winning a client.

Let's suppose you've been commissioned to do a show (or at least you've been asked to explain the steps in simple terms). What are the steps and what are some special, professional techniques within each that you can use to bring polish and expertise to your work?

Pre-Production: The 6-P's Formula

In the military (And make no mistake, making a great video is a lot like waging a war!) they say, "Proper Planning Prevents Piss-Poor Performance." Pre-production is the first third of a project and is by far the most important part.

Video technology makes it all too easy to pick up a camcorder and shoot. In film production this isn't as easy and it is really expensive. So the best place to learn pre-production is by copying film techniques in preparing the creative aspects and attacking the logistical problems.

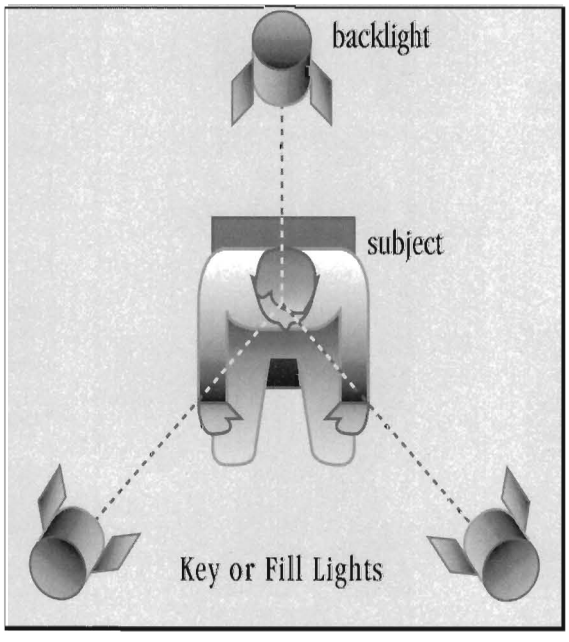
The pre-production creative aspects are Script and Storyboard. Imagine: some video producers don't even use a script. "Script a wedding video?" I hear your scream, "Are you crazy?" Consider this:

You're up against the best wedding video producers in your market and you want to impress you customer and win the job. Let's say it's a Jewish wedding. What's wrong with going to a synagogue, nudging the Rabbi and asking him for a copy of the standard wedding ceremony (in English)? You knock this out on a word processor, add a title, "Katz's Wedding," and then globally change all the "bride" and "groom" parts to the appropriate names of your potential client.

In video productions, the audio portion of the script is placed on the right half-vertical column of the page. Here is where you put all the words anybody will say. If you like, ask this friendly Rabbi to suggest appropriate music selections for the ceremony. Then, where the music starts, add a line: "FADE IN MUSIC: (name of song). The same goes for sound effects: "SOUND EFFECT: Glass shatters under foot, sound of drum beat."

Now comes the creative part: on the left vertical-column, you put in all your suggestions for video shots. You have several to choose from, such as extreme close-up (an eye), close-up (a face), medium shot (head and shoulders), medium wide shot (two people), wide shot (the bridal party), long shot (the congregation), extremely long shot (planet Earth—just kidding). You can describe the movements from the tripod's head such as a TILT (up and down) and a PAN (left and right) and you can describe camera movements from the dolly, such as a TRACK IN or OUT. Don't forget ZOOM IN and OUT. After the camera effect, describe briefly what the client might expect to see: "Start with WIDE SHOT of congregation, then ZOOM-IN to CLOSE-UP of Mother, crying. Don't be afraid to let your imagination run wild. It's easy for a client to laugh at your extravagance and then suggest, "going a bit more conservative." It's hard for a client to express that he or she wants more pizzazz. Pizzazz is your job.

Which brings us to the Toaster. If you have one, write it in, "DIGITAL SPECIAL EFFECT: the picture becomes "posterized," like an antique photo, then it FREEZES while a TITLE ("OUR LOVE") is SUPERIMPOSED over the picture." (Use capital letters to note any special item in the script which should be noted, as shown above.)



If you think the client will have a hard time imagining how something will look and if you are a half-decent artist, draw a sample frame in the left column. This is called storyboarding. Storyboarding is the most effective way of selling a script. It also helps enormously in pre-visualizing a production. Incidentally, Alfred Hitchcock storyboarded every scene of nearly every film he ever made.

Production

The next step is production—shooting the video. Here, I'll assume you are working with a consumer (or, I hate the term) prosumer camcorder. Many of these principels apply to the highest levels of production.

The most important element in shooting is the client! I was going to say lighting, but I remembered the video techie's penchant for sacrificing the "actors" in lieu of the technology. Never forget who (or what) is in front of the camera and how that relates to the project. If it's a wedding, will the clergy be upset if you bring in lights? (Ask in advance!) If it's a used car commercial, will the client be pleased if you bring a car-cleaning kit and have your assistant "detail" the car just before you shoot (You bet he will!).

Lighting

Most consumer camcorders have very high light sensitivity. If you are shooting outside, the only lighting you will probably need (or be able to use) are reflectors. These can be made from simple foamcore boards, bought from an artist supply store. Foamcore and a roll of duct tape are the two most valuable tools for shooting anywhere, but on a sunny day, you can bounce extra light into the underside of difficult-to-light places (like under a nose or chin, for instance) or add attractive highlights to your scene.

When shooting interiors, lights always help. You can use the existing lights in a room (we call these "available practicals") if you're on a low budget. Consider carrying some extra 150-watt bulbs to replace the practicals that are too dim to use.

You can use a camera-mounted (battery-powered is best) mini light, too. Many network news crews carry these, but be warned, they make video that looks like it was shot by a news crew, not a professional glamour photographer. To get a really professional look, you need at least three lights for each scene (or what we call a "set-up").

The three lights are named for after their generic purposes: key, fill and back. Basically, the positions of the lights may be described by thinking of a three-bladed propeller. Each blade represents a light and the hub represents the subject of the scene. If our subject is a woman facing the camera, the back light would be behind the subject, pointing at the back of her head and shoulders. The key light will be one third the radial distance around the subject, to the left or right of the camera. The fill light will take the place of the remaining third propeller blade. I like the propeller analogy because you can imagine rotating all three lights equally about twenty degrees in either direction and still maintain a theoretically correct lighting plot. Later, as you get better at it, you can even change the proportion of radial distance between each light and the distance of the light to the subject.

The key light (as in "key man") is the brightest and sets the mood of the scene. If it is very strong, it lends contrast or drama to the scene. The fill light flattens the scene a bit and fills in some of the shadows created by the key light. The back light adds depth to the subject by creating a border of light that distinguishes the subject from the background. Entire books have been written about lighting, but this brief explanation can serve as a basis for experimentation. The ground rule is to start with a ratio of intensity of light between key, fill and back that represents 2:1:2 respectively.

Measuring these intensities is tricky without a light meter. You can ballpark it, or use the built-in light level meter of most camcorders to measure each light's relative intensity. Do this by pointing the camera at the subject from the light's point of view, turning on only the measured lighting instrument and then looking at the needle. The key and back should be equal and the fill should be about half. Now turn on all the lights and look at your subject from the camera's point of view. Is it what you want? Try turning off each light and seeing how the mood changes.

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With experience, you can create an infinite variety of effects, each to suit a particular need. Of course, when adding subjects, consider that you will be adding lights! Often one back light will do, adding keys and fills becomes a complex process. Soon, you, like most feature film Directors of Photography, will wish you had a special "negative light" that would take away shadows!

On Focusing

After lighting, consider the ways you can get more quality out of your camcorder. A quick comparison between a broadcast camera, such as a Sony Betacam, and a consumer camcorder, will reveal two startling differences. Professional gear does not have auto-focus for two reasons: a professional cameraman knows his focus instinctively and auto-focus just doesn't work. Disable it right now. Another difference is auto-iris (automatic exposure). Professional cameras allow you to disable the auto-iris and most good camera operators do. Otherwise, you get ugly iris changes in the middle of a shot if you pan or zoom from one light level to another. Unfortunately, you can't disable the auto-iris without an internal modification. Live with it.

Now let's look at how focal length (position of the zoom control), object distance and iris setting work together and how to exploit this important relationship. Look through your camera and focus on some movable object about ten feet away. Now move the object closer and farther from the camera and note where it begins to fall out of focus. This range is called the depth of field. Now, turn on some lights and measure the depth of field again. The increased depth of field was the result of a smaller iris setting (f-stop), caused by increasing the light. Depth of field is maximized as the view angle is widened (zoomed out), as the iris is narrowed (light level increased) and as the distance from the camera to the object is increased. Depth of field is minimized (to the point that a nose can be in focus but the ears remain fuzzy) when the lens is zoomed in, the iris is open (a dark scene) and when the object is closer to the camera. Now think creatively.

If your clients are complaining about focus problems, maybe you need more light. You can create attractive "focus-pull" effects, where you shift attention from a person in the background to a person in the foreground by pulling the focus from one to the other. This requires a minimal depth of field. You can blur out an unattractive background by lowering the light and putting your subjects closer to the camera. Each of the three parameters—zoom, iris and object distance—are interchangeable. You don't have control over the iris unless you have controllable lights, but by adjusting the zoom position and distance you can get very creative. By the way, all of these rules apply to still photography. That's why professional 35mm cameras have so many controls.

Here's a tip on zooming: don't overdo it. Years ago, I was commissioned to shoot stock footage in Peru for a TV series called *Ripley's Believe It Or Not*. When I submitted the film, the producer yelled, "Too many %&*$ zooms! Don't you trust your eyes?" Later I learned that excessive zooming is the sign of someone who isn't sure he knows what the best composition is. Learning to trust your eyes is a matter of committing yourself to a shot; its angle, subject, lighting, subtleties and finally its focal length; and sticking to it. This also applies to what I call "nailed-down tripods." Don't pick a place and never move. Take the camera and move all around your scene. That's why it's a portable camera. I look at a lot of camera operator's reels. The real pros give you a lot of well-composed video snapshots, not a continuous series of static zoom shots from one position at eye level.

Sound Ideas

Finally, let's consider sound. The microphones on all camcorders suck. And that goes for my Betacam as well as your VHS gear. Do anything, even take the mike from your kid sister's Fisher Price "Mr. Mike," put a long wire on it and plug it into that accessory jack. Ah, but now where do you put that mike and who holds it? Well, go to a hardware store and buy one of those telescoping poles that house-painters use to reach a ceiling. Tape the mike to that and have your assistant point it at the neck (yes, the Adam's apple is where the best sound comes from, not the mouth) of your subject. Or hand the mike to your subject and ask him to play TV Announcer. Jim MacFadden, a successful New York wedding producer, says his clients love to pass the mike from table to table giving "best wishes."

Of course, you can buy better mikes, but you are limited to the audio recording quality of the camcorder. Take your camcorder to a good supply house and ask them to let you test your system against their demo models. There are lots of different kinds to choose from. A "shotgun" (highly directional) mike works best if you are going to camera-mount or work from a boom. A "lavaliere" mike is designed to clip on to a man's tie or a woman's bodice. It's great for interviews, but you have to remember to unclip it before the subject walks off and rips his tie, your camera jack or worse.

Finally, you can buy inexpensive "radio" mikes. These are usually lavaliere types that plug into their own micro-transmitter. You get a receiver that mounts on your camera. Using the radio mike, you can let your subjects go wherever they want (within about 300 feet), and you'll hear them as if they were connected by a wire. Sometimes you'll get interference, but the convenience is worth it and most radio mikes are made with enough quality that they sound great and add a lot of production value to your show.

Now we're ready for editing, which is the third and final phase: Post-Production. The first shock most video people endure the first time they edit is that video editing is not film editing. You don't cut the original tape, you copy it. This means you are going to experience some degree of "generational loss." In the professional grades of video, the loss is minimized (to practically zero in digital formats). In VHS or 8mm, it's a major problem. Each copy of a copy increases generational loss exponentially, so you really should go no further than one copy for your edited master tape. From that tape you will have to make your release copies. Anything you give a client is going to be at least two generations degraded from the original. (And that's why I stressed lighting and focus!)

The Grammar of Video

There is a grammar to editing that is exactly like and as important as grammar in writing. This analogy may help explain editing effects. Imagine a novel. Each chapter has a heading page. Your video might have a fancy graphics and appropriate wipe effects about as often and in about the same places as a novel has chapters. Too many or too often and the wipes and graphics look overdone—your toast is burnt and Lee Stranahan (see Last Word, Video Toaster User August/September 1992) will call you a Toaster Abuser.

So what do you use for paragraphs, sentences and words? Paragraphs suggest a change of topic. In video we use a dissolve to suggest a change of time, sometimes of place. The slower the dissolve, the longer the time we suggest has been transpired. Paragraphs and dissolves are analogous. Words, of course are what happens within the scene on a second-by-second basis. If a scene is

MORE HINTS FOR BUDDING VIDEOGRAPHERS

by Robin Rigby

The Toaster is such an amazing machine that sometimes we get caught up in what it can do and neglect other aspects of video production. Keep in mind that the Toaster is just one of the tools at your disposal. You still need to develop your other skills in order to make good video. I've compiled a list of low or no-cost tips to help you improve your videos. The following are pointers I've heard from others or discovered myself in a decade of video production.

Pre-production

Pre-production saves time and money. Writing scripts, drawing storyboards or just keeping notes of your ideas will help greatly. With your Amiga you can use a word processor to write your scripts and a paint program to draw your storyboards. Of course changes will be made on location, but at least you'll have a direction. Things go more smoothly when planned in advance.

Equipment

The single most important thing you can do is buy a tripod and use it. You've spent thousands on video and computer equipment, so you can justify spending $100 on a tripod. Get one that pans and tilts smoothly. A levelling bubble is helpful. Practice smooth pans and tilts. Keep in mind the weight of your camera and the places you're most likely to use the tripod when purchasing.

If you haven't already bought a camera, use this rule: buy the best quality camera you can afford. Don't buy a VHS or 8mm camcorder if you can afford S-VHS Or Hi-8, and if you've got lots of scratch go for 3/4". Ever heard the phrase GIGO? It's a computer user's truism that means Garbage In, Garbage Out. Starting with the best possible video image means you'll end up with the best possible video.

Carry a "gadget bag." This bag contains everything you might ever need on a shoot, whether you'll be in the Antarctic or the Mojave. Like what? Extra mike cables, extension cords, lens wipes, head cleaner, videotape, plastic and duct tape, a notepad and pencil and just about anything else you think you might need. Experience will teach you what's necessary for you. I found out the value of my bag recently. I was shooting a very soggy Fourth of July parade and was having trouble with the dew indicator on my camera (it was working, so my camera wasn't). I remembered the roll of plastic tape I carry. Putting tape around the seams of the tape door of a camcorder keeps out dust, so why not water? Well, it did work for water and from that moment on my camera worked fine.

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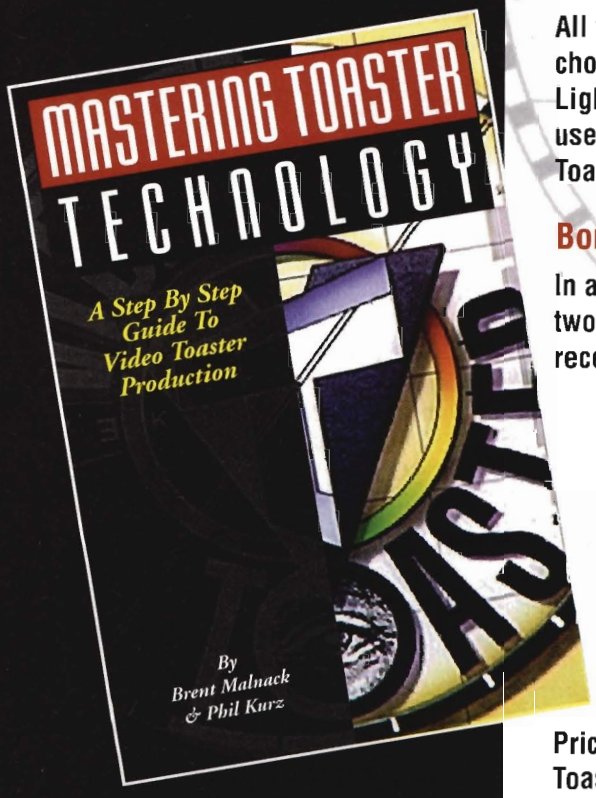

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Priced at only $49.95 (plus $5.00 shipping and handling), Mastering Toaster Technology and the companion software is a steal. Order your copy of Mastering Toaster Technology and all these software goodies today. Unlock your creative potential and become a master of the Toaster. To order call:

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Allow 4 weeks for delivery.

*Logo Loader requires AmigaDos 2.0. Video Toaster™, Lightwave 3D, and Toaster CG are trademarks of NewTek™, Inc.

On Location

Monitor your sound. So many things can go wrong on location. You may have a poor connection or a short in a cable. Monitoring will save major headaches hy catching problems in advance. Also, camera-mounted mikes usually pick up camera noise, so avoid them. Store cables loosely coiled, not folded or twisted. Treat your equipment well and it will treat you well.

Monitor your video whenever possible. Those little black-and-white viewfinders just can't take the place of a color monitor. If you can afford it, a battery-operated color TV can travel with you everywhere. This monitor will also help you with white balancing. Read your camera directions on white balancing and follow them. This process tells your camera what the color temperature of the ambient light is, allowing it to compensate. If you have automatic white balance just remember not to shoot in fluorescent lighting; use halogen lamps wherever possible or shoot outdoors. Bright hazy days are best. The even lighting will make your videos look great.

Speaking of lighting, video cameras, even professional ones, need a lot of light to operate optimally. Ever been in a TV studio? It gets awfully hot from all those lights, but just because you're shooting outside on a sunny day doesn't mean you're all set. Shooting from bright sunlight into shade will make your subject too dark. Move in closer to allow your exposure meter to read the dark areas. Strong backlighting will cause the same problem. Of course, if your camera has a manual exposure setting, you can get around this. Set your camera to auto exposure, set the f-stop, switch to manual, and stop down one or two stops until your subject looks good. If you have to stop down more than two stops, try moving your subject or else the bright spots will flare excessively.

Most camcorders have auto everything. I admit to being a manual snob. My 35mm camera is 100% manual and I prefer it that way. But of all automatic features I hate, autofocus is the worst. Ever seen video shot with autofocus on? The subject is speaking, he lifts his hand to make a point and the camera focuses on the hand, defocusing the face. Ugh! Don't use autofocus. Pretend you've never heard of it. Just in case that's not a good enough reason, remember it also depletes your batteries faster.

Another don't: don't zoom. Why do I have a zoom lens if I'm not going to use it, you ask? OK, sometimes you have to, you need to get closer to the subject and dallying (physically moving the camera) isn't practical. Here's the problems with zooming: Ever see a movie where someone is standing in a hallway and all of a sudden the hallway seems to elongate while the person doesn't move? That effect is accomplished by zooming out while dolling in. This works because zooming changes the focal length of the lens. Zooming in compresses the image, making the background seem closer to the foreground, and zooming out has the opposite effect. It's a great effect, but what if you don't want it? Zooming looks unnatural. After all, your eyes can't zoom. Also, if you do have to shoot hand-held, zooming in on the subject only exaggerates any shaky camera work. Avoid zooming—dolly whenever possible.

Post-production

Review your footage as soon after the shoot as possible. This way, if there are any problems you can reschedule the shoot. Some things you can't reschedule and that's where the previous stuff is important. Reviewing your footage gives you a chance to log it and decide which shots you can and can't use. Notes made while on location help in this process. The more planning you do in advance, the shorter your time in the editing suite and that's always a good thing. I love editing, but after an all-night session in The Dungeon, I don't care if I ever see that place again.

A lot of people now use the Video Toaster, which I think is the greatest thing to happen in video lately. When it comes to wipes, though, those falling sheep may be worth a few laughs, but unless you're doing a comedy version of Animal Farm, how practical are they? If you watch TV, you'll see that most transitions are cuts and fades (with cross fades and dissolves taking third and fourth places). Almost any genlock can perform these transitions. So if you can't afford a Toaster yet, don't despair. Save your pennies, and meanwhile make friends with a Toaster owner and borrow theirs if you really feel the need for that falling sheep wipe. Which brings me to my final hint.

Research

Watch television and movies. Bad stuff and good stuff. See what you like and what you don't like. Imitate what you like and try to avoid what you don't. Some of the biggest mistakes are: sound that's too hard to hear; video that's too dark; shots that go on too long; and shaky camera work. Some of the stuff you can imitate with your Toaster are the graphics. Just last year I was doing an episode of the public access cable show I work on. I had to make a lot of title screens announcing upcoming events. I was watching TV and noticed a trend; commercials (mostly for beer) using big block letters in primary colors on black screens. I found the blockiest font in the Masterpiece Toaster CG Fonts collection from ARock Computer Software (417-866-8803). I typed the words in Toaster CG and experimented with mixing tall thin words with short squat ones and placing them on black screens. I was able to make 20 screens in just a few hours. It was one of the best-looking shows we did.

Of all the things you can do to improve your video, the easiest and most fun is: practice. Shoot anything and everything, edit it together, add animated titles, make a silly video to amuse your friends. Learn how to use the tools you have and then make money with them or just continue to have fun. You don't have to be an expert on Eisenstein's theories of montage or know what mise en scene means to shoot video, but if you're interested, by all means study it. At the very least, find out how your camera records images, what words like f-stop and exposure mean, and what the difference is between dallying and trucking.

You can learn some of these things at the public access department of your local cable company, plus you'll meet other people who are interested in video. I strongly support public access, which is the last bastion of totally free media. Finally, if you have any specific questions you can write to me at:

Peregrine Productions
102 Calla Street
Providence, RI 02905

"happening" to your satisfaction, don't cut. If the scene, like a sentence, is redundant, make it two "sentences" with a cut. If you want a lot of short, punchy sentences, like Hemingway, make quick cuts.

My English grammar is sometimes suspect, but believe me on editing grammar: balance between elements is essential. Balance builds style. The most important skill in maximizing or (let's face it) saving a shoot's production value is editing style.

At the London Film School I had the honor of being taught by one of the great film editors of England, Jim Clark. He started us off by having us cut 16mm film clips that he pulled off the floor of the edit room after other students had finished their projects. The idea was to eliminate the story and concentrate only on cut tempo and the relationships of movement within each cut. Later he added a music track, to which we were to synchronize our cuts. You might try such an exercise. Take a complex jazz piece and create a cut style to fit. What will you do on each drum beat? What will you do for the bass rhythm. What will synchronize with a long sax riff? It's great fun. After eyeballing the screen for five or six hours to create a 10 minute piece, I guarantee you'll know a heck of a lot more about editing than if you'd spent six days in front of a wipe effects bank.

The Toaster

Now for some Toaster editing talk. Think about character generation. Less than twenty years ago, there was no such thing! We made titles by cutting letters out of black bristle board. In the film days, we had to shoot the cards then wait about a week for a film lab to create high-contrast title master film which was then edited into a separate film roll, synchronized with the color film and optically combined at the lab in a second pass. This is where the term "A, B and C rolls" came from. Then a company named Chyron changed all that. Now you can type text (and a whole lot more) right onto the screen and see it instantly!

The Video Toaster includes a very powerful character generator that allows you to easily create titles and superimpositions with about an hour of non-document self-training. The Toaster also allows you to create "painted" graphics that can act as your "chapter headings" or "text illustrations."

When it comes to powerful transitions, the Toaster can give you dissolves of any length and more effect transitions than you ever dreamed possible. (More than I ever dreamed necessary!) But remember in high school, what Miss Crabtree said about writing and Mr. Gnagy said about painting: learn your basics before you get fancy!

In fact, I would strongly say that there is almost too much power in the Toaster for an offline environment. It's really an online tool. What's the difference between offline and online? We'll save that for the next article!

Until then, have fun getting into this crazy business and let me know of anything I could do better for you next time. VTU

George Avgerakis is V.P. Creative Director of Avekta Productions Inc., a full-service video production company in New York City. He pioneered the use of computer animation for industrial markets by introducing the Via Video System One (a CPM, S-100 Bus computer workstation) to the Northeast market in 1982.

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Morgan Harbour

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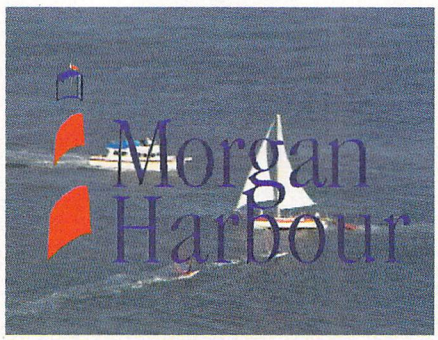

Bring broadcast quality video images to print.

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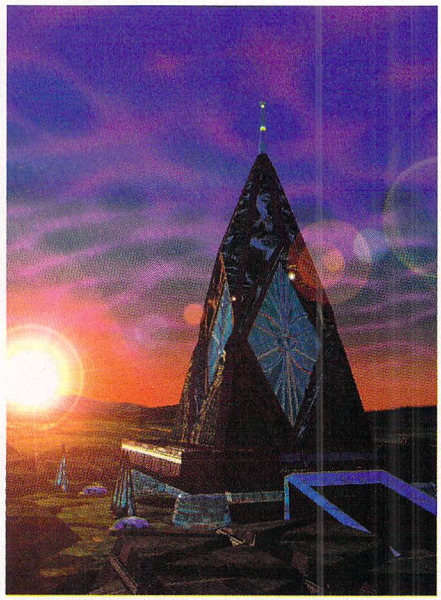

the world's most powerful print graphics computer. Now, the promise of professional video on your Mac is a reality with ToasterLink.

Gateway for the Macintosh

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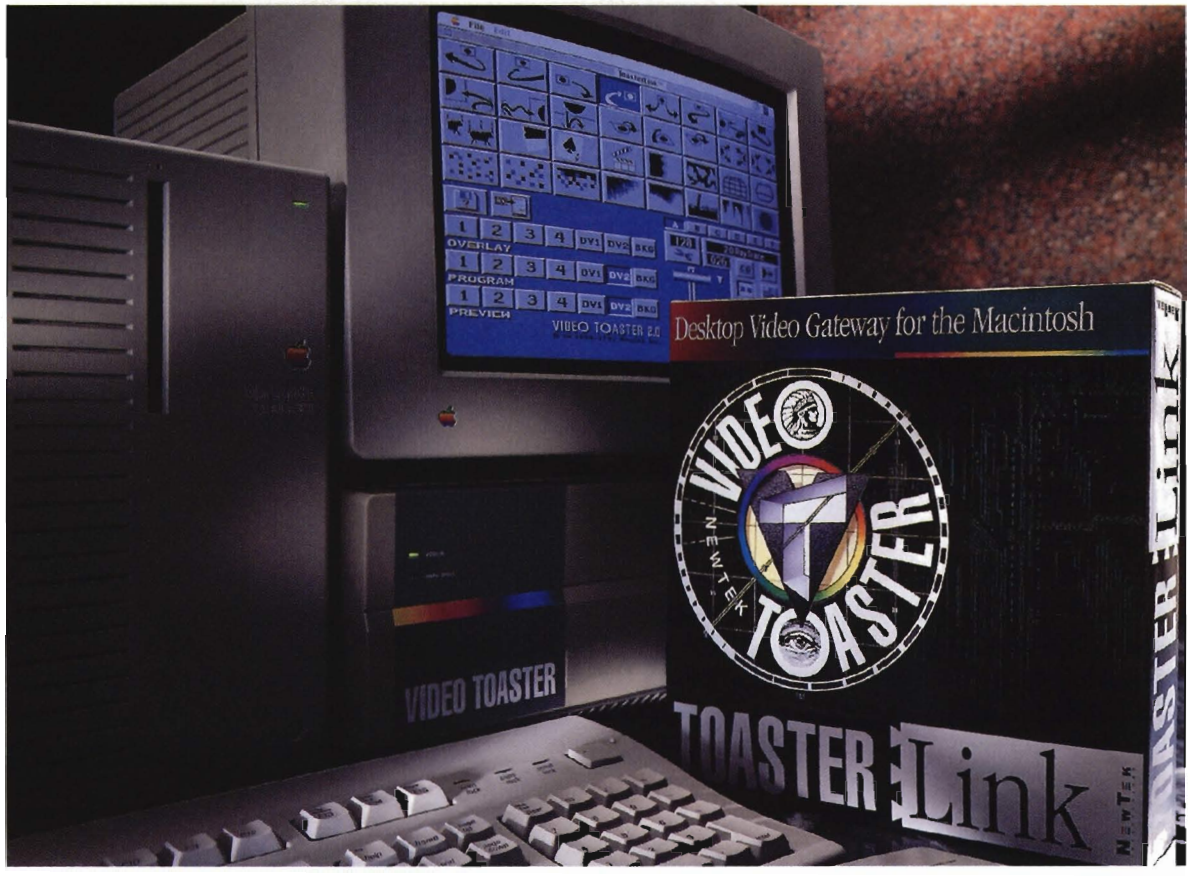
—MacUser

"The Toaster creates desktop video the way Apple Computer and Aldus Corp. created desktop publishing."
—Los Angeles Times

"...Video Toaster has been hailed as personal computing's third revolutionary product (the first two being VisiCalc, the first spreadsheet, in 1979, and the Macintosh in 1984)."
—Discover

"The big news at the moment is NewTek's Video Toaster."
—Time Magazine



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From motion pictures and television to business and education, industry professionals have come to rely on the Video Toaster, the world's first all-in-one broadcast-quality video production studio. The Toaster provides the 9 essential tools for making broadcast video: digital video effects, character generator, video paint system, 3D graphics and animation, dual frame buffers, luminance keyer, real-time color processing and still store/frame grabber. The Toaster has so revolutionized the video industry that it has been featured in stories in Time, USA Today, Rolling Stone, MacUser, MacWeek, hundreds of other publications and even NBC Nightly News.

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The endlessly expanding world of

fonts for T.V.

Mark McCabe

Fonts, fonts, fonts! Color fonts, solid fonts, 3D fonts, 2D fonts—you want 'em, you got 'em! In television, some of the most powerful messages presented are through written graphics. The fonts you choose can formulate a powerful statement through their style, size and color. Here's a pictorial section showing you a selection of Toaster CG and LightWave fonts from the best of the various collections available commercially. Most font styles are available in a variety of sizes. Here's a list of the products shown and their manufacturers:

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(and others)
Allied Studios
482 Hayes St.
San Francisco, CA 94102
(415) 863-1781

Broadcast Fonts 3D
Unili Graphics
143 Lorraine Ave.
Pittsburg, CA 94565
(510) 439-1580

EuroFonts Video
Classic Concepts
PO Box 786
Bellingham, WA 98227-0786
(206) 733-8342

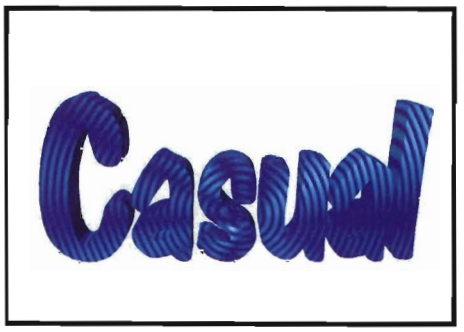
Masterpiece LightWave Fonts
Arock Computer Software
PO Box 731
Springfield, MO 65801
(417) 866-8803

Kara Fonts
Kara Computer Graphics
2554 Lincoln Blvd., Ste. 1010
Marina Del Rey, CA 90291
(310) 578-9177

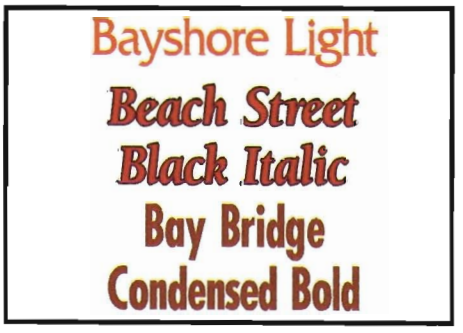
Pop Arts 3D Fonts
Pop Arts Inc.
28 Main St., Ste. 200
Bradford, PA 16701
(814) 362-7413

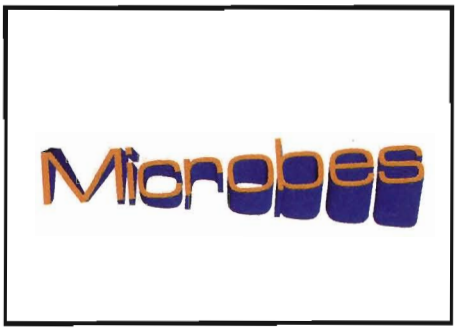
Professional ToasterFonts
Integrated Graphic Media
765 W. Alosta Ave., Ste. E
Glendora, CA 91740
(818) 963-7545

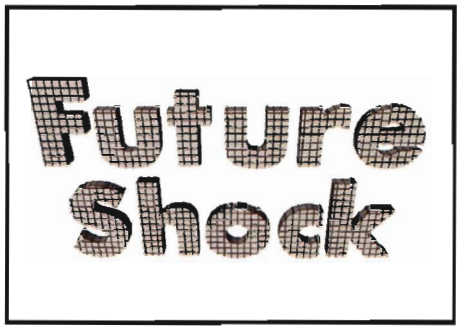
Broadcast Fonts 3D

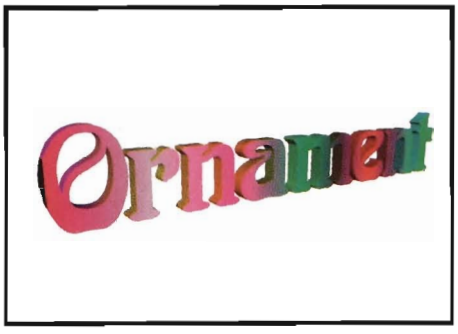


1st Prize Toasted Fonts

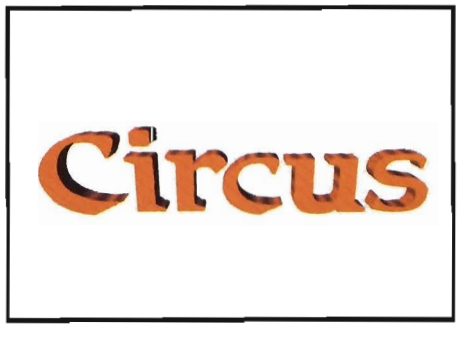






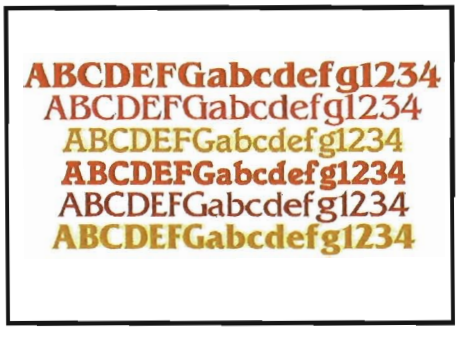


Pop Arts 3D Fonts

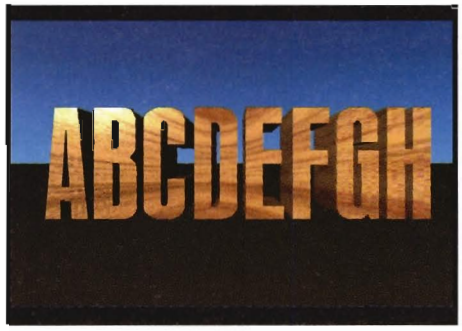


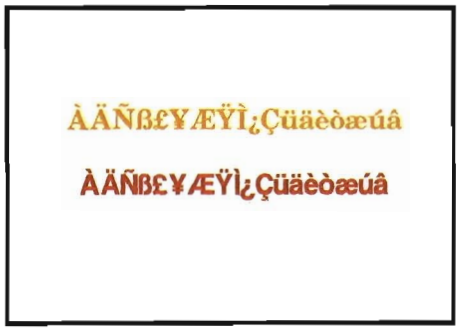
Masterpiece LightWave Fonts

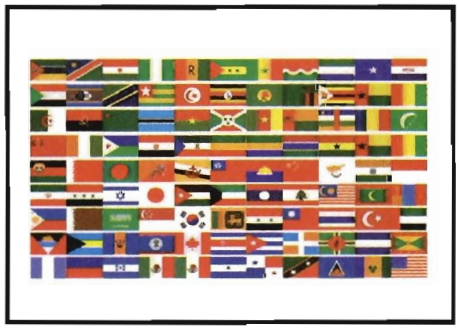
Professional ToasterFonts



Kara Fonts







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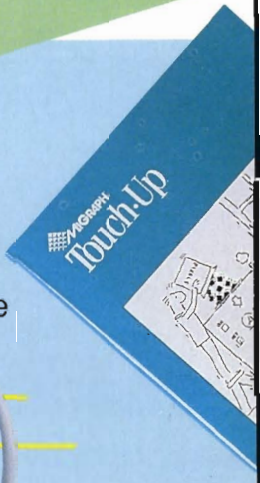

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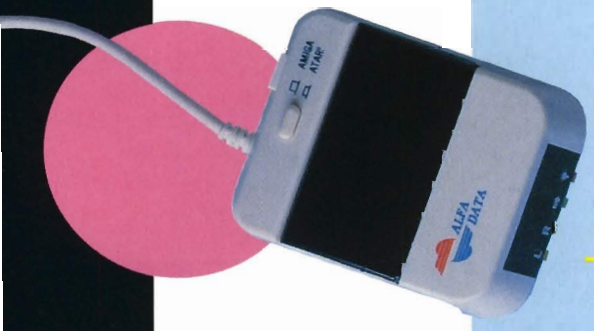

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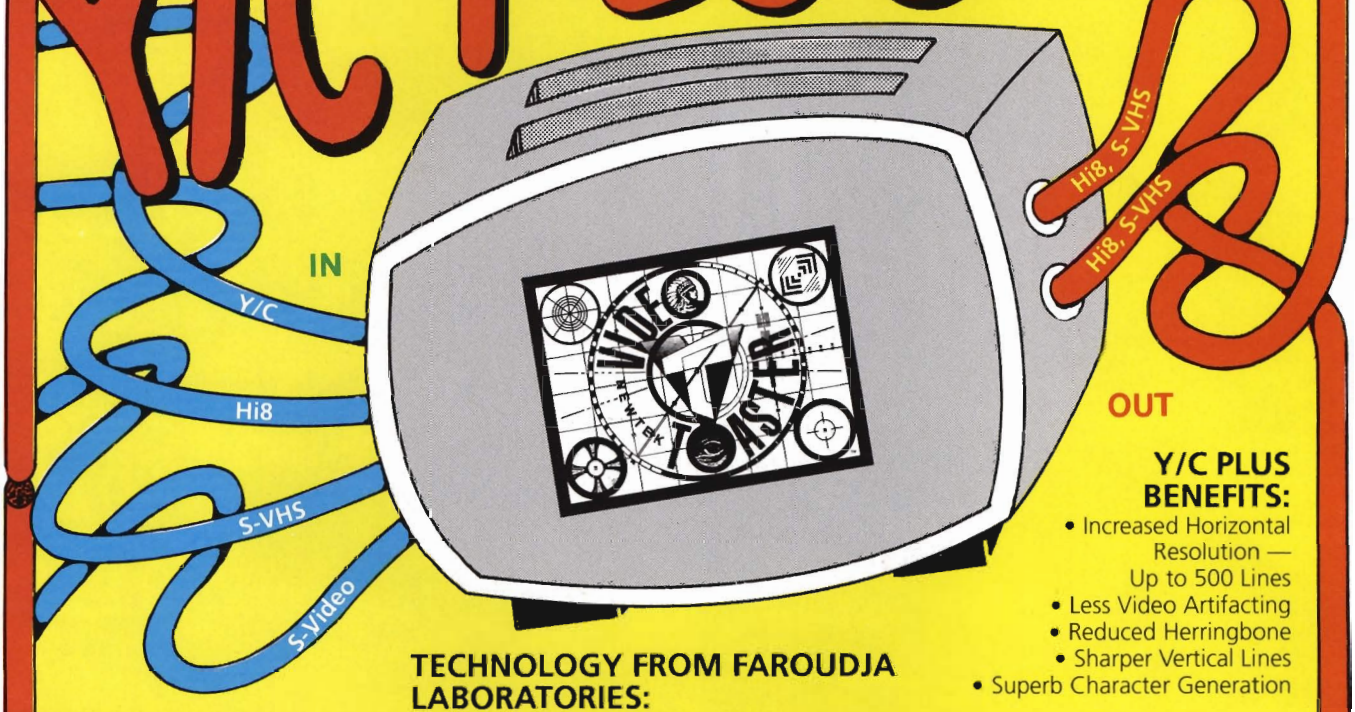

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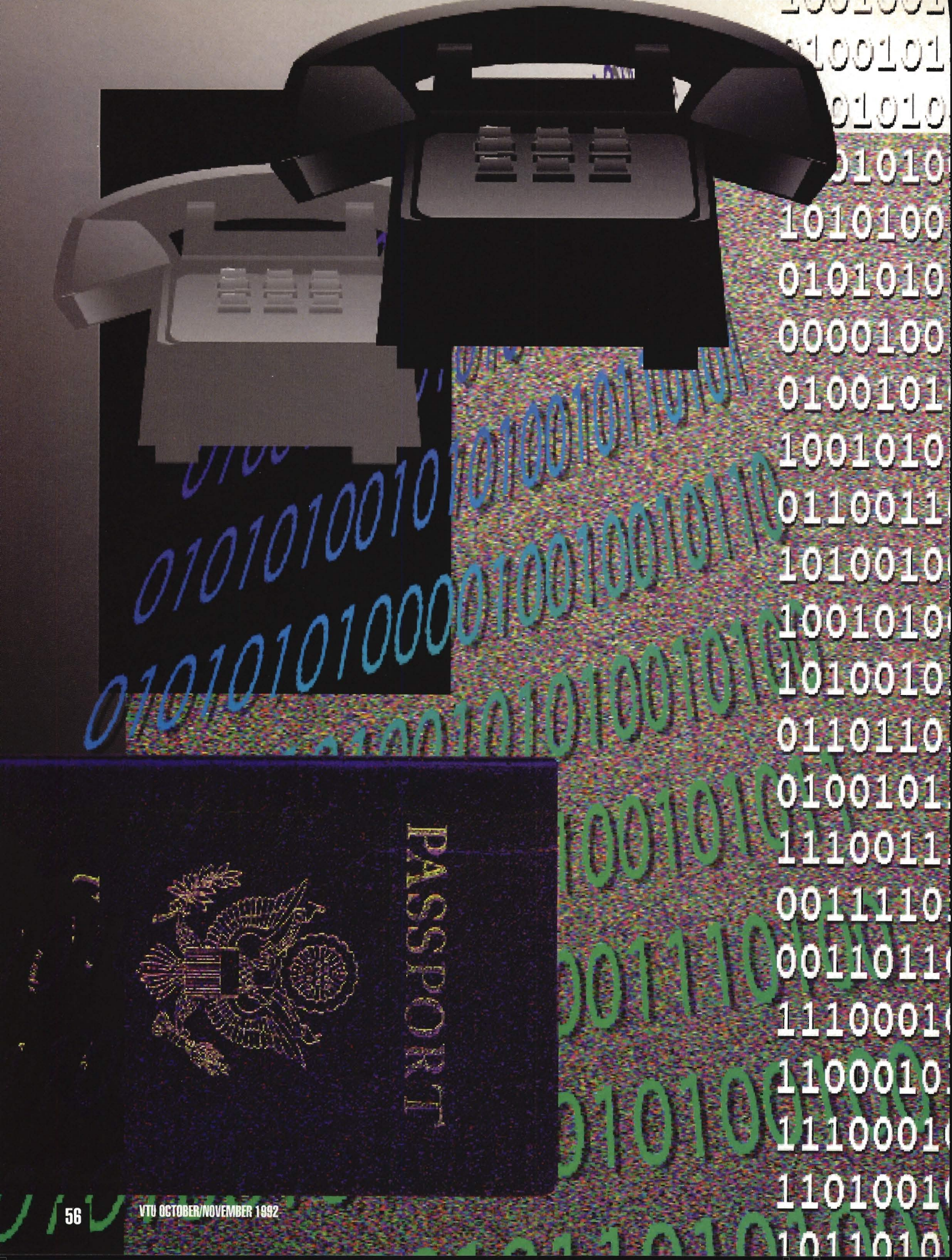
Information Request

Name _____
Company _____
Address _____
City _____ State _____ Zip _____
Phone (___) _____ FAX (___) _____
Model VCR's Used _____ Model Edit Controller _____


PASSPORT

PASSPORT to CYBERSPACE

An Introduction To Telecommunications and How To Get the Free Software You Need.

by Geoffrey Williams

Cyberspace exists within and between the vast networks of computers linking data across the country. Within its domain are information and software of tremendous value to Video Toaster users. Fortunately, the ticket to Cyberspace is cheap. All it takes to tap into this incredible world is a modem, any computer (including your Toaster), and telecommunications software. With the current level of sophisticated software, it's easy even if you know almost nothing about computers.

The major ports of call in Cyberspace are known as bulletin board systems (BBSs), which can be accessed just by having your telecommunications software call them using your modem connected to your phone line. The computer you are calling will answer the phone and connect with your software. Following simple menus that appear on your screen, you can leave and receive messages and transfer software programs from its hard drive to yours.

The Bare Essentials

To get started, you need a modem. A modem connects to your computer's serial port and turns computer data into something that can be transmitted across phone lines. Prices have fallen dramatically, and you would be ill advised to buy anything slower than 9600 baud, which means it can transfer about 900 to 1000 characters per second. 2400 baud modems are now very cheap, but they can only transfer around 200 characters per second. Since many of the things you'll want to download (transfer from another computer to yours) will be fairly large files, a faster modem makes a big difference. Even fax modems with 9600 baud are available for under $250.

You also need telecommunications software. There are commercial programs available, but most people I know use either JR-Comm or Term 2.0, which are available from user's groups and PD distributors.

Types of BBSs

There are two main types of BBSs. The commercial networks charge an hourly fee for access and have huge amounts of storage for messages and programs. They also offer such services as airline reservations, business news and services, and database access. There are expensive services such as Compuserve (800-227-2983) and BIX (800-227-2983), and less expensive services such as GEnie (800-638-9636) and Portal (408-973-9111). They each have their own strengths, and all offer strong Amiga support.

The other types of BBSs are free. Anyone can set up their own BBS, and many do, either as a hobby or as part of a user group. Many of the Video Toaster user groups have their own BBSs, and many Amiga BBSs have Video Toaster sections devoted to information and programs for Toaster users. You can access them for the cost of a phone call, and if it's a local number, it costs you absolutely nothing. For BBS devotees, there are services such as PC Pursuit that let you call other computers all over the country after prime time for 30 hours a month for only $30.

Some of the non-commercial Toaster BBSs include The Los Angeles Video Toaster Group (818-883-8979), Club Toaster in Tampa (813-527-1722), Microwave in Buffalo, New York (716-873-9262), and the Little Rock, Arkansas Toaster User's Group (501-223-2516). There is also Toaster support on Amiga BBSs such as the Amiga Video-Graphics Guild (AVG, with which I'm involved) BBS in Glendale, California (818-240-4873). Once you get on one BBS, they usually have information on other local BBSs.

What's Online

One of the great things about a BBS is the message sections. People can leave messages about new techniques they've discovered, important information about new products, and anything else they feel that others might be interested in. You can leave questions, which will usually be answered within a couple of days. Many who frequent the BBS are very knowledgeable, so they can be a great source of valuable information.

Even so, surveys show that the main reason most people use a BBS is to download files. It is easy to download a file to your computer. You choose the files you want from the list of available files on the BBS, tell the remote computer to send them (usually by selecting D from the BBS menu), and your telecommunications program automatically loads the software to a preselected directory on your hard drive.

There are a wide variety of files to choose from, ranging from text files to complete programs. For Toaster users, there are literally hundreds of Toaster fonts, LightWave 3D models, and framestores from which to choose. There are also sample ARexx scripts to do things like automatically convert a list of framestores to IFF24 using ToasterPaint, as well as complete tutorials on various aspects of LightWave.

Most software that you can download from a BBS is known generically as PD (public domain). In reality, almost all of it is actually copyrighted and is not PD at all, but the authors have agreed to let you make a copy of it for your personal use, and most allow you to distribute it in any way you want. This is why disks of PD software are available from user's groups and commercial PD sellers (although the newest and most up to date software is found on the BBSs).

Some software is Shareware, meaning: if you like and use the software, the author expects you to send a specified amount of money (usually under $25). This is a great way for programmers with no marketing budgets to distribute their software and get some return on their investment of time. If you use the software in developing projects for clients, it is appropriate to send the author the shareware fee, as they have probably saved you a lot of money by making their utility available. In fact, a great way to motivate you to send a shareware fee is to include the cost in the budget of the project for which you are using the utility.

Decompressing Downloads

The first time you download software you will find that you can't use the programs as is. They usually have an extension such as .lzh at the end of the filename, for example TMiracle.lzh. This means that the file has been archived. A special utility called an archiver has taken several files, such as the program, its icon, and the documentation file, compiled them into a single file, and compressed the entire thing so that is significantly smaller than the total of the original files. This makes it easier and faster to transmit the files over a phone line.

There are several archivers, and you can determine which one you need to decompress the file by the extension. The .lzh extension means that the LHArc compressor was used. The .lha extension means you need LHA or LZ, which can also decompress LHArc files. These two are the most common. Less common are .zip files that need ZIP or PKAZIP (this format is more common on PC compatible computers), and the older .zoo, which uses the Zoo archiver, and the even older .arc which uses the Arc archiver.

These archiving programs are usually available on the BBS in self extracting archives, which usually have the extension .run, .exe, or .lhs. This means that you type the name of the archive in a CLI and it will automatically decompress itself. They are less efficient than regular archivers, so self-extracting archives are generally used only for things like other archivers.

> "FOR TOASTER USERS, THERE ARE LITERALLY HUNDREDS OF TOASTER FONTS, LIGHTWAVE 3D MODELS, AND FRAMESTORES FROM WHICH TO CHOOSE."

This may sound like a rather complicated feat to try to figure out how to decompress all of these archives, and it might be were it not for one of the more useful type of PD utilities, known as directory utilities. While there are commercial versions, such as OPUS from Innovatronics, there have always been very popular PD utilities. One of the best of the bunch is SID, a shareware program from Timm Martin. Like other directory utilities, it shows you lists in windows displaying the contents of your hard drive and disks. You can copy, delete, and move files simply by clicking on them in a list and clicking on the appropriate action button. This makes it very easy to delete or move to floppies all the Toaster files that you don't use regularly, such as objects and fonts. This can free up a lot of hard drive room. More importantly, if you are using BBSs, SID can automatically detect the type of archive you have and decompress it for you. This makes dealing with archived files very easy.

My Favorite Things

Understanding which utilities will be useful to you is a difficult task, as the descriptions are often vague. In future articles, Video Toaster User will cover some of the most useful. In the meantime, I'd like to mention a few of my favorites.

If you keep your Toaster screen up almost all the time, it is possible to burn an image into your screen. That is why there are screen blankers that prevent phosphor burn-in. While Workbench 2.0 includes a commodity that will blank your screen after a set period of inactivity, I find it rather boring and you might think your monitor is off. A rather amusing option is Gernot Reisinger's Flying Toaster (FlyingToast.lzh), based on the Macintosh After Dark module. Instead of blanking the screen, little toasters (the kitchen kind) with wings fly across the screen. It's quite amusing, but does require Workbench 2.0.

LightWave/DCTV users will particularly appreciate Thomas Krehbiel's Rend24 (version 1.04f and later), which can grab each LightWave frame as it is rendered and add it to a DCTV animation. Unlike the CanDo based shareware utility ADAM (which is now included with DCTV), Rend24 can convert directly to an anim without first having to save out all of the DCTV frames. It even supports palette locking, a very important feature if you want to be able to display your DCTV animations at full speed. Even ADAM creator Dan McCoy uses this utility. It can also convert GIF and JPEG files into IFF24 format files so that they can be loaded into ToasterPaint. Look for Rend104f.lha.

The Toaster does not make it easy to switch between screens, and this can be annoying when you are using one of the many utilities that works interactively with the Toaster. A simple solution is Khalid Aldoseri's Switcher (Switcher.lzh). With a quick click of the right and left mouse buttons, a control panel pops up that lets you jump to any active screen. Very handy, and no more ctrl-ctrl-alt-alt nonsense.

If you want to know what is going on with your computer, the best tool is LaMonte Koop's AIBB (AIBB465.lha). Not only does it run over a dozen benchmarks to show how your machine compares with other configurations, it also tells you what hardware is installed and provides other useful information about your system. It is easy to use, and the documentation is very good. It is very detailed and will teach you a lot about what is inside your machine and what it does. It is also great for trouble shooting, as it can help find where some problems are without even opening your computer.

Have you ever accidentally deleted a framestore, or had a hard drive crash? Has a floppy given you a read/write error and become completely unreadable? This can be a major disaster, unless you have Werner Guentlher's FixDisk (FixDisk.lzh). It reads a corrupted or non-corrupted hard drive or floppy and makes a list of all the files (even ones that have been deleted but not written over). You click on the files you want to restore, and copy them to a new destination.

In Conclusion

There are literally thousands of other PD programs available on the BBSs. While many aren't of interest to most Video Toaster users, there are still dozens of programs that are very useful.

To make it easier to embark on your explorations, I've put the JR-Comm telecommunications program and all of the archivers on a disk. I've also included a disk catalog program with the entire AVG disk collection and text catalog with descriptions of the over 300 graphics and video utilities. If you'd like a copy, send $1 and a self addressed stamped envelope to: VTU

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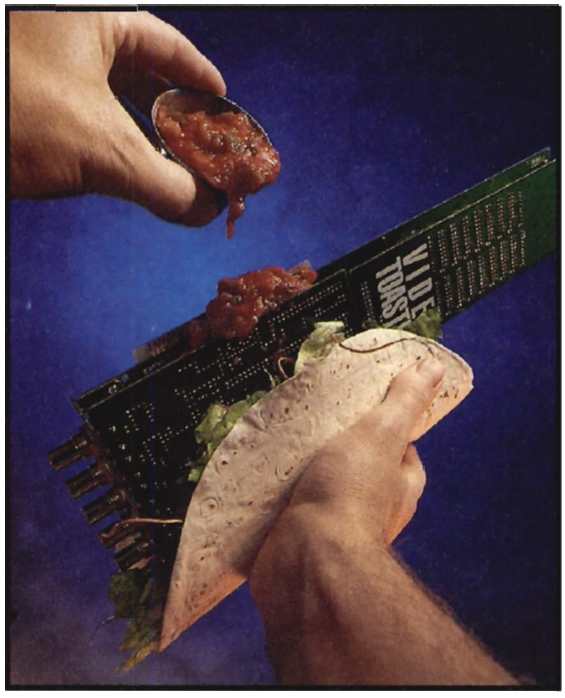
by David Duberman



My dictionary defines synergism as "the cooperative action of discrete agencies such that the total effect is greater than the sum of the effects taken independently". A Video Toaster workstation, which is based on the Amiga computer, represents synergism at its best. The circuitry of the two combine to make a whole that's greater in potential effect than the sum of the parts. The Toaster's circuitry wouldn't have been possible had the Amiga not been designed from the ground up with video timing in mind. So it stands to reason you're not really taking full advantage of your investment in the Amiga computer unless you at least take a look at some of the amazing ways you can augment and enhance your Toaster output by using the computer's other capabilities.

A Toaster workstation is an amazingly versatile machine that fulfills many of the working video professional's requirements. However, you'll probably have need, from time to time, for a job not within its repertoire. This could be the creation of a test animation from LightWave, or a custom animation for use as a unique AnimWipe on the Switcher. Maybe you have the perfect background image for your Toaster project, but it's a GIF file on your PC—how to transfer it? The Amiga's inherent graphics power makes it an ideal platform for software for the creation and manipulation of images and animation. While such programs may not have been designed originally with the Video Toaster in mind, we'll give some examples of how they can easily adapt, and tell you about some of the best programs.

ADPro

If you've already bought a Toaster system, and if you got it from a service-oriented dealer, he or she may have recommended that you also get ASDG's Art Department Professional. You might have wondered why you needed to spend an extra $200 when you were already spending several thousand dollars. In all likelihood, that $200 is one of the best minor investments you can make in your desktop video studio. In the opinion of many Amiga professionals, including us here at VTU magazine, if you get only one Amiga-only program (besides the Toaster, of course), it should be Art Department Professional. If you get only two, the second should be Deluxe Paint IV, which we'll get to shortly.

ADPro's primary function is to permit conversion of images between different file formats. For example, a popular format for 256-color images in the MS-DOS world is GIF, which stands for Graphics Interchange Format. If you have a PC with a scanner or digitizer, it can probably output GIF images. You can load any GIF image from a PC directly into ADPro, and save it as well. Thus, you can avoid the extra expense and inconvenience of buying a scanner especially for the Amiga. ADPro also supports JPEG, a format particularly handy for transfer and archival storage of large 24-bit images. JPEG achieves tremendous compression--twenty to one or better—at the cost of a practically invisible loss of image quality. JPEG is supported on the PC and Mac as well.

Of course, you also have to deal with the fact that the Amiga's disk drives use a different disk format than a standard PC or clone computer. One of the best solutions we've found is CrossDOS from Consultron. This handy utility is easy to install, and once done lets your Amiga disk drives read, write, and format IBM-standard 720K 3.5" disks. Operation is transparent so you can read and write files with PC disks from within any Amiga program—you don't need to run a special program just to copy a file between formats. CrossDOS also includes a software PC emulator called CrossPC so you can actually run PC programs on your Amiga! I haven't tried that one yet.

If you're coming from the Macintosh world, ToasterLink/Mac with fast direct file transfer/conversion capabilities will be out soon. But until then, you can transfer files via 800K 3.5-inch floppies if you hook up a Mac floppy drive with Mac 2 DOS, a connector with software. You can also transfer files between Amigas and PCs or Macs by hooking them together by the serial ports, either indirectly over the telephone lines with modems, or directly with a null modem connection—ask your retailer for details. For best results, use fast machines and get terminal (telecommunications) software that supports the ZMODEM protocol for batch file transfers.

Other formats supported by ADPro include PCX and MacPaint. With an optional add-on module, ADPro also handles the TIFF format, popular in the Apple Macintosh software world, as well as Targa and Rendition. In addition, it features a number of useful image processing functions, starting with the standard adjustments of color balance, contrast, and brightness. There's also conversion to grayscale, blur, colorize, resize, and quite a few others. Of particular interest to videographers for background creation are the Line Art function, which reduces an image to its outlines, and Tile, which lets you repeat any rectangular part of an image in a tiled pattern.

It's not unusual for Toaster-based videographers to produce 3D animations featuring a client's logo extruded into three dimensions and flying through space. In fact, it's a little too common, but is likely to continue as long as the networks set the pace. If the client has a printed sample of the logo, you can use the Toaster to get it into the computer by pointing a camera at it and grabbing the image in Switcher. LightWave can't use the logo, however, until it's converted into a 3D object. This is done with Pixel 3D, which we'll discuss shortly. Unfortunately, the Toaster software can only save images in 24-bit and Framestore format, and Pixel 3D can't read either—in fact, it works best with black-and-white (1-bit) images. So we need a way to convert 24-bit images down to a level Pixel 3D can use. Tadah!!...ADPro, again, to the rescue. And it does more, much more, including image compositing, background creation, text handling, and animation editing.

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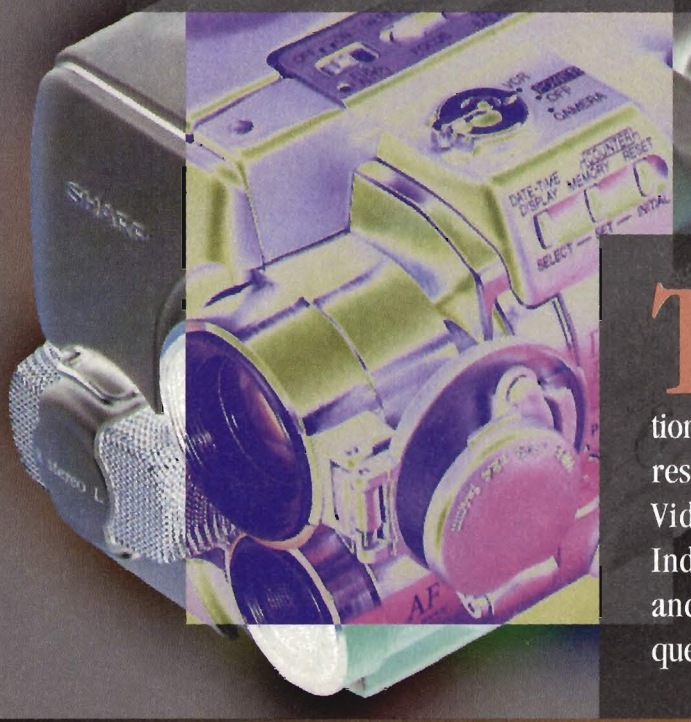

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ImageMaster

ADPro's primary competitor in the Amiga image processing field is ImageMaster from Black Belt. This program is much stronger in image-processing—it has seemingly zillions of ways of messing around with an image, from adding star points to 3D transformations. It's not so strong on conversion between different computer formats, however. For example, it handles Targa, but not the more popular TIFF or GIF, and it is more limited in the types of JPEG it can import—I couldn't load a JPEG file from the PC that would load into ADPro. But it handles all standard Amiga formats just fine. While it doesn't work on ANIM files, it can create sequences of images that can be compiled into an animation. DCTV users will be happy to know that, unlike ADPro, ImageMaster can load a DCTV picture as a 24-bit image. When an image is loaded, it's resized to fit the Amiga screen display and shown in the Amiga format of your choice. There is a version that uses Impulse's Firecracker board for display, in which case you can work with a needle-sharp 24-bit RGB display.

ImageMaster is one of those rare, constantly evolving programs that re-emerges almost monthly with more commands and an improved interface. The latest incarnation sports a truly staggering number of commands, with 2D morphing perhaps the most spectacular—see the Morphing sidebar for details.

Features and More Features

Here are some more of ImageMaster's functions. All of these work on the entire image or on any part, as defined by the user. If you hate lists, skip this paragraph. There are the usual Contrast, Brightness, Gamma, Dynamic Range, and Sharpen. Filter functions useful for videographers include Low and High Pass Filter, Smear, and Antialias. For elimination of defects, there are Remove Pixel, Remove Streak, Remove Chunk, and Remove Feature (erase your mother- or father-in-law's mouth!), and Thin, which reduces, but doesn't wipe out a feature. Others are NTSC Limit, NTSC Filter, and Reduce Glare. Special effects, which, of course, should be used sparingly, include Posterize, Solarize, Pixelize, various types of Negative, Watercolor, Oilbrushed, and Melt. Geometric transformations include Motion and Spiral Blurs, Implode/Explode, Wave Distort, Dome, and Caricature.

There's also a full-fledged 24-bit paint program built in. As with ADPro, all processing is performed internally in 24-bits, with full ARexx support provided. This last point is key-while ImageMaster offers unparalleled interactive support, you really can't take full advantage of the program without learning to write scripts for it.

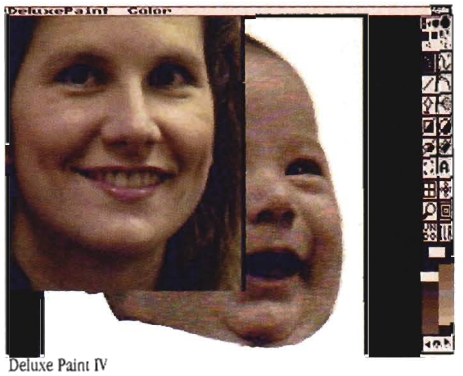
While ImageMaster is primarily oriented toward manipulation of still images, it does grant a few concessions to videographers and others who must manipulate or generate sequences. Sequence processing allows image processing to be performed on a series of images. The Filmstrip function lets you see your sequence as it is processed, or create a new sequence on the fly as the result of consecutive processing operations. A new feature allows direct output of Amiga-format ANIM animations from Morph and Sequence operations. However, most of this requires at least a minimal familiarity with and use of ARexx.

The above description is somewhat akin to seeing the Grand Canyon while lying prostrate at the bottom—you're missing most of it. I don't believe there's an image-processing program on any computer platform that comes close to reproducing the incredible range of features offered by ImageMaster. I do believe that if Mac and PC owners learned about this package, many of them would buy Amigas just to use this program. If you can force yourself to learn ARexx, you can write simple programs to create unique animated 24-bit effects that will truly make your videos stand out from the pack.

Deluxe Paint

One of the Toaster's selling points is the included paint program, ToasterPaint, which is useful for creating backgrounds, touching up and compositing digitized images, and much more. As good as it is, ToasterPaint is limited in terms of taking advantage of the Amiga's native capabilities. For example, it can't do animation. Deluxe Paint IV, on the other hand, is an excellent program for animation as well as a number of other things. Its primary limitation for Toaster users is that it doesn't support 24-bit images. HAM, the techie name for the Amiga's built-in 12-bit (4096-color) graphics mode, is as high as it goes. For high resolution screen displays you're limited to 16 colors. In many situations, however, that's not a problem.

Deluxe Paint IV started out as a not-so-simple paint program from the pioneer Amiga software publisher Electronic Arts, and has evolved into a graphics powerhouse. Like most paint programs you have the standard drawing tools: Freehand Dotted and Continuous Line, Rectangle, Circle and Oval, Filled or Outline, Area Fill, and Airbrush. The Custom Brush feature lets you pick up any part of the screen, manipulate it in various ways, and draw with it. Other standard tools allow magnifying part of the screen for close-up work, aligning the brush to an adjustable grid, printing text on the screen, and a "reflect" mode for kaleidoscopic or tiled drawings. Drawing modes include Matte, Color, Replace, Smear, Shade, Blend, Cycle, Smooth, Mix, and HalfBrite. Of these, my favorite for 3D work is Shade; when used with a properly set gradient range, you can easily create interesting abstract images ideal for texture, bump, and reflection mapping.



Deluxe Paint IV

Among DPaint's most useful drawing aids are the Stencil and Perspective modes. Stencil is something like a frisket, which allows you to paint on part of a surface without disturbing other parts. Only instead of drawing the frisket, you can define it simply by clicking on the colors you want to protect. Perspective allows tilting of brushes or the entire screen for convincing 3D effects, and is useful for creating video backgrounds that seem to stretch off into infinity.

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Deluxe Paint IV supports traditional cel animation in which the animator redraws foreground figures for each frame, then composites them against a painted background. There's a special Light Table feature that lets you see a few frames forward or backward for better accuracy. DPaint also has special tools for animation including the Morph function (see the Morphing sidebar), the animated brush or AnimBrush, and the Move requester.

The AnimBrush is an animated brush at your mouse cursor. By simply pressing the button and moving the mouse, you can draw an animation on the screen. Hold down a key and each frame of the AnimBrush is drawn on a successive full-screen animation frame. You can create an AnimBrush by performing a morph between two images. Another way to create an AnimBrush is by grabbing a rectangular portion of a sequence of animation frames.

DPaint's Move requester gives you a powerful assortment of automated animation tools. You can move a brush or AnimBrush across the screen in any direction, and into or out of the screen. You can also rotate brushes on any or all of the three Cartesian axes. Other options let you preview an animation, have a moving object leave trails behind, or add acceleration or deceleration to an object. A new feature in Deluxe Paint IV lets you load and save Move setups, so you can build or buy libraries of custom moves that can be applied to any object.

Making Your Own Animwipe

OK, let's get to the juicy part. Say you prefer your girlfriend's shape to Kiki Stockhammer's, or your boyfriend's to the beefy model in the sports

...Continued on Page 103

Morphing!

by David Duberman

The latest rage in image processing is 2D morphing, which is easily performed by the Amiga with the right software. This effect, which first caught the mass audience's eye in Michael Jackson's "Black or White" video, lets you change anything into anything else in a smooth transition that is pure video voodoo. Morphing has spread like wildfire, and can be seen today in many commercials and movies. If you tell your clients you can do 2D morphing, you may get more work. Currently, three Amiga programs can do it—Deluxe Paint, ImageMaster, and CineMorph—with more on the way soon.

While none of these programs is Toaster-based, you can use the Toaster to grab frames for morphing, and for recording morph sequences onto tape. You can get the pictures for the morph into the computer by pointing the camera at a subject or even a photo and using the Switcher's Freeze button. Once it's in one of the frame buffers, go into ToasterPaint, grab it using four fields, and save it as RGB. If you need to grab sequences of frames for moving morphs with CineMorph, you probably should use a single frame controller in conjunction with the Switcher. It's often best to use as simple a background as possible, and try to match the positions of the two subjects closely.

If you're using DPaint, you should use ADPro or ImageMaster to reduce the pictures to a format it can handle, such as HAM or hi-res. Of course, it's better, if possible, to render the morphs in 24 bits using ImageMaster or CineMorph. These programs create sequences of files which can be recorded with a single frame setup. No doubt your single frame controller has commands for recording pre-rendered frames, but I find that loading them into LightWave as an image sequence, setting the sequence to be the background, and then rendering only the background with Recording turned on works well. For some reason, LightWave can load these frames very quickly. Of course, you don't have to render them as backgrounds. You can map morphing sequences onto animated objects in countless ways for some really special effects. Availability of truly fabulous tools like these makes this the best time in history for visual artists, by far.

...Continued on Page 107

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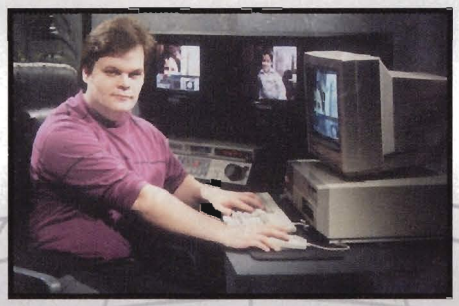

Lee Stranahan
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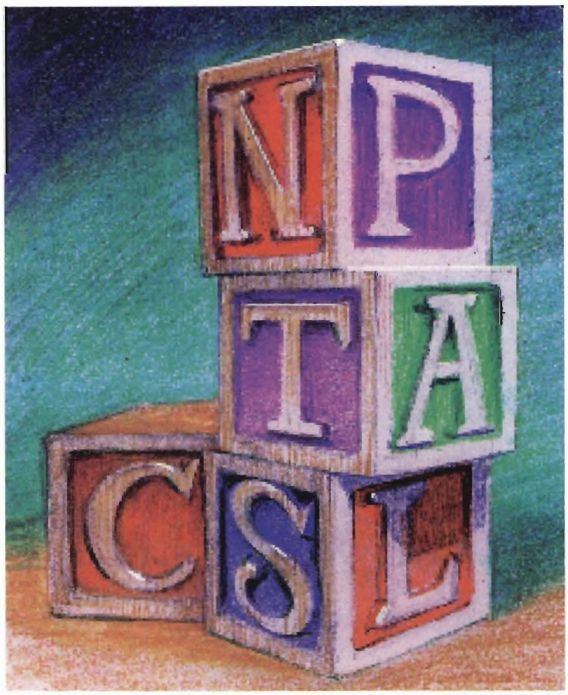
ABC's OF VIDEO

From Acronyms to Understanding

by Rick Lehtinen

Not that long ago, video was simple. You pushed a tape into your VCR, and out came pictures. Now that you have a Video Toaster, you make your own productions. Video is changing. Gone are the simple names such as "REW," "FF" and "PLAY." You've started to encounter strange new initials—"NTSC," "Y/C," "D-2." The reason for this is that video is fifty years old. It is a rich discipline, with history, conventions, rules of thumb, and yes, a language all its own.

If you are like most, the new letters pile up faster than you can absorb their meanings. This article will explain video's acronyms. It will do so by showing the changes video makes going from RGB in the computer, to NTSC on tape.



It is amazing how the letters fall into place once their story is told. By the time you've finished this article, you will know enough about video to get past all the acronyms with ease. By the time you've read this series, you will he able to talk to equipment dealers and manufacturers' technical support people with confidence. You will know enough about video that you can easily wire new gizmos into your Toaster setup, and quickly troubleshoot the video part of your system if something goes wrong. This will not only help you make better productions with your Toaster, it will make Toaster ownership more fun.

New Letters

Here's the first word you'll hear a lot when you start talking Toasters—*NTSC*. NTSC stands for the National Television Systems Committee. The NTSC is a group that got together 50 years ago when TV started, and laid down the rules for black and white television. They got together again, about 30 years ago, to figure out the guidelines for television in color.

The NTSC did good work. Today, NTSC is the official TV system for the United States, Mexico, Canada, Japan and a few other countries.

NTSC is a *composite* video signal. Composite means that a black and white signal, the extra signals needed to make it color, and synchronizing information are all mixed together. They all travel together down one wire.

The opposite of a composite signal is a *component* signal. There are several types of component signals, each with its own name and abbreviation. For now, just realize that in a component signal the black and white signal and its color sidecars travel separately, on different wires.

The synchronizing signal, usually called *sync*, tells the video monitor how to scan the picture tube face. Sync has two pulses. Sixty times each second a *vertical sync pulse* chases the picture tube's scanning beam up to the top of the screen. It then drifts down, reaching the screen's bottom just in time for another vertical sync pulse to drag it up again. Meanwhile the *horizontal sync pulse* is chasing the beam from side to side. Together, the h and v sync pulses control the beam's position on the screen each instant, while the video signal itself sets the beam's value for each spot.

Component Video

We've mentioned that component video comes in several flavors. This is a big source of acronyms. Interestingly, all the video types are related. The difference between them is merely at what point you tap the signal in its change from RGB (the ultimate component video) to NTSC (a composite signal). Figure 1 tells the story.

The trail starts with individual signals for red, green, and blue. These three black and white signals are called *color primaries*. They function just as the red, yellow and blue on an artist's color wheel. By combining the appropriate amounts of each, one can build up all the other colors. The primary colors for TV are different from those for paint, because TV uses additive color, similar to theater stage lighting, while pigmented color is subtractive .

The shorthand for Red, Green and Blue is RGB. RGB is the purest form of television color. To move RGB around, however, you need three cables, sometimes four, depending on what you do with sync. This requires special care. If the cables get out of order, or if one is stretched or kinked, the picture will look bad. A society that, by and large, cannot set the clocks on its VCRs is not ready for a four-wire video signal.

The goal is to reduce the number of wires to one. By artfully re-mixing RGB, we can recreate the same signal that would be produced by a black and white camera, and then express color as sidecar signals to the black and white one. These new signals are called respectively the *luminance* and *color difference* signals.

Luminance is just a fancy word for black and white. A long time ago, someone decided to abbreviate luminance by using the letter "Y." This is the same Y that you see in "Y/C," of S-VHS and Hi 8 format fame.

The color difference formulas are a little more difficult. Suffice it to say that with algebra and some electronic trickery, you can create two signals which consist of red minus luminance (R-Y), and blue minus luminance (B-Y).

The same folks who named luminance Y decided to name R-Y "U" and B-Y "V". After a little more processing, these signals become "I" and "Q." Collectively, Y, I and Q, (YIQ), or Y, U and V (YUV), or Y, R-Y and B-Y (Y/R-Y/B-Y) are called *component analog video* (CAV) signals. CAV is the native format of Betacam, Betacam SP and MII video tape recorders.

High "C"

We have taken some nice, decent RGB, and through some electronic mish-moshery we've turned it into something that we cannot even pronounce. It still takes three wires. Where is the payoff?

I and Q each occupy half as much bandwidth as a single black and white signal.

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In other words, converting RGB to component analog video accomplishes about a 2/3 bandwidth reduction. This is an important savings. It allows us to devote less bandwidth to color, but keep the picture intact.

In the digital world, lower bandwidth means fewer bits. In fact, if we digitized Y, U and V, we could recreate a successful picture by using only one sample of U for every two of Y, and one sample of V for every two of Y. This means that for every four samples of Y we'd use two each of U and V. This ratio, 4:2:2, is the formula for CCIR 601 digital video (D-1). It is also the basis for several new component digital tape formats.

If we do just a little more trickery, we can combine I and Q into just one signal. It is a hard trick. To combine I and Q without loss, we modulate them onto a *color subcarrier*. We then shift the phase of the Q signal 90 degrees, and sum I and Q together. We call this new signal *chrominance*, designated "C." This is the "C" part of Y/C.

The Y and C signals each occupy one wire. This means that Y/C is a two-wire format. Y/C is the native format of S-VHS and Hi 8 VTRs.

On to NTSC

We make Y/C into composite video by summing the Y and C signals, and adding sync pulses. The color subcarrier frequency which modulates the I and Q signal is chosen such that it throws its spectral energy in packets that will interleave with the spectrum energy generated by the luminance signal. For NTSC, the subcarrier is about 3.58 MHz.

There you have it. NTSC is one of the most technically difficult signals to make. But if you want your video to fit down one wire (or one TV channel), it's worth it.

If you were to digitize NTSC, you'd end up with the basis for the digital video signals D-2 and D-3.

Of course, NTSC is not the only composite format. Many countries use a system called PAL, and a few use one called SECAM. Toasters are not yet available for these standards.

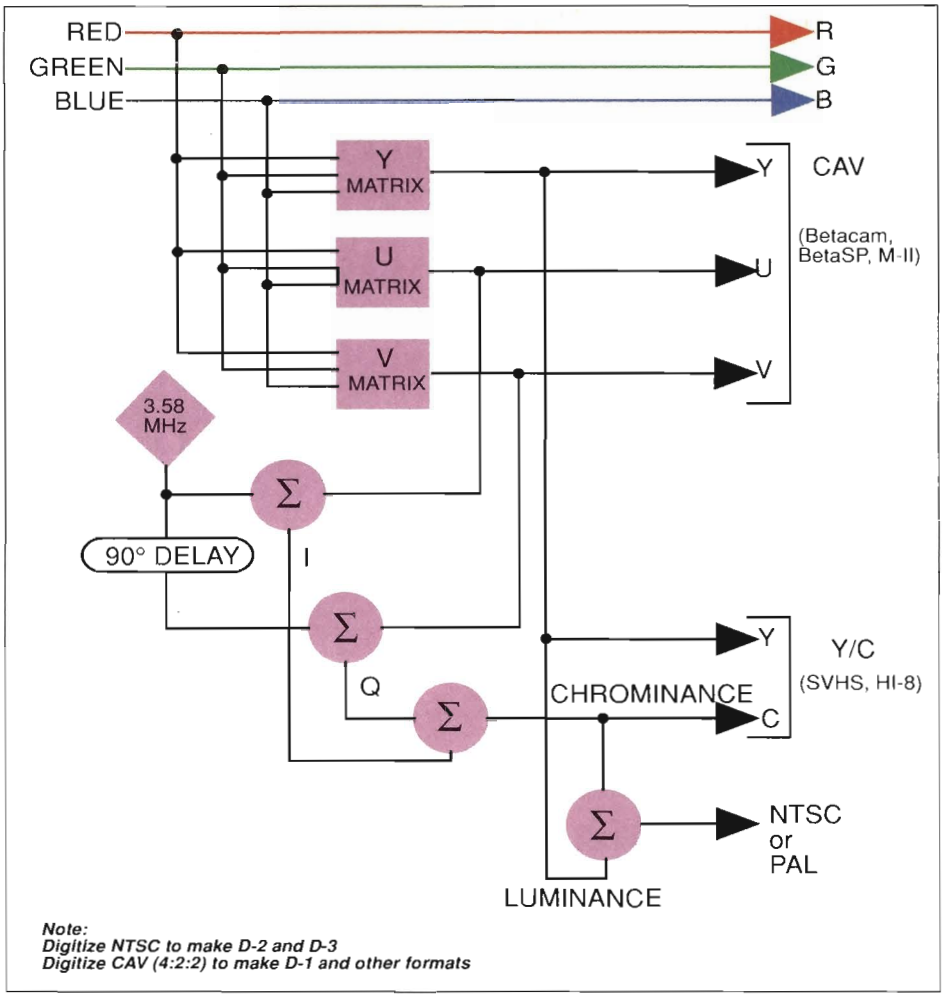


Figure 1: Getting the video signal from RGB to NTSC is an arduous process. RGB is first matrixed to form a luminance signal (black and white) and two color difference signals. The color difference signals are summed to form the chrominance signal. The chrominance and luminance signals are then frequency interleaved to form NTSC. The CAV signals can be tapped off along the way, as can the Y/C signals. Digitized CAV is D-1. Digitized NTSC is D-2 and D-3.

Tradeoffs

RGB is so unwieldy that about the only environment in which it is successful is computers, where it can be tightly controlled. NTSC, on the other hand, is easy to use and almost universally applied. However, the extensive signal processing required to make NTSC may degrade its quality a little. The CAV and Y/C formats are compromises, offering better quality than NTSC, but at premium prices. (See Figure 2).

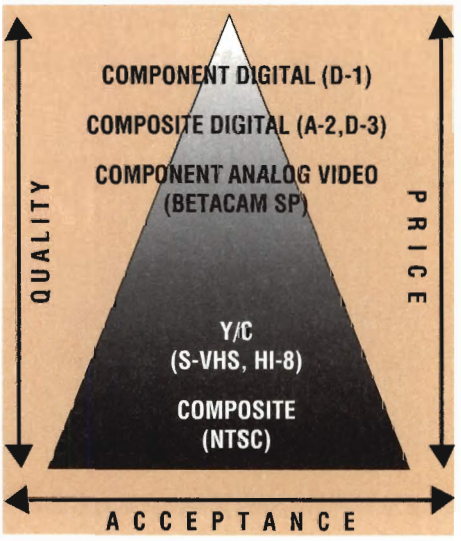
CAV formats are almost as good as RGB. This is why they are so popular with broadcasters. But a single Betacam SP VTR can cost as much an entire Video Toaster workstation and editing setup. This doesn't fill the bill for "desktop video."

Y/C, however, offers intriguing possibilities. The biggest quality hit in making NTSC is the very last step, where Y and C sum. The summing circuits frequently confuse a little Y for C and vice versa. This leads to dot crawl and cross-luminance—the source of poor resolution on vertical lines and the "seersucker suit with worms on it" effect. Y/C devices simply omit this last step.

Y/C camcorders are readily available, and Y/C VTRs cost only a little more than strictly composite ones. Even though these units are Y/C internally, they usually have composite inputs and outputs as well. This is why so many Video Toaster owners use them.

But for the true Y/C advantage, well, you're stuck. Toaster is not available in a Y/C version, and the word is that NewTek intends to keep it that way. However, there are now available a raft of new products devoted to giving the Toaster the Y/C advantage. And just like the Toaster, these products offer record breaking performance for their price.

Figure 2: (below) Relationship of record format to signal quality, VTR price and number of users. Digital recording systems typically offer the highest quality, but at a steep price and narrow install base. Composite, on the other hand, offers a low price and a wide install base. CAV systems offer high quality at a high price. S-Video (Y/C) systems offer good quality at a reasonable price.



Brave New Words

This article has covered a lot of ground, from RGB to NTSC and back. These are important steps, so much so they have names. The process of moving from RGB to composite is called *encoding*. Moving from NTSC (or another composite format back to RGB is called *decoding*. These terms only apply when the conversion is a complete one. If all you do is change from RGB to CAV, or vice versa, it's called *transcoding*.

There, now you need no longer fear video's alphabet soup. Although it can be confusing at first, understanding the roots of NTSC can pay off handsomely, especially if you seek to merge the Toaster into a larger production facility.

Next issue we will expand on formats, only instead of talking video, we'll talk tape. We'll discuss what kind of VTR is right for you, and include an introduction to editing. VTU

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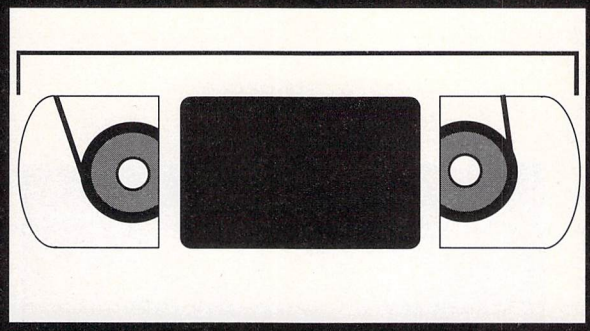

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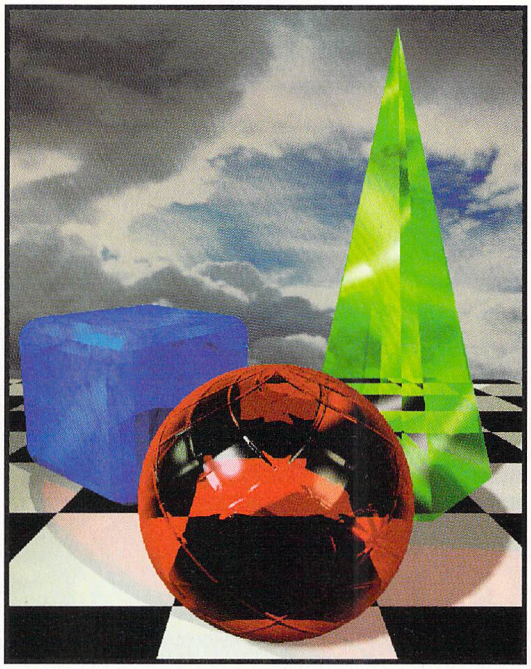
INTRO TO MODELER

Part Two

by Tim Doherty

The Video Toaster continues to push the envelope of what an affordable desktop system is capable of. Nowhere is this more evident than in LightWave 3D. The dazzling imagery of NUtopia's *Theology* video and Ron Thornton's spectacular effects from Babylon 5 are as intricate and sophisticated as those produced by any computer graphics system on the market today. They are equally inspirational. When Toaster owners of any skill level see such polished, professional images, the immediate reaction is: I want to do that! Unfortunately, new users sometimes never pass beyond this dream because the principles of 3D modeling are often as intimidating as they are challenging. It need not be so. By entering the world of 3D object design gradually, the newcomer can assimilate an understanding of 3D concepts, cultivate the skills to make and manipulate objects, and slowly unleash his creative talents.



Heber / Svet

Part One of this introduction to LightWave's Modeler appeared in the June/July issue of VTU. In that article, we examined the 3D coordinate system, orthographic projection, Modeler's views and orientation, ways to add points to the workspace, how to join points into polygons, the importance of surface normals, and methods of selecting/deselecting points or polygons. Part Two will continue with the assumption that you have read and understood these ideas and techniques.

Volume Mode

Selecting points, polygons, or objects in the workspace, or current layer, is one of the most basic tasks we can perform in Modeler. It is also one of the most important operations to master, since only items which have been selected can be moved, altered, deleted, renamed, or otherwise manipulated with the program's host of tools. Volume mode provides a third method of selection, complimenting the two modes previously discussed, Point and Polygon. By clicking on the Volume command button, we can drag out a 3D box in our workspace. Points, polygons, or objects enclosed by the box are all automatically selected. This is a big time saver. For instance, if you have created a 3D logo of a company's name, but need to tweak the placement of the individual letters, you can simply enclose each letter one by one in a volume and adjust its position. Obviously, this is much faster than trying to click on all of the points or polygons making up each letter.

Let's try using the Volume tool. If you haven't already done so, load Modeler. From the Objects menu, click on the Disc button. In the bottom view, drag the bounding box from position X: -1, Y: -1 to position X:1, Y: 1. Move to the back view and add height to the soon-to-be-created object by dragging the bounding box along the Y axis in both directions. Press Return or click your right mouse button to create a solid cylinder. Switch to Volume mode. The name on the Volume button will change to "Exclude" when you click on it, which means that only those polygons falling completely within the volume are selected. Polygons only partially enclosed are excluded. Position your pointer so that it is above the center of the cylinder in the back view, then hold down the right mouse button and drag out the volume, enclosing the right half of the object. Note that the volume is infinitely large in the other two views because we've only sized it along one plane. If you click in the left or bottom views, you can drag the volume's Z size, exactly as we did when we added the cylinder to the workspace. The points and polygons on the right half of the cylinder are now ready to be altered. Press the X key, or click on the Edit/Cut button. The points and polygons inside the volume are cut from the layer, while those outside are untouched.

Undo the last operation (U), then click on the Volume button again. It toggles to Include mode, and the dotted line defining the volume changes to a solid line. Now, press X again and note the difference. Even the polygons that are only partially enclosed by the volume are cut, provided at least one point lies within the volume. Figure 1 illustrates the difference between the two types of volumes. As you become more practiced, you'll find it helpful to change from Include to Exclude in order to precisely pick the areas you wish to modify.

Other Selection Tools

Because selecting object parts is so critical to successful object design, Modeler provides a number of other time-saving techniques. The Lasso tool is a variation of the Volume, but with more flexibility. It is activated by holding down the right mouse button while in either of the three select modes. Unlike the Volume, which is defined by a 3D box of variable proportions, the Lasso has no preset shape. Essentially, it is a freeform volume which you draw in the workspace. To try it, restore the cylinder with the Undo key, then switch to Point mode. Hold down the right mouse button and draw around a section of the cylinder in any one of the views. When you release the mouse button, the shape you have drawn will automatically enclose itself and all points lying within it will become selected. Do the same thing in Polygon and Volume modes. Notice that, unlike the Volume, which we can stretch in any of three dimensions, the Lasso can only be drawn in one viewpoint at a time and along two axes. It runs infinitely along the third axis. Also, keep in mind that the Polygon Lasso is always in Exclude mode, so that polygons must fall completely inside to be selected. The Volume Lasso operates in either Include or Exclude modes.

In addition to modifying parts of objects, it often is necessary to make global changes to everything in the work area. An entire logo may need to be stretched, for example. We could enclose the object in a volume, but Modeler offers a still faster method: don't select anything! If you don't specify any points, polygons, or volumes,

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OUR EXPERTS

Tony Stutterheim is the director of NewTek's award-winning Revolution. As the former head of NewTek's Video department, he has been working with the Toaster since before its release. A prize-winning photographer and video editor, Tony is also responsible for many of the amazing LightWave 3D animations seen on NewTek's promotional tapes. He is currently starting his own high-end production/ post-production/3D graphics studio.

John Gross is the lead instructor at NewTek University, NewTek's training program for its authorized dealers. John's classes at NewTek U have earned him high praise as a teacher and Toaster expert. He writes the "Dear John" column in *Video Toaster User* magazine, and has also worked as a graphics/3D artist in Minneapolis.

Lee Stranahan is known across the country for his ability to show people the power of the Video Toaster. He wrote the Tutorials for the acclaimed Video Toaster 2.0 manual and last year he logged over 30,000 miles giving seminars, speaking at conventions and user's group meetings, and working at trade shows for NewTek. He is currently featured in the Desktop Images instructional tape series.

OUR CLASSES

Toaster Essentials is our general purpose hints and tips class, which covers use of the Toaster's Switcher, Digital Effects, the Character Generator, ToasterPaint and much more. Those attending will learn how the Toaster works, and techniques that they will be able to use in their work right away, whether they work in broadcast, corporate or industrial video.

LightWave 3D Essentials is designed to show people how to use LightWave 3D. Students will learn methods of creating 3D graphics; how to create and modify objects using the Modeler; how to create and apply surfaces, such as wood, glass, and water, to objects; and how to lay out a scene to create either still images or animations.

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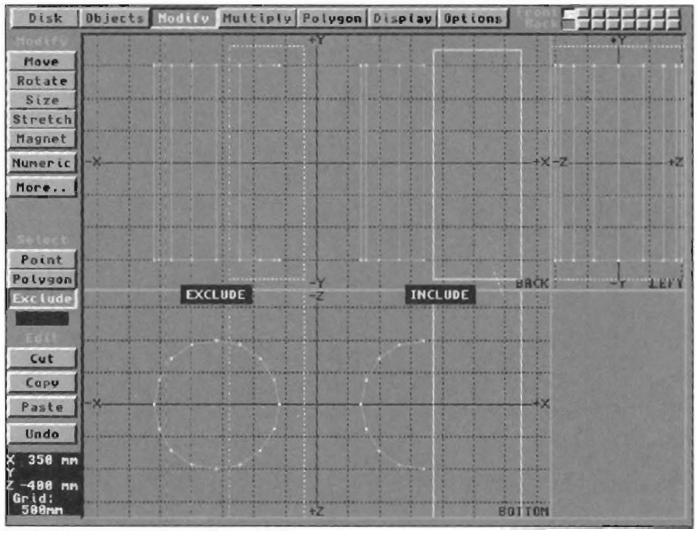
FOR TOASTER TRAINING AT HOME SEE PAGE 65

Modeler assumes that you want your commands to act upon everything in the current layer. To illustrate this, click on the small blank area of the command strip above the Select buttons. This will deselect everything in the layer. Then press the X key again. The entire



object will disappear as it is cut away. You'll find this global command particularly useful when you begin using Modeler's layering capabilities, which we'll discuss later. Press U to return the object to the workspace.

Surface Names

If you decided to save the object, then load it into LightWave and render it, the resulting image would show a featureless, faceted white cylinder. Modeler's only function is to mold object shapes. Attributes such as color, texture, smoothing, and specularity are assigned using LightWave's Surfaces menu. Changing the color of the cylinder from white to red is, therefore, a simple matter of opening the Surfaces menu in LightWave, clicking on the Surface Color button, and then pulling down the green and blue sliders. Resaving the object in LightWave also saves all of the corresponding surface attributes you assigned to it.

Though the cylinder had only a single surface, it is possible, and usually preferable, for objects to be composed of many surfaces. By definition, surfaces are simply polygons which have been given a unique name in Modeler. This makes it possible for a single object to have many different surface characteristics. An example of this is the NewTek logo in the Objects/Tutorials drawer. Different letters of the logo have been given different surface names, so that they can be assigned separate colors in LightWave.

The concept of surface names is very important. You should always designate individual names to the key elements of your objects, particularly as your designs become more complex. Also, make it a point to create names that are clearly descriptive. Don't label the surfaces of a clock as "A" "B" and "C," but rather as "clock.face," "clock.hands" and "clock.case." This will facilitate the task of applying attributes in LightWave, and that of modifying objects in Modeler as well.

The process involves two steps. First, we need to tell Modeler what names we'd like to use. Then we need to assign those names to the appropriate polygons. Surface names are created by clicking on the Edit Surface button from the Options menu. This opens a window in the center of the screen. The up and down arrows allow us to scroll through all the surface names currently in memory. Since we haven't yet created any new surfaces, or loaded any objects which have their own surface names, Default is the only one presently listed the list. This is the name Modeler applies to all surfaces until others are created and specified. Click in the Input box, type the name "Cylinder.top," then click on the Create button. Do this again with the name "Cylinder.side." Make sure that you click on the Create button, since pressing the Return key merely closes the window without adding the current name to Modeler's memory. If you click on the arrow buttons now, you should scroll though the three names.

Next, we must choose the polygons we want to rename. Open the Polygon menu, then click on the

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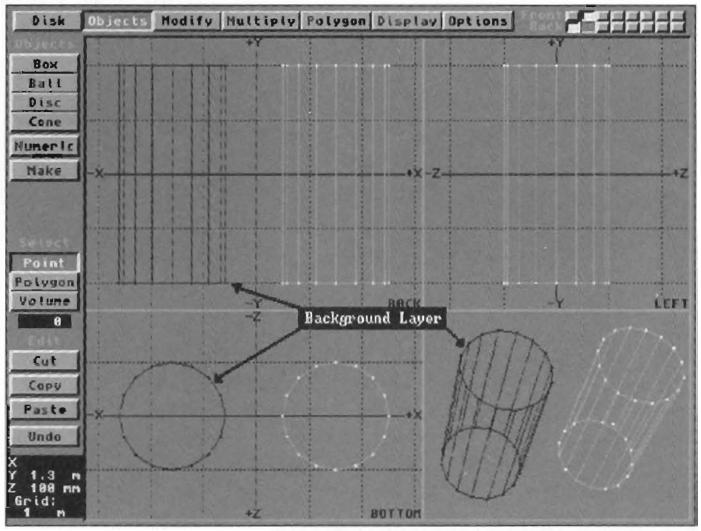
Surface button. Use the arrow keys to scroll to the name "Cylinder.top," then click on the OK button. This will globally change all the polygons to the new name. However, we still need to rename the side polygons. Activate Select Polygon mode, then go to the back view. Hold down the left mouse button and sweep the pointer over all the side polygons to select them. Click on the Polygon/Surface button. Scroll to the name, "Cylinder.sides," then click the OK button. All of the highlighted polygons have just been changed to the new name. We can now save the cylinder, load it into LightWave, and independently assign attributes to its sides and tops.

Be aware that whatever name is listed as the current surface in the Surface menu will automatically be assigned to any new objects or polygons you create. Of course, you can rename them anytime you choose.

Statistics and Info

Modeler's Statistics and Info windows provide valuable facts about our current layer. They also offer useful tools which are often overlooked by the novice user. Both are particularly powerful once you are familiar with polygon names. Activate Select Polygon mode, then open the Polygon Statistics display by pressing the W key, or by clicking on its Command button under the Options menu. As its name implies, the Statistics window contains statistical information about the polygons in the current layer. This includes the total number of polygons, and a breakdown based upon the number of vertices per polygon. We can select or deselect polygons on this basis by using the Plus and Minus buttons, respectively. More importantly, we can also select or deselect based on surface names. For instance, click on the up arrow key until the name "Cylinder.Top" appears. The number of polygons assigned to that name is listed immediately above it. By clicking on the corresponding Plus key, we can instantly select all the "Cylinder.Top" polygons.

Utilizing the Statistics window will prove to be invaluable as the complexity of your models increases (provided that you are careful to assign surface names properly). For a better appreciation of the importance of surface names, and the ease with which you can use names to select parts of an object, try loading some random objects from the Phonebook. Use the Polygon Statistics window to review their various surface names, then study how they were pieced together by selecting each section via the Plus key.



Info (I) is another handy window. Unlike Statistics, which provides feedback about everything in the layer, Info only deals with *selected* items. In Polygon mode, it provides a quick method to find out the surface name of the selected polygon(s). It also has a few other applications. Its Deselect button provides a painless way to cut one polygon away when, say, two identical polygons have been pasted down atop one another. In Point mode, it supplies the coordinates of the selected points, which can then be used for numerical alignment.

Layers

One thing that sets Modeler apart from other design software is its layering capabilities. Much like a sophisticated CAD system, Modeler has eight layers,

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each of which is a separate workspace. You can move from one to another by clicking on the row of Layer buttons, located on the top right of the screen, or by pressing keys 1 through 8 on the keyboard. This is an excellent way to simplify complicated designs. If you were designing a human head, for instance, you could work on the nose in layer one, the ears in the second, the eyes in the third layer, and the mouth in the fourth, and the rest of the face in layer five. After completing the individual elements, you could then copy all of the pieces into layer six and save the resulting finished object.

Adding even more power is the ability to define foreground and background layers. Foreground layers are active, and are what we have been using for this introduction. Modeler's tools work in foreground layers, but have no effect on background layers, which are inactive. So what good is a background layer if our tools won't work in it? A background layer is visible beneath the current foreground layer, and so can be used as a reference. In the example given above, the shape of the head could be used as the background layer, over which the various foreground layers could be placed for proper alignment. Background layers are turned on by clicking the lower row of Layer buttons, or by pressing the Alt 1-8 keys. Figure 2 illustrates a workspace consisting of one foreground and one background layer. Background objects are black. By the way, it serves no purpose to activate a background layer unless you have something in it. Also, if both layers contain the same objects in the same location, you won't be able to see the background layer until the foreground object is moved, or otherwise modified.

Basic Tools

It's time now to begin using Modeler's most common tools. Cutting, copying, pasting, and moving are probably the commands that you will employ most frequently. The first three all have keyboard equivalents, as well as buttons which are always accessible on the lower left (unless the Options menu is open). Cut (X) removes the selected polygon, point, or object from the current workspace. Though it is out of sight, it is not out of mind; it is moved into a buffer, from which it can be pasted down at any time. It will remain in the buffer until another object is cut or copied, taking its place. To clear the buffer and regain the memory it uses, cut from an empty layer. Copy (C) leaves the original object in the workspace, placing a duplicate in the buffer. Paste (V) is used to copy the object from the buffer back to the workspace. You can paste as many times as you like, so if you press the V key twice without moving the first, you'll end up with duplicate objects on top of one another.

The Modify menu has commands for, among other things, moving, rotating, sizing, and stretching. These actions occur relative to the location of your pointer, which adds greater flexibility but can also be confusing if you aren't aware of this fact. Thus, if you position your pointer over the center of the object when you rotate it, the results will be very different (and, incidentally, probably what you prefer) than if you position your pointer far from the object. When moving objects, I often place my pointer some distance away so that it won't obstruct my view as I try to position them precisely. If I want to slide an object along the X axis but want to keep its Y placement the same, I sometimes move the crosshairs so that they are over a grid line, and use the line as a reference. In Point mode, you can also move the cursor to the desired area of the workspace and then press the J key. All selected points will then jump to that area.

Experiment with these commands. Try them in Point, Polygon, and Volume modes. Practice using both the mouse pointer and, for more precise control, the numeric data requester. Take advantage of Modeler's layers to copy, cut, paste, and move objects. If you feel adventurous, test some of the other tools. Remember: Undo is only a keystroke away. You should start to develop a firm understanding, both in theory and in practice, of Modeler's basic structure. In the next installment, we'll delve into more of the program's tools, and study its powerful layering capabilities in depth. Until then: happy modeling! VTU

Tim Doherty is a professional LightWave animator. Contact him at TKD Animation, 218 Rancho Del Oro Dr., Suite 126, Oceanside, CA, 92057, or 619-967-9402.

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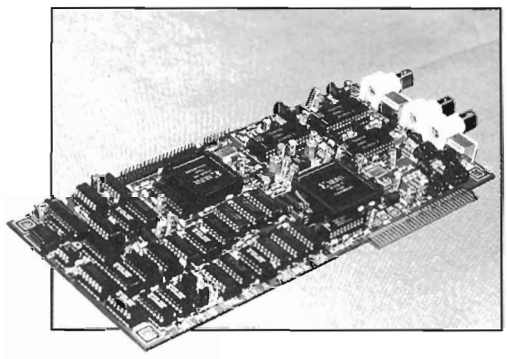

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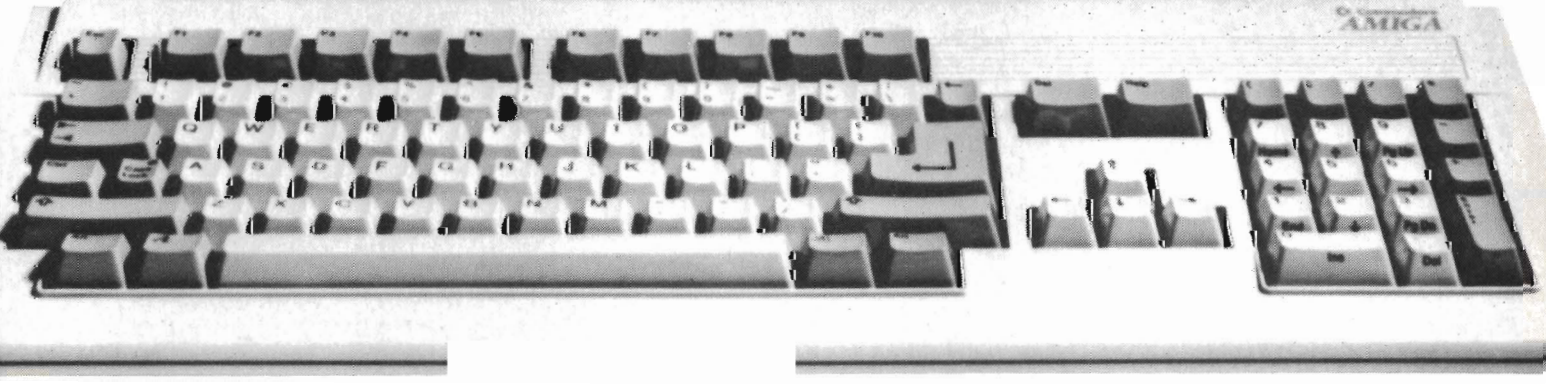

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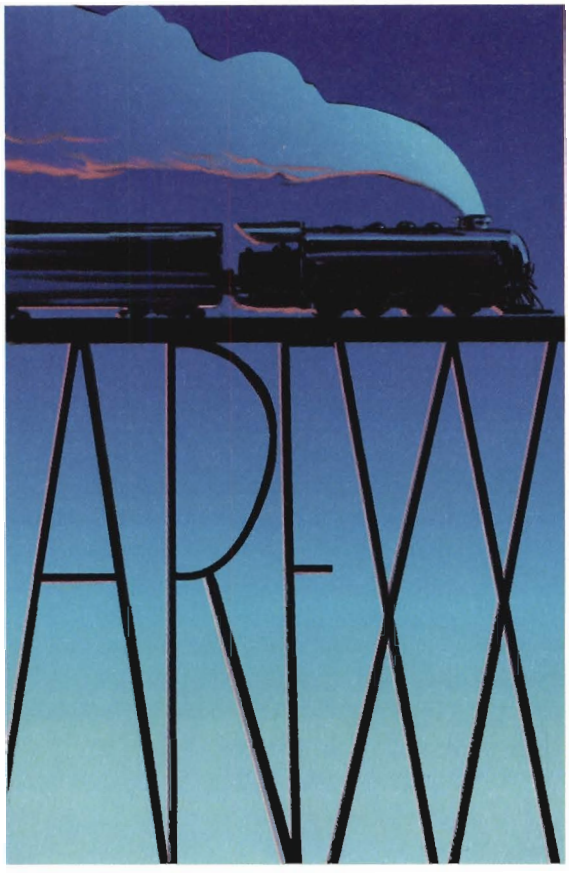
TOASTER AREXX

Part 1

by Steve Gillmor

You've probably noticed mysterious phrases such as "ARexx-compatible!", "ARexx required." or "ARexx not required " cropping up in both articles and advertisements in Video Toaster User and other Amiga magazines. ARexx is a powerful programming language that allows many different compatible programs to work together, and can automate batch procedures. Yet many Toaster owners come to the world of computers from the video and graphics disciplines, and are intimidated at best by the idea of programming. Here's a secret: you don't need to understand ARexx to take advantage of it! You can run the example ARexx programs included with your 2.0 Toaster software, or you can purchase separate utilities that control the Toaster via ARexx, taking care of all the details. You can do things with ARexx, the Toaster, and other Amiga tools that can extend the power of your system and save you time, and most importantly, money.



But to really harness ARexx, you need to be able to create your own custom scripts to automate your particular tasks. The scripts included in the ARexx_Examples directory of your Toaster software are a wealth of information and techniques, but some tips are needed to take advantage of them. Once we've unlocked some of these secrets, we'll use some of our new knowledge to create a useful ARexx macro in another key Amiga program, Art Department Professional 2.0. A few simple ARexx commands create an automated way of prototyping Toaster animations to obtain client approval before going single-frame to tape. In next issue's Part 2, we'll explore Toaster utility programs and their use of ARexx.

If you bravely jumped right in and tried an example Toaster ARexx program, you might have been stumped. Let's say you first open a Shell (CLI) on the WorkBench, then run the Toaster and use Ctrl-Ctrl-Alt-Alt to return to the WorkBench. You decide to try the ToastCmdTest.Rexx script, since it promises a tour through many of the Switcher commands. You change to the ARexx_Examples directory, type:

```
rx ToastCmdTest
```

...hit Return, and nothing happens. Or possibly things start to happen and then stop unexpectedly. It's actually a simple problem: you have to be on the Switcher screen in order for the ARexx script to execute properly. You could add a 'TOSW' command at the beginning and a 'TOWB' at the end, but there's an easier fix. After you type:

```
rx ToastCmdTest
```

. . . and *before* you press Return, do a Ctrl-Ctrl-Alt-Alt to go back to the Switcher and, taking care *not* to click in the Switcher window, press Return to execute the ARexx program.

You can also slow ToastCmdTest.Rexx down to execute instruction by instruction. Load the script into your text editor (not a word processor, which may add control codes that will screw things up), and add the line:

```
trace ?R
```

on the first line after the comment, just above `options RESULTS`. Save the script with a different name in the same directory. Now when you start the program, the script executes each line and then waits for you to press Return to continue. You can stay on the WorkBench and watch the first few instructions execute and print their results in the Shell window, then go to the Switcher screen to see the results as you continue to hit Return.

You can also create and run tiny one-line ARexx programs called string files. You need to enclose the string in quotes and separate multiple commands with semi-colons. First, open another Shell, CD to the same ARexx_Examples directory and type:

```
rx ToasterCommandHost
```

and press Return. Then in your other Shell, type the following, move back to the Switcher and press Return:

```
rx "options results; address TOASTER_COMMAND_HOST; AUTO"
```

You can keep substituting other commands at the end of the string to test various commands.

Toaster ARexx Example Scripts

Now that we've got ARexx responding interactively, let's take a look at two of the included Toaster ARexx example scripts. As Arnie Cachelin indicated in his "ARexx and the Toaster" articles (see Video Toaster User June/July and August/September 1992), there are several different types of ARexx implementations in the Toaster 2.0 software. The Switcher uses a function host interface, ToasterPaint and LightWave use the more common command host interface, and the Genlock can be accessed either way. Indeed, the ToasterCommandHost.rexx program we used earlier lets us address the Switcher in the more traditional command host method. We'll look at a function host example, TimeLapse.rexx, and then a ToasterPaint macro, IFF2TPaint.rexx.

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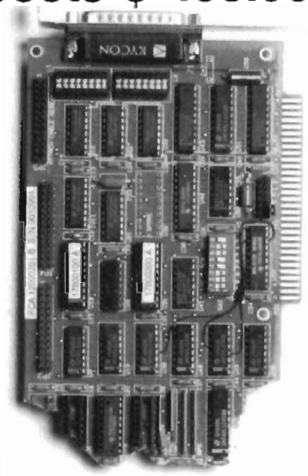

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```
/* TimeLapse.rexx - Record frames at intervals of 1 to 60 mins */
/* By Arnie Cachelin © 1992 NewTek Inc. */
```

Every ARexx program must begin with a comment, starting with /* and ending with */. This comment is a useful place to put the title of the script, the name of the author, and a description of what the program does.

```
OPTIONS RESULTS
```

As Arnie says in a comment in another script: `/* Ask ARexx to pass command results along to us */`. Options results is not actually used here, and perhaps was left in through force of habit by the programmer. It won't hurt in this script, but cannot be used in ToasterPaint scripts.

```
TOASTERLIB="ToasterARexx.port"
REXXLIB = "rexxsupport.library"
```

These two lines each assign the string value on the right to the variable on the left. We'll use these variables in a few lines to add the Switcher function host and an ARexx support function library.

```
arg delay count name
```

Here we parse (or break up) the command line that ran this script into variables. If the command line reads "rx TimeLapse 5 10 Sunrise" then the variable delay now equals 5, count equals 10, and the name is Sunrise. If the user did not specify any arguments on the command line, the next section determines that and uses the SAY command to print a message to the Shell window detailing the suggested arguments, before Exiting the program.

```
if arg()=0 then do
  say "USAGE: rx TimeLapse <delay in mins> <# of frames> <name>"
  exit
end
```

If there were arguments (there needs to be at least one), the script now makes sure that the values are either initialized to defaults if no argument is given, or kept within certain boundaries.

```
if delay="" then delay = 1
if delay<1 then delay = 1
if delay>60 then delay = 60
if count="" then count=10
if count>1000 then count=1000
if name="" then name=left(date(),6)
```

If there is no name argument, two ARexx functions are used to create a unique timestamp name. You read the multiple functions used here from the inside out, evaluating the Date function first and using its result as the first of two arguments in the Left function. If today's date is December 25, 1992, date() returns 25 Dec 1992. `Left(date(),6)` extracts the 6 leftmost characters to return "25 Dec" as the value of name. It might even be a good idea to add the Compress function around this to squeeze out the space in between 25 and Dec, as in:

```
if name="" then name=compress(left(date(),6))
```

By the way, a good way to check your progress and debug your scripts is to use the Say command to see where you are. In this case, add a "say name" here and try it with and without the Compress() function.

```
delay=delay*60*30        /* delay in minutes x 60s/min x 30f/s = delay
in frames */
```

Here the number of seconds of delay is converted into frames, a value which the Switcher's Wait function can use later.

```
IF POS(REXXLIB , SHOW('Libraries')) = 0 THEN
  IF ~ADDLIB(REXXLIB , 0 , -30 , 0) THEN x=Bummer(" I don't get no sup-
port!")
IF POS(TOASTERLIB , SHOW('Libraries')) = 0 THEN
  IF ~ADDLIB(TOASTERLIB , 0) THEN x=Bummer(" Me No Find Toaster
Library!")
```

You may notice code similar to this in many of the Switcher and other ARexx examples. The goal of these lines is to check whether libraries and/or function hosts needed for the operation of this script are available, and if not, load them. The first and third lines in pseudo-code work as follows, again working from the innermost parentheses outward. The Show function returns a list of the libraries and hosts currently in memory; the POS function looks for the position of REXXLIB (rexxsupport.library) or TOASTERLIB (ToasterARexx.port) in the list. If the position is 0, that means the library or host is not there, so the next line loads it.

Don't be confused by the ~ character before ADDLIB; it means NOT (courtesy of Wayne's World) and reverses the meaning of the code that follows it. When ADDLIB is not successful, it returns a 0, which in computer-speak is the same thing as FALSE. The THEN clause of an IF statement executes when the IF part is true, so the ~ operator

reverses the result to 1 or TRUE, which means that IF ADDLIB fails, THEN we call the Bummer user-defined function. Unfortunately, due to oversight, the Bummer code is not included in this script, so you'll need to copy it from the Toastslideshow.rexx script and paste it in at the end of TimeLapse. We'll go over it when we get there, in a minute.

One other note about libraries: we don't actually use the rexxsupport.library in TimeLapse, but unless you are very low on memory, you might as well load it and any other ARexx libraries you use often, perhaps even in your startup-sequence.

```
Switcher(TOSW)          /* Go to Switcher screen */
Switcher(LVID)          /* Set to live digital video */
time(reset)
do f=0 to count
  Switcher(FVID)        /* Freeze frame */
  SaveNextFrame(name||time(elapsed))
  Switcher(LVID)        /* Set to live digital video */
  Switcher(FRES)        /* Reset frame counter */
  Switcher(WAIT,delay)   /* Wait */
end
Switcher(TOWB)          /* Go to Workbench screen */
exit
```

Now we'll paint the rest of the picture in broader strokes. The comments tell most of the story; various Switcher commands are sent to capture freeze frames with the delay set earlier and then save them to the hard drive. The Time() function resets the ARexx clock to 0, and then tacks on the elapsed amount since the reset to the name created earlier. The || symbol (two shifted backslashes on your keyboard) is the concatenation operator, which means stick together the strings held in the variables on either side of the operator. The script does a DO loop to grab the number of frames (count) defined by the user when the program was run.

```
SaveNextFrame:  Procedure
  arg name
  N=Switcher(STAT,KNUM)        /* Get the current keypad number */
  fs=N+1
  do while Switcher(FMXI,fs) &fs~=N   /* Is the frame already there? */
    if fs=999 then fs=0        /* wrap around at last frame */
    else fs=fs+1
  end
  if fs=N then t=10          /* got to starting frame without finding
open fs */
  else t=Switcher(FMSV,fs,name)     /* Save frame */
  say "Saved frame "name" in number "fs " at "time()
  return t
```

SaveNextFrame() is a user-defined function you'll find after the main body of the script. The concatenated name is passed in to the function as the name variable. The rest of the function makes sure to save each freeze frame in an empty framestore slot up to the limit of 999 frames, storing the name in the comment field of the FMSV command.

```
Bummer: PROCEDURE
 arg etxt
 say etxt
 EXIT
 return 0
```

You're an old hand by now, so I'll just confirm that if the Bummer routine is called, it passes the appropriate string and then quits the program.

You should now have the tools to dissect IFF2Paint.rexx. This script assumes ToasterPaint is loaded in memory; since ToasterPaint has the more common command host interface, you need to Address its port to tell ARexx to send subsequent commands to it. Notice how one user-defined function can call another, which can in turn call two more. Both LoadBrush() and SaveRGB() call the SetFile() routine, which in turn calls GetPathName() and GetFileName(). These last two functions illustrate ARexx's great string-handling abilities. In GetFileName(), the full filename is searched for the last position of the "/" character. If no "/" is found (c = 0), then we look for a ":". Then we return to the calling SetFile function, the part of the string starting one character after the "/" or ":", in other words, just the file name without the rest of the path. GetPathName() returns just the path without the filename, and each value is used in the appropriate ToasterPaint commands to load or save with its file requester.

```
/* Map iff to ToasterPaint canvas */
/* By Arnie Cachelin © 1992 NewTek Inc */
/* 01 Dec 1991 At 23:07:52 */
/*
```

This program loads a standard Amiga IFF image, and maps it to fill the ToasterPaint canvas. Give it a full file name to load. Optional parameters are an output name, to save the RGB image, and a blur switch. If there is any

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third parameter given, then Blur will be used, and the whole picture will be blurred once. This helps smooth the pixels and colorbands in lower resolution or color images. To turn the blur on without saving the frame, use 'NIL:' as your save name.

```
*/
ARG iffname outname blur
Address "DigiPaint"     /* Tell ARexx where commands go  */
if pos('DigiPaint',show(ports))=0 then do
  say "Can't find ToasterPaint!"
  exit
  end
PageWide=752
PageHigh=480
'Bdel'                          /* Delete swap brush */
Call LoadBrush(iffname)
'Bcop'                          /* Copy Brush to swap brush */
'Maxe'                          /* Set edge blend level to max */
'Maxc'                          /* Set center blend level to max */
'Cbx0'                          /* Choose color 0 (black) */
'Clrs'                          /* Clear the screen */
Call MapBrush(0,0,PageWide,PageHigh)
if Blur~="" Then do
       'Blur'
       'Redo'
       end
if Outname~="" & OutName~="NIL:" then do
       Call SaveRGB(outname)
       end
'Shco'
exit
MapBrush: PROCEDURE  /* Size swap brush into rectangle with corners*/
/*at (x1,y1) and (x2,y2) */
  arg x1, y1, x2, y2 /* if there is no swap brush, whole screen is
used! */
   'Pmcl'         /* Normal draw Mode */
        'Hvof'          /* Turn off gradient blend (center=edge) */
        'Maxc'                          /* Set transparency off */
   'Flon'         /* Fill On */
   'Aaon'         /* Anti-alias on */
   'Txma'         /* Texture mapping on, fill on, draw rectangles  */
   'Drre'         /* Draw Rectangles */
   'Pend' x1 y1   /* Get in top Left corner  */
   'Penu' x2 y2   /* lift pen  */
   'Flof'         /* fill off  */
   'Pmcl'         /* Normal draw Mode */
    return

SetFile: PROCEDURE           /* Select file in current requester */
  arg fil e
  dirname=GetPathName(file)
  'Dnam'dirname              /* Enter file path  */
  'Dsel'                     /* Hit return on directory */
  filename=GetFileName(file)
  'Fnam'filename             /* Enter File name  */
  'Okls'                     /* Hit the OK button  */
  return

SaveRGB: PROCEDURE   /* Load Brush, copy into swap buffer */
  arg filename
  'Sa24'                     /* Call file requester  */
    Call SetFile(filename)
  return

LoadBrush: PROCEDURE   /* Load Brush */
  arg filename
  'Lobr'                     /* Call file requester  */
    Call SetFile(filename)
  return

GetFileName: procedure  /* Extract file name from full*/
```

```
/* file specification */
   ARG fullfile
   c = lastpos("/",fullfile)
   if c = 0 then c = lastpos(":",fullfile)
   return substr(fullfile, c + 1)

GetPathName: procedure  /* Extract directory name from full*/
/* file specification */
   ARG fullfile
   c = lastpos("/",fullfile)
   if c = 0 then c = lastpos(":",fullfile)
   return left(fullfile,c)
```

Finally, we'll construct a simple ADPro script that automates bringing IFF24 files from the Toaster through FRED into ADPro where they are processed and formatted so that we can load them into DPaint and save them out as an animation. FRED is ADPro's visually-oriented FRame EDitor; with it you can create "sequences" of IFF names and apply ADPro functions to it via ARexx macros. After setting up a sequence of consecutive LightWave or ToasterPaint IFF24 files, select all of the frames, then choose the Invoke ADPro menu item. You can then apply one or a chain of ARexx programs, which FRED will call, after loading each selected frame. Arguments are passed to the ARexx program or programs which indicate the frame number (first argument) and the name of the file being processed (second argument). Here's the basic ARexx program we'll use:

```
/* IFF2HAM.adpro */

/* By Steve Gillmor and some guy named Jeff at ASDG tech support */

/* Converts IFF24 to HAM for anim */

/* trace ?R */
address "ADPro"
arg NUMBER NAME
ptotal "HAM"
pstatus locked
screen_type 2
abs_scale 320 400
operator "BLUR" 1 128
execute
extension = overlay(NUMBER,'0000', 5 - length(NUMBER))
name2 = "dhl:anim/ham."||EXTENSION
save name2 "IMAGE"
```

I usually put a trace statement at the top of my scripts, then comment it out so that I can reuse it. Next, we address ADPro, putting the case-sensitive port name in quotes. Then we load the Number and Name variables with the values FRED passes for each frame. We'll use the Number variable and store the Name for possible future improvements, like SAYing the name of each frame as we proceed.

Ptotal defines the total number of colors as HAM (or 16 base colors). Pstatus Locks the palette so that all frames of the animation use the same colors. I'm assuming that we just started ADPro and no previous palette has been loaded. ADPro will use the first frame's palette for the rest of the sequence. This could be improved to load the first picture, use its palette, then lock the rest of the frames.

Screen_type is set to Interlace. Abs_scale scales the raw bit-map loaded in ADPro to the designated dimensions. We are looking for a maximum of resolution and number of colors while allowing for the highest possible frame-rate of anim display.

Next we apply the Blur operator to smooth out the transitions. This is very similar to the same ToasterPaint function used in the IFF2Paint.rexx program earlier. We then execute and create rendered data from the raw data.

We want to format the name of the resulting file name so that it will consecutively number the HAM files. When we use the Load Picture command in Deluxe Paint with the "# of Frames" requester set to the total number of frames, DPaint will create an anim in sorted order. Therefore, we use the ARexx built-in Overlay() function to generate a number extension that we tack on to the path where we store the HAM files. First, we use the Length() function to establish the number of characters in the number passed from FRED, then subtract that from 5. This becomes the [start] position in Overlay(), the position in '0000' where NUMBER is overlaid on top. So if the frame number is 33, then 5-2 = 3, and the function returns 0033. Finally, the Extension value is concatenated to the path I want to store the pictures in, and the file is saved from the rendered data.

Of course, the program can be improved in many areas. You could prompt the user for a directory in which to store the files, and error checking should be added to stop the program if one of ADPro's commands fails. There are several useful ARexx examples included with ADPro 2.0; take a look at Make-hame.adpro for error-handling code. You can also render DCTV files by changing the appropriate ADPro commands.

You should now be much more comfortable in reading ARexx scripts, and well on your way to making your own. In Part II, we will look at powerful Toaster utility programs that can automate ARexx program generation, and explore the increased power and potential that ARexx can bring to your Toaster and Amiga studio. VTU

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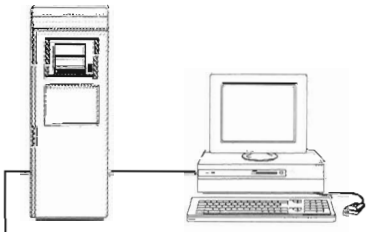

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SONY EVO-9650

Single Frame Hi 8 VTR

by Tim Doherty

It is no wonder that computer animation used to be a highly specialized, and equally expensive, medium. Just a few short years ago, quality animation software could set you back several thousand dollars, as could a 24-bit display device. Single frame controllers alone cost $3000-5,000, to which you had to add the price of a frame accurate VTR with serial control, starting at about $8,000. These items then had to be integrated together with the computer hardware and software.

Today, the market is undergoing a radical change. The Toaster/LightWave combination has brought 3D scene design to a new level of user friendliness and affordability. Products such as the Personal SFC from Nucleus Electronics dramatically reduced the cost (while increasing the functionality) of single frame controllers. Edit VTRs have gradually become less expensive, thanks in part to the shift away from 3/4" to new formats. As a result, computer animation is becoming something that artists, small production companies, and in-house corporate media divisions have suddenly found to be within reach.

First Animation VTR

Electronics giant Sony Corporation is obviously aware of this revolution, and of the accompanying growth in demand for computer animation. Their new Hi 8 VTR, the EVO-9650, is aimed directly at this market. To my knowledge, it is the first VTR designed expressly for the purpose of single frame animation. Using a null modem cable you can record single frames of animation directly from LightWave 3D without using a single frame controller!

At first glance, the EVO-9650 is an unimposing machine. In fact, it is smaller than some consumer VTRs, measuring 14" wide, by 4 5/8" high, by 15 1/4" deep. The front is nearly featureless. Aside from the tape bay and a row of small LEDs, there are only three buttons: Power, Remote and Eject. Several other controls are located beneath a hinged door on the bottom front of the machine, including knobs for adjusting audio levels, switches for various editing modes (audio dub and video insert/assemble), on screen menus and time code selections. However, these hidden controls can, for the most part, remain hidden, since the supplied RM-9650 wired remote commander contains a jog shuttle knob for tape movement, as well as keys for the most commonly used VTR functions. The user can therefore keep the VTR itself out of the way, with only the small and very functional remote on the desktop. The remote commander also permits users to program edit points and durations, making it possible to do manual single frame controlling with very little effort. This is an ideal method for single framing pencil tests onto video.

The Hardware

The back of the deck contains composite, audio, and S-Video inputs and outputs. There is also a GPI out, a connector for the remote commander, and an RS-232C port. A covered bay provides future expansion. For a list price of under $970, Sony offers an optional RGB card, the EVBK-65, to insure even better image quality from the incoming signal. Regrettably, this card is input only. Since Toaster users operate in the composite domain, the RGB card will be of little use unless you are able to save your animations as IFF24 images and then single frame them with another display device that offers component output.

The EVO-9650 features a built-in time code generator/reader. Editing options include assemble, or insert capability for video, PCM audio, and time code. Of course, it is accurate to plus or minus zero frames. It also has a built in frame buffer, which allows the 9650 to grab the computer generated image as soon as it is rendered. The computer can then immediately go back to rendering while the 9650 pre-rolls and drops in the grabbed frame. This digital frame memory has some other interesting uses as well. It can grab frames of incoming video, much like a TBC. You can zoom in on moving video or on a frozen image, making it possible to closely examine a part of the picture. It also permits you to play variable noiseless slow motion. This is an excellent method for slowly stepping through your animation during playback. Another unique application is a 3x3 matrix display, which divides the screen into 9 boxes. Each time you press a key, an image from tape is grabbed, shrunk, and displayed in a box. The result is an instant, condensed storyboard.

Software Control

The RS-232C port supports a rich instruction set. An included manual thoroughly documents the commands. Single framing from LightWave is a simple matter of adjusting the Amiga's protocol rate to that of the VTR, and then entering the correct hexadecimal commands in the LightWave record requesters. Refer to the chart for a complete description of this process. Users who prefer the simplicity of the mouse over the keyboard will be pleased to learn that the EVO-9650 is also being added to Amazing Computers' outstanding single frame controlling software, Transporter. Transporter provides a point and click interface, eliminating the need to type commands in LightWave's record boxes. It also allows you to set up loops, reversals, and frame repeats, not to mention its many other features, such as sequential frame grabs, time lapse recording, ARexx scripts, ANIM previews of rendered IFF24s and framestores, and support for most controllers and display boards. For more information, contact Amazing Computers at 813-977-6511.

Satisfaction Achieved

I must admit that I have always been skeptical about the Hi 8 format compared to 3/4" SP, primarily because the smaller tape is more susceptible to dropouts. I've also never had complete faith in Hi 8's image quality. Though it has excellent resolution (over 400 lines, versus roughly 330 for 3/4" SP), its signal to noise ratio is only 45 dB. However, it didn't take long for me to reconsider my view, since the EVO-9650 performed beautifully during the 4 days I had a unit for evaluation. I did not experience a single dropout, even though I did excessive shuttling, recording, and re-recording. The

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VTR was exceptionally quiet and responsive. In fact, when I first began, it was so silent that I didn't even realize it was recording. That's a far cry from the noisy clicking of my 3/4" machines. The 9650's playback was very crisp and clean. Digital noise reduction (DNR), which can be varied via the on screen menu selections, improved the playback picture a great deal. Both chrominance and luminance noise reduction can be adjusted independently. I found that it was best to keep the DNR to low levels in scenes that had a lot of contrast, since high levels caused some visible streaking on moving objects. Even at the low setting, DNR noticeably improved the playback video.

There was one feature of the EVO-9650 that I disliked: during pre-roll, the VTR holds a frame in its digital buffer. The result is that you do not see the animation building while it is laid down to tape, as you would with other VTRs. I enjoy seeing the rendered images form an animation as they are recorded. More importantly, I also like to keep an eye on the animation for mistakes or errors. It would be nice if the 9650 allowed the user to preview the animation during pre-roll, as do other VTRs.

My only other disappointment with the machine was that there is no 3/4" dub out, which Sony saw fit to incorporate into their other new Hi 8 deck, the EVO-9850. Though Hi 8 is proving to be a great low cost acquisition format, I still prefer to bump to either 3/4" or Beta for editing. Also, I rarely have a client who will accept a Hi 8 master. A 3/4" dub out would have provided an easy way to obtain a clean output to 3/4". Additionally, a component out board, rather than their RGB input-only board, would be ideal for getting the cleanest possible transfers onto Beta.

Apart from these two complaints, I was very impressed with the tape deck—so much so that I decided to purchase one. With a list price of $5600, a selling price below $5000, and the ability to work without a single frame controller, the EVO-9650 is currently the most affordable quality option for animators. Coupled with an Amiga and Video Toaster, the EVO-9650 is helping to make the catch phrase "desktop video" a reality.

Working With the 9650

Single framing directly from LightWave 3D to the EVO-9650 is a simple matter of entering a few hexadecimal command strings into LightWave's requesters. Though these commands may seem cryptic, the chart shows that they actually represent very easy-to-understand ASCII codes. To begin, you first need to set the Amiga serial preferences to 9600 baud, eight bits, no parity, and one stop bit (8-N-1). Then, using the 9650's on screen menu, set the VTR to 9600 baud as well. Protocol does not need to be adjusted, since the 9650 is preset to 8-N-1. Next, go to LightWave's Record Setup window, enter the command string DFCO$32$34$30$40 and press Return. This puts the EVO-9650 in video insert edit mode. You should notice the remote LED on the VTR flash for a moment when the return key is pressed. If not, the Amiga is not communicating properly, and you will have to check your cabling and/or reboot your machine. Again in the record setup window, enter DE98$30$30$30$30$33$30$30$30$40 followed by the Return key. This starts the animation at the tape's time code position 00:00:30:00 (30 seconds and no frames). To select a different starting point, change the HEX code according to the format in the chart. For example, to begin at 2 minutes and 30 seconds (00:02:30:00), the correct string would be DE98$30$30$32$33$30$30$30$40. Now, click in LightWave's Record Command window and type DF92$30$30$30$31$40. This command tells the recorder to lay an insert edit, starting at the end of the last edit, for a duration of one frame. To record two frames at a time, the syntax would be DF92$30$30#30$32$40. In the Record Menu, enter a record delay of 20 and then turn on the Recording button. Finally, activate LightWave's automatic render feature. The 9650 will then be slaved to LightWave3D. Each time an image is rendered, it will automatically be laid to tape one frame at a time.

Chart
To begin an animation at 00:00:30:00

form-	EXP-7	CMD	H	H	M	M	S	S	F	F	ENT
HEX-	DE	98	30	30	30	30	33	30	30	30	40
ASCII			0	0	0	0	3	0	0	0	

Other numeric data can be entered using these codes:

decimal-	0	1	3	2	4	5	6	7	8	9
HEX =	30	31	33	32	34	35	36	37	38	39

Tim Doherty is a professional LightWave animator. Contact him at TKD Animation, 218 Rancho Del Oro Dr., Suite 126, Oceanside, CA. 92057, or 619-967-9402.

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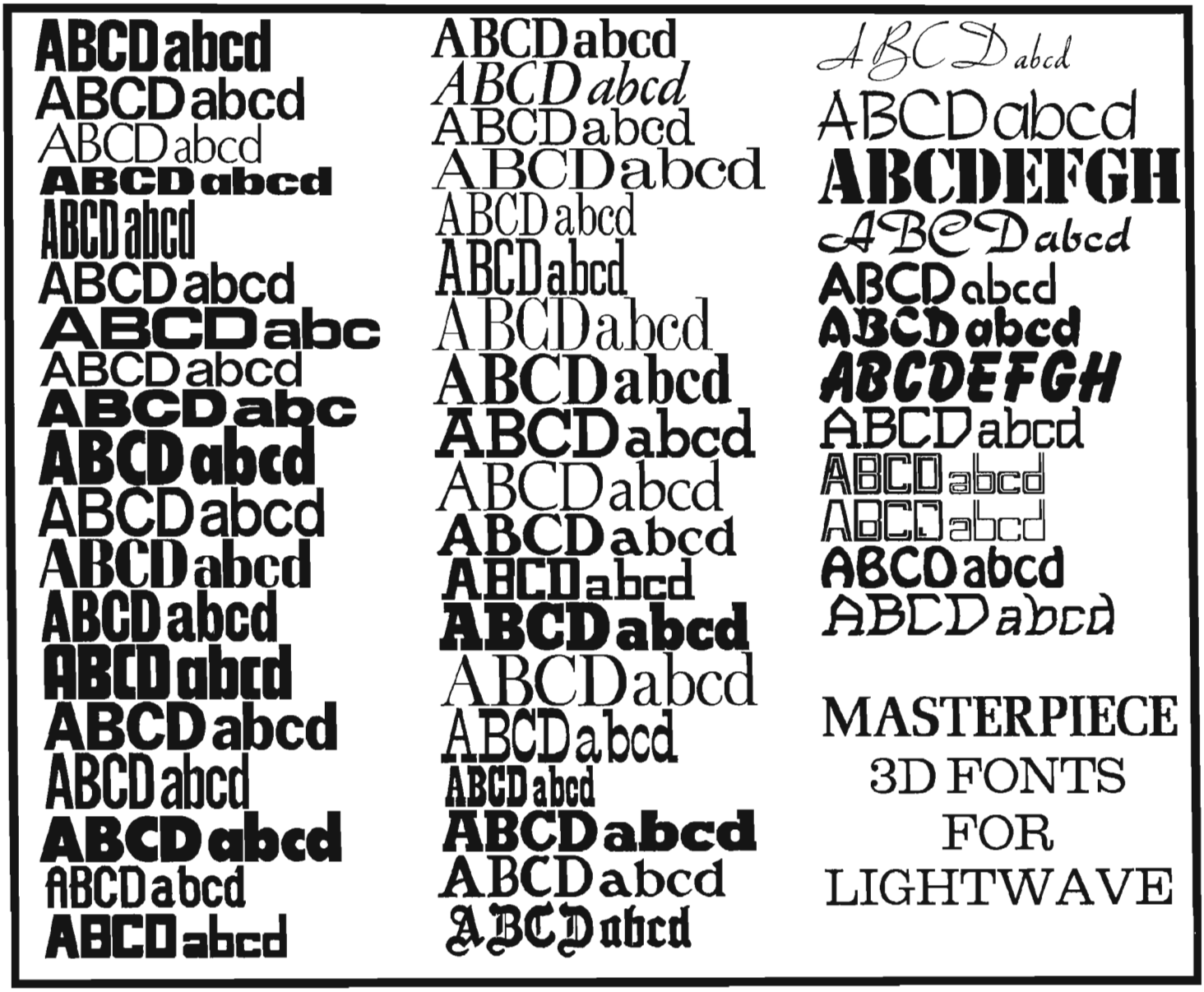

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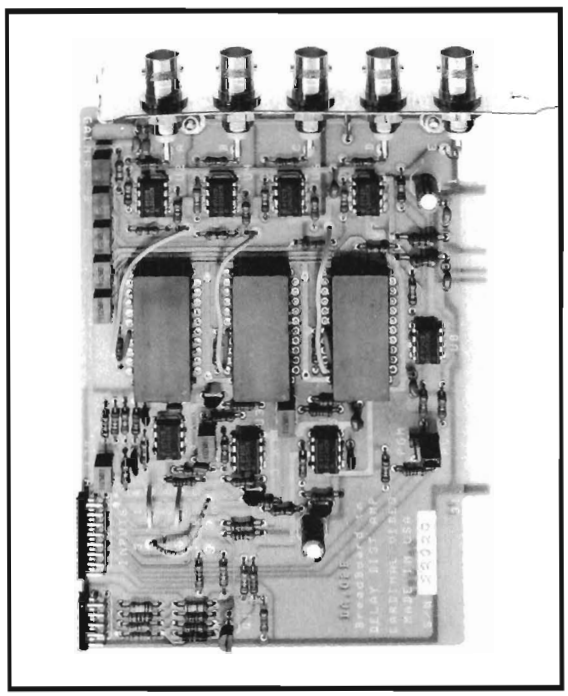
The BREADBOARD

A Delay Card for the Video Toaster in an External Video Switcher Environment

by Tony Gomez

This article is targeted toward the video professional who may already have a stand-alone video switcher system, but who also wants to integrate a Video Toaster "upstream" into its production environment. As such, it's somewhat technical in its description and use. It will also highlight a real-world professional application using a stand-alone video switcher and the BreadBoard.

The Video Toaster's switcher has a property shared by all video switchers: a finite electronic signal delay between each video input and the program video output. This delay is technically measured in extremely small units of time called nanoseconds or ns for short. The Toaster's input/output delay is approximately 400 ns.



Normally this wouldn't concern you if you were operating the Toaster as the only switcher/effects device in your production suite. But what if you were working with a much larger switcher system in which the Video Toaster was providing an additional level of effects (ME or mix/effects as it's called), or character generation, to your larger systems ME capability. If you want the ultimate versatility of switching either unmodified video sources, or "Toasterized" ones, then you've got real timing problems because of the built in time delay factors.

The traditional solution for such timing delays is the use of devices known as video delay lines. A video delay line's function is to delay a video source by as much time as would be encountered going through the switcher itself. The end result is two perfectly time-delayed signals, one representing the signal as passed through the switcher with its built-in delay, and the other, the original video source, but with a perfectly matched delay. Being perfectly synchronized with each other, these two signals can then be easily connected into a larger video switcher system with no timing problems.

For the professional production environment using a Video Toaster, a practical delay device should have the ability to delay at least three video input channels. Incidentally, the reason it's three and not four is because in most professional Video Toaster applications, input 1 is always the reference signal, to which all other video input sources to the Toaster are synchronized. This leaves three possible video sources which might need additional delays.

The Breadboard

Recognizing this need, Cardinal Video Products (founded by some video engineers from the Grass Valley Group, perhaps the most prestigious manufacturer of video equipment today) has recently introduced a half-size PC card called the BreadBoard. While the name "BreadBoard" has the familiar sounding Toaster kitchen metaphor, it is also electronic jargon for a system which can be modified for different applications.

As delivered from the factory, the BreadBoard comes wired with Toaster Input 4, Key Insert, and Alpha Channel as those channels which are available as delayed signals. The Key Insert and Alpha Channel delayed signals are used by external switchers which require these external keyer signals. You can change these to your own needs. Later, we'll show an example which made such changes.

Installation

The BreadBoard connects to the Video Toaster card with one or two ribbon cables. A 16 pin ribbon cable is always connected between the Video Toaster header connector called JP2 (located at the top and rear of the Toaster card) and the BreadBoard card. An optional 10 pin ribbon cable *can* be connected between the Toaster's header connector JP1 and the BreadBoard. Use this optional cable only if you are using the Toaster with an external keyer. The only problem is that the JP1 header is extremely difficult to get to. You actually have to gently and carefully separate the two halves of the Video Toaster card (something not recommended for first-time users) to gain access to the JP1 header! You also have to remove the power supply, in order to remove and separate the Video Toaster. So before you attempt this, make sure you really need this external keying function.

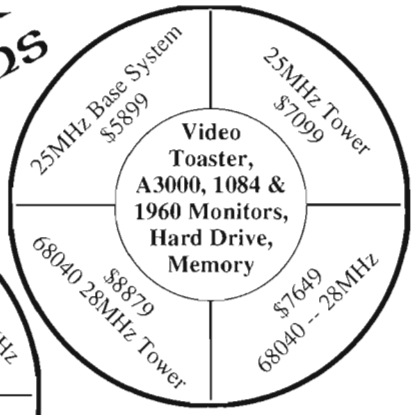
You can configure your BreadBoard for your specific needs. The three upper BNC connectors are labeled output A, B, and C respectively. As mentioned, they are preset from the factory as Input 4, Key Insert, and Alpha Channel. We'll assume that you are using these factory pre-sets. (We'll also demonstrate a different hookup example later). The lower two BNC connectors are called output D and E. These are preset as Toaster Program and Toaster Program/Preview respectively. Output D is always fixed as Toaster Program output, but you can adjust output E to either Program or Preview by selecting the proper jumper on the BreadBoard.

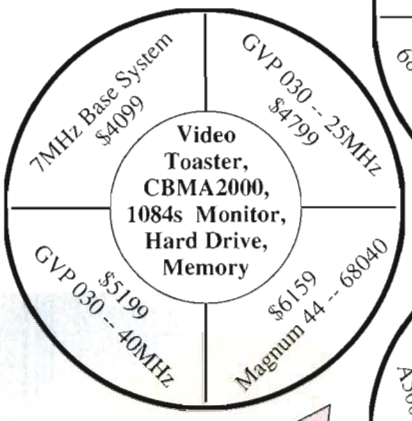
Before installing the BreadBoard card, check the three coarse delay adjustment modules on the BreadBoard card. They should be set for the 425-450 ns range for each of the three channels of delay. The fine adjustment will be done later. With the computer's power off, insert the BreadBoard card into an available PC slot. Connect the proper ribbon cable(s) (the 16 pin normal one, and the optional 10 pin alpha-channel one) to the Video Toaster card as needed.

Testing

Verify proper operation of the BreadBoard by selecting a known video source, such as color bars, and feed it into Input 4 of the Toaster. Compare the Toaster's Program output with the BreadBoard's delayed version of Input 4. Adjust the fine

Toaster Solutions





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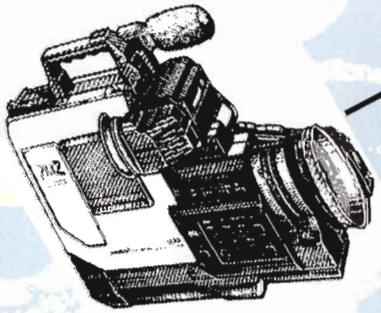

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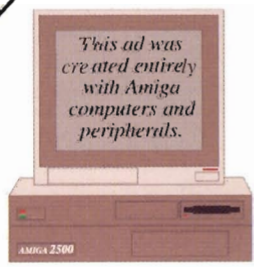

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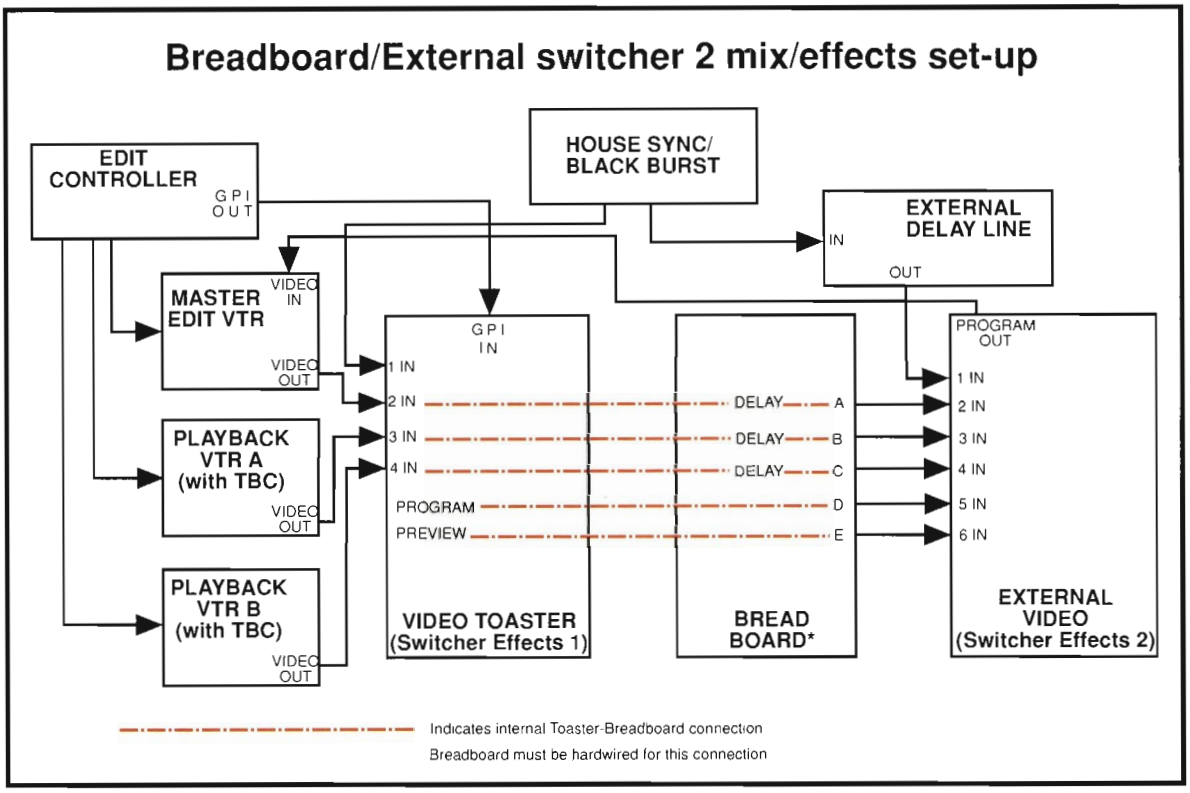
tuning delay potentiometer until the delayed version compares favorably with the normal Toaster program output. Note: if it's not possible to make enough correction, it may be necessary to change the BreadBoard's coarse delay adjustment to bring it within proper operational range, then repeat the fine tuning adjustment. Cardinal Video advises a more precise procedure: use a vectorscope/waveform monitor to compare the two signals. The BreadBoard's delayed Alpha Channel and Key Insert also need to be connected to your external video switcher's key source and Key Insert inputs.



This Video Toaster "upstream" setup scenario is considered the most basic. It offers you one channel of source video to be delayed (Input 4), and Insert and Alpha Channel delayed outputs. You might find this somewhat limiting. This was the case when I discovered a really high power application using the Video Toaster, and BreadBoard in a professional production suite.

The Video Toaster in a Unique Professional D-3 Production Suite

I recently visited Norm Marshall Associates Post (NMAP), a Hollywood video production house, and observed how Video Toasters are integrated into a professional video editing environment. Brock Suter, their Toaster graphics artist/special effects wizard was my guide and gave a fascinating background description of their unique setup.

NMAP has two edit bays: offline and online. Their offline edit bay is used for the creation of Video Toaster 24 bit still frame and animation graphics. The Toaster system in the offline bay is connected to the Toaster in the main online bay through use of the Parnet inter-communication system.

The online edit bay consists of an A-B roll system which feeds a second Video Toaster that is itself connected to an external video switcher. The following VTRs are used: the latest Panasonic D-3 half-inch composite digital VTR (with amazing "pre-read" for limitless layering of effects) is used as the master edit recorder; a Sony BetaCam SP player is the A-roll VTR, and a Sony U-Matic SP player with dynamic tracking is the B-roll VTR. Each VTR's video outputs are internally time base corrected and feed the online Video Toaster's inputs 2, 3, and 4 respectively. House black burst feeds Toaster input 1, as well as the VTRs reference inputs. An external edit controller's GPI output is connected to the Toaster's second mouse-port connector for automatic, precise GPI edit control.

Their online Video Toaster is connected to the Cardinal BreadBoard internally. NMAP chose not to use the BreadBoard's factory default configuration settings, primarily because they have other uses for their own external keyer, and they find that the Toaster's built-in luminance keyer is satisfactory for CG work. Instead, they chose to make Toaster inputs 2, 3, and 4 available as delayed outputs. Brock mentioned that this modification process was a somewhat tedious procedure involving soldering. He said it would have been nicer if Cardinal had provided an easier method to change defaults such as dip switches, or easily changeable jumpers.

The BreadBoard's delayed outputs, as well as, the Video Toaster's Program and Preview outputs feed an external 6-input video switcher. The BreadBoard's delay modules are properly adjusted for glitchless video switching. The main switcher's program output then feeds the master D-3 edit recorder. The edit recorder's video output also feeds the Video Toaster Input 2 for additional graphics/effects layering with the application of the D-3's unique "pre-read" capability.

Unique Digital Pre-Read Allows Multi-Level Layering

Because of the amazing ability of the Panasonic D-3 to perform "pre-read," while an edit is taking place, what was previously recorded on the recorder can be folded-back on top of new source material. This is the new digital way of performing an "A-B" roll effect, without the need to create an intermediate B-roll tape. Through the added use of the Toaster and an external switcher, multiple levels of effects can be quickly and easily set up. However, there is a dark side to this digital A-B roll technique. If one makes a mistake, one must start over from scratch, because the current level of layering is the only physically existing version. Brock mentioned that a work around to this is to physically create a B-roll BetaCam SP copy of any existing layer if it is sufficiently complex, and then perform a traditional A-B roll layered edit.

Delays-Internal Or External?

One might ask about the possibility of using other external delay lines, instead of the BreadBoard's internal solution. These certainly could be used, but for each video source you wish delayed and simultaneously fed to the Toaster, you will have to deal with signal distribution to your system. You'll quickly find it's easier with the BreadBoard card solution with its internal video distribution system, where you get three channels of delay built-in! Also the BreadBoard gain controls allow perfect matching of delayed versus Toaster Program outputs.

Conclusion

The BreadBoard is an inexpensive, useful product, but it's not for the casual Video Toaster user. It's aimed directly at the video professional who needs to smoothly integrate a Toaster system into a video production environment with a main production switcher. To configure the BreadBoard for the non-default conditions requires soldering, and to use the Alpha Channel capability with an external keyer requires taking the Toaster apart at the middle to gain access to the Alpha Channel connector. These annoyances are acceptable because the professional end results are what counts.

The BreadBoard ($398 list) is manufactured by:

Cardinal Video
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CREATURE FEATURE

Interview with John Vulich and Everett Burrell, from Optic Nerve, Inc.

by Stephen Jacobs

John Vulich and Everett Burrell joined forces in 1989 and opened Optic Nerve, Inc., a special effects makeup house. They do the same type of work that industry superstar Rick Baker made his name in. Latex makeup appliances, animatronics, puppeteering; all can play a part in Vulich and Burrell's work. According to Burrell, special effects makeup is neither special effects nor makeup, but a gray area in between. Vulich says that while straight makeup artists try to hide blemishes and freckles, special-effects makeup artists do the opposite. "Because we're gluing plastic onto people, we have to add all that in."

You see, at Optic Nerve, Inc., they make monsters. Their resumes include living heads that rip themselves out of the spinal cords of others, blue-headed alien girls and corpses that come back to life. They're also good with knife wounds, bullet holes, and exploding heads.

When we think of the Toaster and special effects, we usually think about 3D animation. Optic Nerve, Inc. doesn't do that (not yet, anyway). Vulich and Burrell use the Toaster to design potential creatures for producers before the actual makeup and appliance production begins. As you'll see, they use photo-realistic design in real-time as both a sales and development tool.

VTU: What was your first project together?

Burrell: It was the remake of Night of the Living Dead for George Romero. It was a color remake of the black and white original. It was shot in Pittsburgh and was our first big gig.

Vulich: For that project I used Digi-View and Deluxe Paint. We found this book called Heads, full of pictures of bald-headed guys and we scanned them all in. We were looking for kind of a concentration camp look, so we did research on camps. At that point, it was just a generic design thing. But because we started with real pictures our designs were more realistic than just sketches. It really saved us time over-producing photo-realistic drawings and helped us visualize our designs. When it came time for the real film, we scanned photos of a few of the actual actors and drew on top of them.

VTU: What came next?

Burrell: We did The Dark Half for Orion. It's a Stephen King movie. It was a $15 million film so we got to do a lot. Then Orion went bankrupt so no one's ever seen it.

Vulich: On The Dark Half they had a lot of questions about hair, and how it would look. The character in the book was a kind of Doc Savage-looking guy. George (Romero) wanted to go for a kind of "white trash" look for the character. So we drew different "looks"; long hair, mustaches, and so on, onto the scanned picture of actor Timothy Hutton. Hutton was there, and he really got into it. He started drawing in different types of mustaches as suggestions. We settled a lot of questions before we started.

VTU: Any idea when we'll get to see it?

Burrell: The bankruptcy hasn't gone through yet, so I don't know. It's kind of funny because The Dark Half game just came out on the PC. The game came out before the movie.

VTU: When did you start working on the Toaster?

Burrell: When John used Deluxe Paint and Digi-View for Night of the Living Dead and The Dark Half, we got some press out of it. So we called NewTek, sent them a package and started asking them about getting a Toaster. They sent us a Toaster card and we bought a 2000 with all the extras.

We've been on set non-stop. We're working on a TV series for Fox called Great Scott. It requires some animatronic puppets and some makeup-type effects. Like one character has a fantasy about being really muscular so we did an appliance on his chest to make him more muscular. The lead character is a teenager with a vivid imagination. His mother is going to drive him to the movies and he's embarrassed so she turns into this alien type of creature with a big tongue that shoots out of her mouth and says "I'll be ready to go in five minutes." The show is about stuff like that, the area between fantasy and reality. We're also doing this film called The Skateboard Kid. It's got a talking skateboard animatronic system.

VTU: How has working with the Toaster affected the way you work?

Vulich: One way is that the Toaster increased the resolution of the process and the realism of our designs.

Burrell: We've used it to show producers ideas live. Rather than going to a four-hour meeting and then taking a week to produce designs, producers can sit right next to us and we can start to design the working model in real-time. We show the Toaster to producers and they're blown away. We know four or five producers who've bought Toasters after seeing us use it.

Using the Toaster, we got to do the mechanical bats for Batman Returns. Some of the greatest effects houses in the world were bidding on, and participating in, that film so it's a really great compliment to us. It shows that people know we're trying to put quality up on the screen.

It's funny because Batman Returns' designers were looking at the effects reel from another house with whom we collaborated on The Dark Half. We made these birds that attacked one of the characters. It uses mechanical birds, optical birds, and real birds all together. They wanted the same look for when the bats attack Penguin. We were able to test motion patterns and double the size of a bat design when they wanted a big one to fly into the camera (which they never used).

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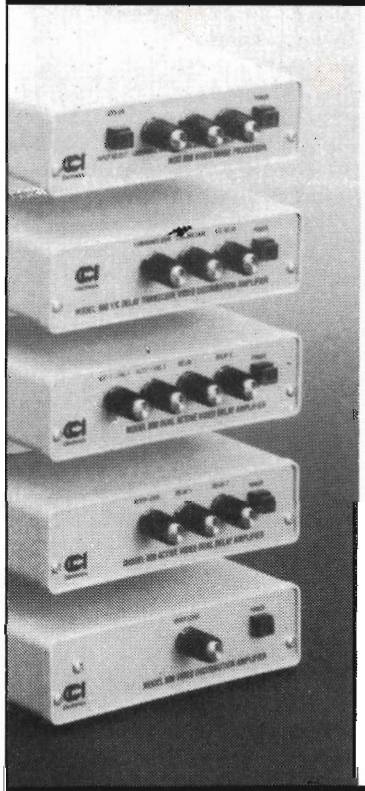

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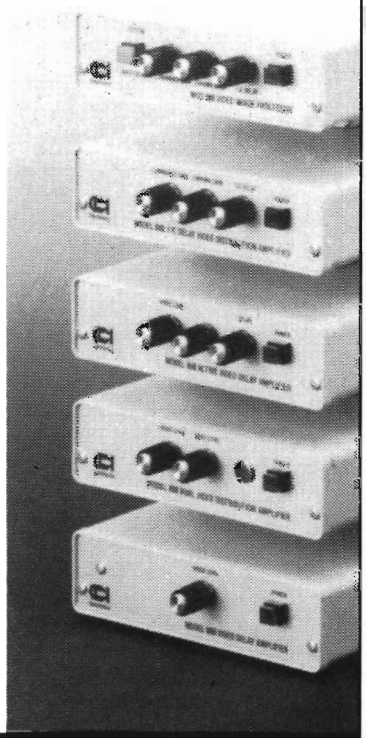

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Vulich: We can turn our designs into video presentations with titles and digitized photos. It's really desktop video. Everyone out here has a VHS VCR in the office and it's a really slick way to present our work.

VTU: What part of the Toaster do you use most?

Vulich: ToasterPaint is really great for what we do. I use the tool that affects the edges, the transparency, and the darken and lighten tools with a soft edge. We'll draw on the framestore the way we do makeup. I'll highlight a certain area and then use Redo a lot to get it just right.

I use the Texture Map to steal pieces of skin from one place where it's not real noticeable, like the forehead, and map textures to make larger jaw bones or skulls or what have you. I'd like it to have a real blend tool rather than just a blur, but it's OK. Sometimes I use colorizing to change eye colors.

It's good and quick for what we need to be able to do. The quality of our designs is more photorealistic so there's less guesswork involved. Directors and producers can't always visualize clearly the way an artist can. Pencil sketches tend to be more cartoony and don't really show you what you'll get.

VTU: How is what you're doing different than what most computer artists are doing?

Burrell: Originally, guys would make all these clean, anal retentive shiny models and they'd lose the look of art, the realism. The difference between them and people like Ron Thornton or us is that we know how things really look and that makes the difference.

Vulich: What Ron's doing with spaceships we're doing with monsters. Ron brings detailed texturing to his computer models. We're just dabbling now, but I think the kind of blotching, wrinkling and modeling all work together in our design work. We know the look and know how to get the feel.

VTU: What problems have you run into using the Toaster?

Burrell: Going to film is tough and I have yet to see some really strong film output from the Toaster. There's nothing off the shelf. You've pretty much got to know what you're doing. It's not like the Mac where there's stuff being manufactured directly to support it.

We used to get a lot of flak from our peers cause we were using computers. "We don't need computers, we can really draw." I think they'd be surprised at how labor-intensive the work is. You really have to learn new techniques. I think Death Becomes Her helped makeup effects guys wake up to the fact that soon a lot of the stuff we do will be done on computers.

VTU: Where do you want to go with the Toaster?

Vulich: We want to use 3D computer graphics and animation as output for work. We're going to do some clay models, scan them into PCX files with a 3D digitizer, and then transfer them into LightWave.

We've done some experiments in building creatures with translucence built in. It's really hard to do. Because you need to make them in separate pieces, you end up being able to see the lines from the assemblage. Unfortunately, here aren't many good translucent materials to work with. On a computer it would be a piece of cake. What excites me is the possibility of doing what's impossible any other way, instead of trying to use the computer to replace what we already do.

VTU: How do you see the industry changing?

Burrell: Coppola said Dracula might be the last movie he shoots on film. He's thinking of going full digital on future projects. If someone like Coppola or Lucas does it, every one will follow suit. Digital compositing is the wave of the future.

Both sides of the business will have to change. Producers don't know anything technical, they're ex-lawyers. But they know they want a hit movie. Computer production is hard for many traditional producers to understand and accept because the models are intangible and all they seem to pay for are manhours. For the artist, once the computer system is set up the only expenses are disks and electricity.

Computer people will also have to change. They'll have to learn to be more sociable and the producers will have to learn how to deal with them. The computer guys can have real snotty attitudes because they know how to run DOS. They'll have to learn to be a little more patient. Computer guys won't be able to say "If we can't use a 3000 with an '040 we won't do it." Both producers and computer users will have to learn to speak a common language.

Someday, it could be that a good programmer will be represented by an agent, like an actor. I'll be interested to see who the first software guy represented by William Morris is, if it's not Ron Thornton already.

The Toaster is really going to bring things closer to home for people. I think it's good to have. People like ILM have millions of dollars worth of equipment. You can put out a comparable product if you really use your head. The bottom line is always your work and what it looks like. I think it will be looked at as a professional machine as more people become aware of how many professionals are using it. VTU

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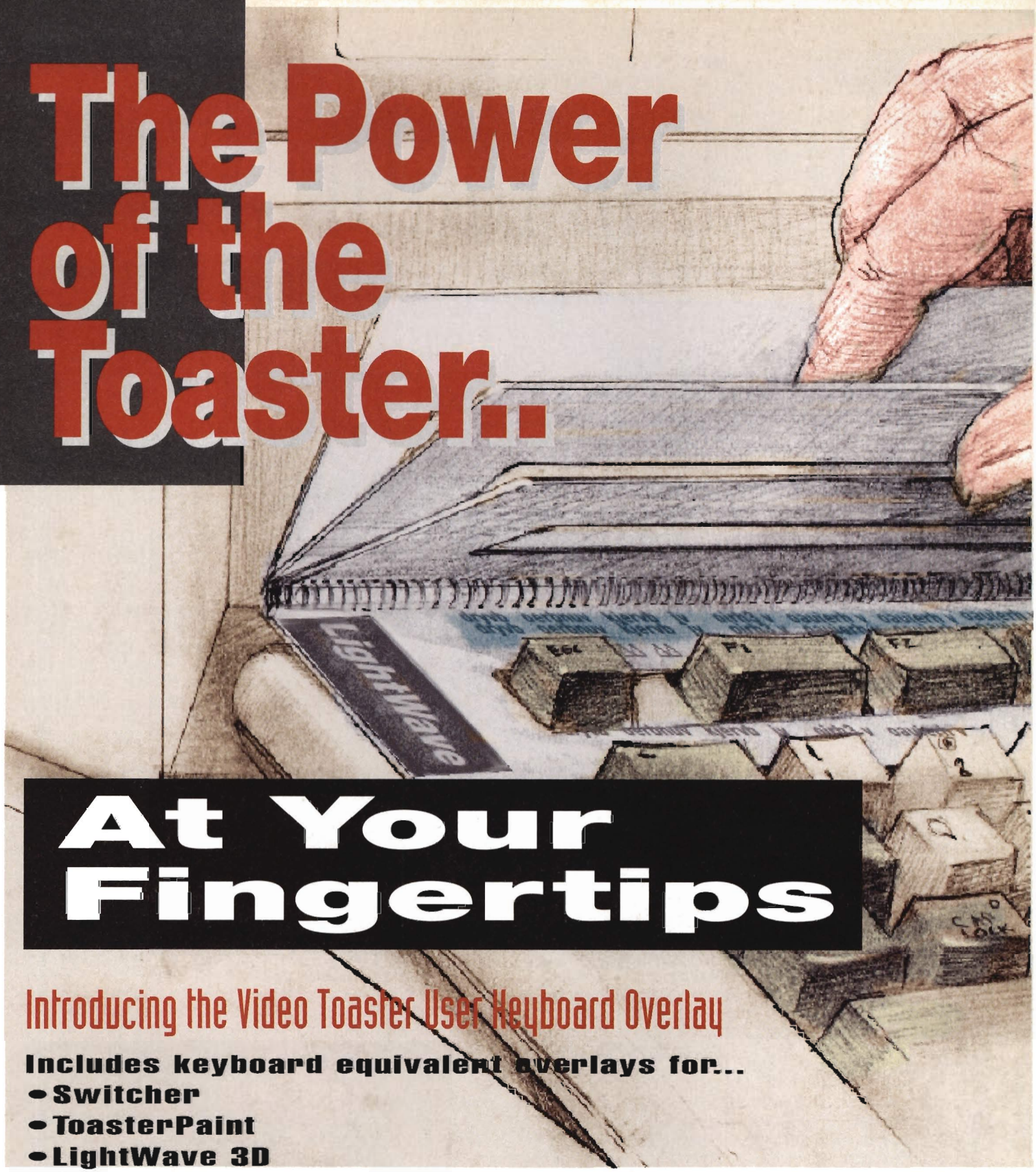

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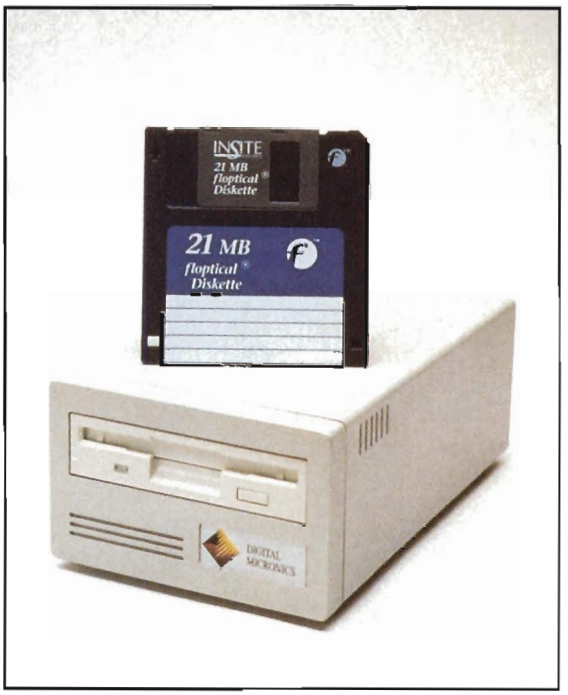
FLOPTICAL DRIVE

A New Form of Removable Storage Media

by Merrill Callaway

When people start working with computers and video, hard reality soon comes crashing down around their ears. Almost immediately, the need for various types of system enhancements becomes glaringly apparent, quickly dashing dreams of being able to "do it all" for minimal investment. Computer graphics tend to require large amounts of storage space, so increasing disk storage space is usually one of the first changes that you consider making to your computer/video system. Fortunately, the SCSI interface used by most Amiga-based hard-disk systems is a versatile one, allowing many additional devices to be added beyond the initial hard drive. Actually, SCSI (Small Computer System Interface) lets you connect as many as seven devices such as hard drives and scanners to your computer.



Recently, we've seen a surge in the popularity of removable-media storage devices. You may have heard of one of the most successful of these, the SyQuest, a true hard disk drive with removable 44- and 88-megabyte cartridges. The street price for the 88-megabyte SyQuest drive is currently about $500, and $120 for each 88-meg cartridge. Now there's another contender with a smaller capacity and less speed, but at a considerably lower cost. The new Floptical Drive for Amiga computers from DMI is an ideal storage medium for projects, graphics, and objects that you want to keep handy, but not necessarily using vital space on your primary hard disk.

"The Solution That Won't Stack Up"

DMI markets their Floptical Drive with the above motto. A "floptical" drive is a SCSI device (not a floppy drive) that uses diskettes with the look and feel of 3.5" floppy diskettes, except that they hold 20.8 megabytes of data when formatted! Your archive files and backups will take up only one twentieth the room of conventional double density floppies, hence the DMI motto. Both optical and magnetic characteristics are used in this new storage medium. In fact, the appearance of the medium itself merges the colors of the brownish conventional magnetic medium with the rainbow hues of a compact disk.

Two Units

DMI sells both internal and external units. I tested a DMI external Floptical Drive on my Amiga 3000. The internal unit fits into the standard space of a half-height 5.25" SCSI unit, such as a CD-ROM drive, a SyQuest drive, or a hard drive. There isn't room in an Amiga 3000, but you can install one in the lower front drive bay of an Amiga 2000. The external unit comes installed in a 9.9"W x 2.75"H x 11.25"D case with its own power supply and 110v power cord. For European use, a universal power input socket is also supplied on the case. The case is almost the exact size of my external SyQuest Drive case and handily stacks on top of it. A SCSI interface cable with Male 25-pin SCSI-to-Male Centronics connectors, and a Centronics SCSI termination plug (used only when this unit is the highest numbered SCSI unit) round out the hardware. A floptical disk, and a spiral bound manual with complete, detailed instructions for installing either unit, configuring the SCSI unit numbers, and formatting the floptical disks are included. No need for a mountlist, because the device itself contains RDB (Rigid Disk Block) information, and HDToolkit reads it directly from the device.

Easy Setup

The SCSI unit number can be selected on the back of the case with buttons and a window showing number 0 through 6. The power switch is on the back. As with all external SCSI devices, there are two female Centronics connectors on the back, either one of which can receive input, with the other used for "daisy chaining" to other SCSI devices with a male-male Centronics cable (not included). A one-foot Centronics male-male "gender changer" stub cable makes a good connector for daisy chaining stacked SCSI units, such as a SyQuest and a Floptical. With the power off, connect the power cord to the unit, connect the SCSI cable to the computer and the case, and you're ready.

Removable Media is Not So Easy

If you use any removable media SCSI drive, you will suffer from a few "Gotchas." This is not the fault of the SCSI device, but a result of the limitations of the SCSI controller. The stock Amiga 3000 SCSI controller is noted for several excellent qualities, such as speed; however, one of its less praiseworthy attributes is its control over removable media. I have heard that some controllers are better at this than others, but I will speak only from my experience with the Amiga 3000 controller. One frustration is that if your removable media SCSI device has a disk in, and its power comes on at the same time you cold boot, then the boot will run ahead of the spin up of your external drive and will have already polled the SCSI bus BEFORE your device comes up, thereby missing it entirely. You have to do a warm reboot to get the Amiga to recognize the external drive. Sometimes if a disk

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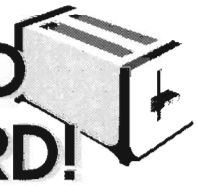

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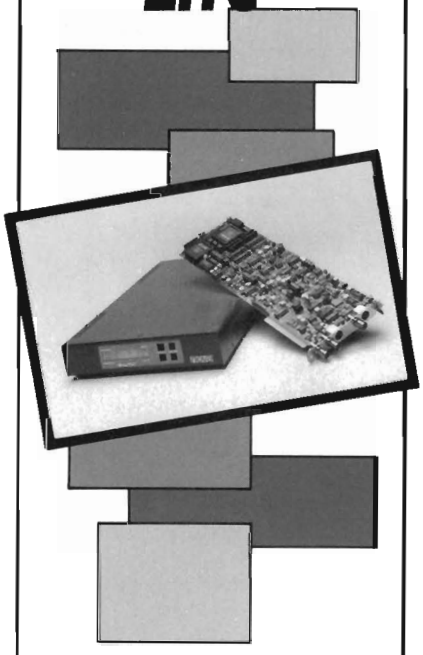

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is NOT in, but the external unit power comes on at booting, the computer will get stuck and never boot until you turn off the power to the external drive. Furthermore, you will regret it if all your removable media disks do not have the SAME device names and identical partitions (volume names may differ). Otherwise, changing disks will not be a happy experience.

A Fix for the Problem

Fortunately, there is a fix of sorts. There is a freely distributable System 2.0 program by Martin Blatter in Switzerland (I found it on BIX), called "SCSIMounter" that allows you to mount and unmount SCSI devices without rebooting. Although it is far from the desired automation I crave, compared to the level of frustration I had before, SCSIMounter is a lifesaver.

How do the Numbers Stack Up?

Before we continue, I'm reminded of the tragic demise of an old friend. I met him when I had a job as a statistician with the State Department of Redundancy Department. He was a statistician, too, but took numbers much too seriously. He drowned while wading across a river with a mean depth of three feet.

No review of any sort of drive would be complete without a list of specifications and a few speed tests, but remember, your numbers will vary. First, the Floptical specifications:

The Floptical diskettes have 753 cylinders, 1510 tracks at a density of 1250 TPI, 27 blocks per track, 54 blocks per cylinder, with a total size of 20304K. The Floptical disk has a capacity of 25 MB unformatted, and 20.8 MB formatted.

The DMI unit is manufactured by INSITE PERIPHERALS, Model I325VM *F, revision 0381. It supports reselection. It parks the head at cyl 753. The recording density is 23,980 BPI(RLL). Transfer from disk takes place at 1.6 Mbit/sec; buffer transfer rate comes in at 2 MByte/sec. Average seek time is 65 mSec with a settle time of 15 mSec. There are 2 R/W heads. The motor spins the disk at 720 RPM, starting up in 750 mSec, and uses 2.5 watts.

Real Life Speed Tests

The formal specifications tell us very little, in fact, about how this unit feels in operation. We want to know, how does this unit compare with a hard drive; a floppy drive; and other types of removable media drives? I compared this new Floptical drive with such a list, after finding just the software required: DiskSpeed, by Michael Sinz (available on BIX or Fred Fish). This is the latest and best disk speed program yet, by someone who understands the Amiga intimately.

I compared a Quantum LP 102 MB hard drive, a floppy drive, and a SyQuest 44 MB removable hard disk, with the DMI Floptical drive. DiskSpeed is capable of testing speed individually for Chip and Fast RAM. It also will do a pass for up to four buffers of user specified size. Each buffer may be tested with LONG-WORD, WORD, and BYTE aligned buffers. Considering the possible 24 combinations given, too many for my purposes, I made the following simplifications:

1. Since disk speed depends on buffer size, I used the value of 30 buffers for every test as a good default average. With a constant buffer size, performances will compare reliably.

2. The speed differences between Chip and Fast RAM, in any one test were small. To simplify things, I tested only Fast RAM.

3. A "fragmented" hard disk was significantly slower than the same disk which had been reformatted and the backup files freshly copied into contiguous areas. I took the trouble to reformat and test "fresh" disks, so that an unknown amount of time would not corrupt the test data by appearing as time wasted seeking small disjointed areas on disk during the test.

4. I ran each test several times and chose the best test for the article. I found that the same test produced different results every time, but was able to verify that the results were accurate within a range of plus or minus 5%. Speed comparisons revealed significantly larger differences between drives.

The results from overall fastest to slowest are; the Quantum, the SyQuest, the Floptical and then the floppy, as we would expect.

Conclusions

The Quantum and SyQuest cluster as one group and the Floptical and floppy as another. One surprise was that in directory scans the floppy was four times faster than the Floptical! But in Reads and Writes, the DMI is much faster. I noticed this before the test. It seemed to take a long time for the Floptical to find a file, but once found, it loaded much faster than a floppy; nevertheless, its speed still felt leisurely. In my opinion, the most serious drawback is that Floptical diskettes are annoyingly slow to format. You must low-level format the disk and then AmigaDOS format it, too. It took a whopping 65 minutes to do both of these chores! It will take five hours to prepare the disks to back up a 100 MB Quantum! Be thankful for multitasking.

The SyQuest feels about as fast as the Quantum even though its official speed is less. The prices of the external drive units of a SyQuest and a DMI Floptical compare favorably, especially if you buy a SyQuest from a volume dealer. A comparison of list prices shows the DMI to cost less. As far as removable media costs go, you will pay $1.00 per MegaByte for the Floptical disks and $1.50 to $2.00 per MB for SyQuest media. I predict that Floptical media will plunge in price to about 50 cents or less per MB and SyQuest cartridges, being more complicated, will not go below $1.25 per MB. If backing up and archiving files is all you'll do, then a Floptical drive makes sense. If you want a really fast "removable hard drive" to supplement your hard disk with programs and data online, then the extra expense of a SyQuest is worth it. If you can afford the expense of the media, the SyQuest is also a great way to back up files quickly. Overall, the Floptical drive, in between a floppy and a hard drive, is the most economical storage of data. The product would be even better if the diskettes were available already formatted. VTU

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Steadicam JR

A Small Camera Stabilization System

by Jeffrey Peden

Steadicam JR, by Cinema Products, is a "stabilization system for small to medium size video camcorders weighing under 4 pounds." The unit was designed using certain concepts of physics to make the camcorder seem as if it were weightless. Here's a short physical description. When in "Flying" (unpacked) mode, the camcorder rests on a platform above the center of gravity, in this case the handle. From the platform, a short bar folds down and clicks into position. This bar holds a bracket, which in turn holds the small black-and-white LCD monitor, and also has another bar which folds down and clicks into place. These two bars make up the upper and lower spars. At the end of the lower spar there is a compartment which holds two of the four C batteries (included), and also holds the weights used to even out the balance. The other two batteries are located inside the monitor, and, together with the other weights and batteries, make most of the coarse adjustments on the JR

The largest balance adjustment is made by a block that determines the angle of the lower spar from the upper spar, and is accordingly named the "Stop Block." To help visualize this, you might think of a kind of linear spiral, with the handle as the starting point, connecting to the platform, then the upper spar, and finally the lower spar, with each "line" double the size of its preceding partner. In "Shoulder" mode, the lower spar folds up and, what is described best by Cinema Products as a "whale's tail," folds out from the spar. With the JR in this position, you put your hand through the handle hold of your camera, and the end of the lower spar with its tail, on your shoulder. From this position, you get the feel of a bigger camcorder or even that of a three-CCD unit, and the monitor is exactly where it is needed most; right in front of your face, yet out of the path of the lens. When not in use, it can be folded down even more, with the monitor, platform, upper, and lower spar flat against each other, and the camcorder on top of the platform. This adds only about two inches of height to what your camcorder would normally take up.

With that said, Steadicam JR is a work of art. Completely based on physics, it tries to create a neutral balance centered around a gimbaled handle with which you hold, support, and control the camera. One of two hybrids, that originated in design from the original Steadicam, was used and relied on in more than 300 motion picture films, including *Rocky*.

Some Assembly Required

Upon arrival, you immediately want to try to mount the camera and go shoot something, only things are not that simple. The best advice is to open the box, take out the tape, two manuals, and the "cookbook", and sit down in front of your TV with the box by your side and remote in your hand. The first thing you do after practicing folding and unfolding the JR into its various configurations is look up your camera in the cookbook. Then you must change the "Stop Block" according to what the cookbook says for your camera, adding the weights needed for proper balance. Most Hi 8 or S-VHS-C prosumer models will require a heavy stop block and all but one of the weights. Now you must pre-balance the JR also according to the cookbook, as it's supposed to help you when you are trying to fine tune your balance. Once you have accomplished this, I advise you to play a stress relaxation tape in the background, because from here on it gets kind of hairy. At this time, you are supposed to push a locating pin into a hole in front of the prescribed mounting hole. I tried for an hour, from every angle possible, with pressure and without, it did not go in. This slightly raised both my blood pressure and my temper. So I skipped it and mounted my camera in the suggested hole, and spent another hour trying to balance the JR That, also, did not work quite right. I changed the hole twice more, finally ending up back in the original hole and not far from the prescribed settings using the Fore/Aft and Side to Side trim, although the JR was now bottom heavy and moved too willingly, so I spent about another hour getting it perfect. The only problem is that when you change the equation by adding or subtracting the Obie Light, changing to or from a heavier/lighter weight battery, using other accessories, or even changing the type of tape, you must reset the trim for balance. Uneven balance can be an advantage as is shown in the video, and we will go over that more later.

Operation

There are two different ways to use the Steadicam in "flying mode." The first is two-handed control mode where you take your main and hopefully strongest hand/arm and place it on the handle. This arm positions the camera, but does not effect the angle unless you bump or jar the JR with your hand. You then place your other hand over the first and with thumb and forefinger, pan and tilt using the ring just above the gimbaled handle. There is also a one handed operation mode which allows you to open doors and such with your free hand. To do this, all that must be done is to move the main hand up a "notch" on the handle, and use that hand's thumb and forefinger to control the angle. Sometimes you must influence the

angle with movement in your arm since you do not have all the power that you do in two-handed operation mode. In flying mode the camera seems weightless, but is actually almost double the weight, as is proved if you try to keep the camera in one place for more than a moment. This is a pure action mode and certainly could not be used for every shot in a video, but can spice up the dullest productions. Fortunately there is a shoulder mode for everyday use, which gives you the normal zoom and focus operations of your camcorder back. It also gives you the ability to use a small camcorder yet maintain the feel of a larger camera, and use the black and white monitor built in to the JR as your viewing device. You can also fold it down completely and mount it on a tripod, but if using a quick release shoe, you must reset the trim.

What Can It Do?

The Steadicam JR can do things that before could only be done with a dolly/crane setup or, with its father figure the original Steadicam, on which the JR is based. Combined in post-production with a special effects unit like the Toaster, you can create what feels like virtual reality, flying through doors and windows, doing 180- and 360-degree turns in mid air, and all without a shake. One can follow a walking person, then "float"over to another aspect, then fly past that person, turn around and hover there giving the wide angle view. It can be quite spectacular once finished, but it does not come without a price. Every shot must be set up specifically for what you need done, and setup is a lot more involved than it is on a typical level. Really, the Steadicam JR can do almost anything given that the user has great imagination, patience, strength, and a bottle of Tylenol to get rid of the headaches that come along every so often.

Pros & Cons

One problem I had relates to everyone who has a camcorder with Control-L (e.g. V801, L-1, etc.). When writing this, I was unable to obtain a cable that supposedly has a special circuit embedded in it that changes the pulse from the Steadicam's Pause switch into Control-L form. This would be helpful, but more could be done in my opinion. For the price that you have to spend, you should have full control (or at least pause and zoom) from the handle. This could be accomplished by putting a pause button, a zoom rocker-type switch, and an IR transmitter in the handle, plus an IR receiver on the upper spar across from the handle. This would give you full control of the zoom and pause even in one-handed mode, and would cost less than $70 to build in. Okay, now to the pros, which outweigh the cons in my mind.

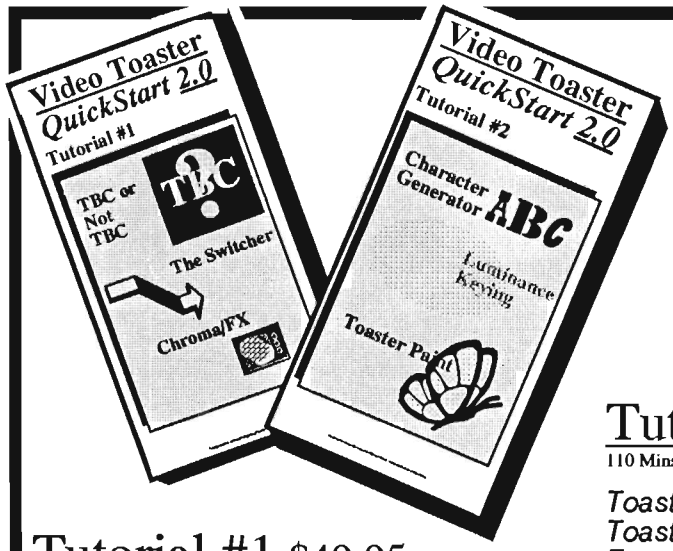
First, there are the advantages of being able to do nearly anything without shakiness or being tied down to a tripod. Then you also have the shoulder mode which I personally find better than most others on the market because of the built in monitor. I also like the Steadicam Travel case which I received with the unit, but find it too small for most use. To remedy this, I took out the foam "mold" that the JR rests in while in "Rest" mode, and put it in my current soft case, which did have room for a power supply and six batteries, plus an assortment of various cables. I still find this a plus, despite the small size. The Obie Light is good for color enhancement and doesn't need a bulky battery belt.

Opinion

Overall, the Steadicam JR is pretty good, but not really suited to professional event videographers. I would like to see a combination JR/EFP (the EFP is a variation from the original Steadicam for use with professional 3 CCD camcorders) type product, with connectors for prosumer products, a monitor like the one on the JR, a bracing system like the EFP, and full control for Control-L, or pause control for Panasonic/JVC type camcorders. This would be of more use to an event videographer, and in my opinion looks more professional than a handheld steadying device. A tool such as this would become a critical part of any videographers arsenal, as it would distribute the weight of the camcorder evenly throughout the body and increase the length of time one could work without starting to fade.

Conclusion

Steadicam JR has a learning curve of a couple of weeks. First you learn how to balance it properly, then you learn how to "use" it as a tool and not a toy. Often, people from the Amiga/Toaster side of video think only about the post production aspect of video, and forget that to make a great final product, you need to start with great footage. Steadicam JR is the tool you need to make the footage great if your acquisition format happens to be Hi 8 or S-VHS-C. But if you are only looking for a device that will give you a steadier picture without any hassle or learning curve, the JR can rock the boat. If you're not going to use too much action in the production, the Steadicam JR is a little too expensive for a shoulder rest. If you are considering purchasing a Steadicam JR, ask your dealer or Cinema Products for a one-week trial period, or borrow an associate's unit. VTU



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Using "In-The-Can" Animation Packages That Sell Your Services

by Frank Kelly

We've all seen them, those eye-catching animated sequences used in commercials and cable network promos. They have been the hallmark of so called "high-end" productions for the last several years. Only recently, with the Toaster's relatively easy to use and powerful LightWave 3D software and 24-bit framebuffers, has the promise of delivering this kind of capability into the hands of mere mortals, such as the small independent A/V producer, become a reality.

Or has it? I often hear laments from people who have seen the Toaster demo reel and the Toaster's beautiful four-color ads touting 3D capability. After buying the product, they feel somewhat misled, thinking that Toaster will create the animations seen on the demo tape in real time without any "extras" required. This isn't really NewTek's fault, but is due more to a lack of fundamental technical knowledge about the realities of 3D animation.

Heber / Svet

Doing It Yourself

Topping the list of "must haves" required to do animation after acquiring your Toaster is a single frame VTR or optical disk recorder, neither of which is an affordable option for most of us. Let's not forget that this unit must have some form of SMPTE time code capability, (cough up more money, please) and some way for the deck to communicate with your rendering engine, the Toaster, using either a single frame controller (around a grand) or a software package from Nucleus Electronics called the Personal SFC (about $425). The latter product requires that your VTR contain its own SMPTE time code card.

The other more affordable option, which has met with some success, is to convert your rendered frames from your hard disk to DCTV format then play them back in real time. This option actually does quite well for producing certain kinds of animations but the overall quality of DCTV's output is not usually as pleasing as the Toaster's. Let's not forget that you will also want to add an accelerator card to the system (with its own specially higher priced memory, no less) otherwise you will spend most of your productive time waiting for frames to render, and not using your Toaster for anything else.

For the sake of argument, let's say that you've decided to plunk down the cash to obtain the hardware required to produce 3D animations. Now you have to learn a great deal about how to think in 3D. The world of 3D design and relative movement requires a certain kind of abstract thinking that we take for granted until we have to apply it in a practical sense, such as required when producing a scene with multiple objects. Their relative motion paths and physical reactions or interactions need to be considered before committing the animation to render.

If all of this seems a bit heady, you're not alone. Handing someone a fully outfitted Toaster system then expecting him or her to turn out a 3D animation that competes with current broadcast offerings is a bit like handing someone a Stradivarius then expecting them to perform like a concert violinist.

Your Animation Partner

But don't despair; there's hope in the form of stock animation packages available from Digital Animation Corporation. These are high quality animations covering a wide range of topics that are useful to the independent producer. Categories include Backgrounds, Holidays, Advertising, Corporate, and something called "Animated Elements." All animations and backgrounds are produced on the same high end workstations as the network animations. Most importantly, the artistic design work is outstanding. After a discussion with the founder of DAC, the reason for this became quite clear. All artists on his staff have college degrees with artistic majors as a minimum job requirement. This really shows in the end product.

I became familiar with the company's wares through a mail advertisement showing several stills from various categories. Coming from a background in advertising, I usually don't "buy into the hype" and was a tad suspicious that the demo reel would not live up to the quality of the stills shown. I was quite impressed when, in fact, the materials shown in the free demo tape exceeded my expectations.

I was particularly impressed that the majority of the objects were animated over "black" which meant that I could use the Toaster's luminance keyer to play these animated elements over my client's footage giving the production that "expensive" look while still bringing the project in on a budget. I had just such a need with a current client. I wanted to show dollar bills falling over some footage of carpeting to emphasize a point in the ad copy about saving money. There it was in the DAC library rendered over black so that I could "key" it in over my carpet footage. There were even a few coins thrown in for good measure! This was just what the doctor ordered. I didn't have to spend time digitizing both sides of a dollar bill, fixing it up in a paint program, creating the multiple objects to map the images onto, setting motion paths, lights & cameras or rendering the frames. All I had to do was play the tape—it was just too easy!

I ordered the Corporate Producer package which contained the particular sequence I needed via Federal Express, posted the tape on time and under budget. But most importantly, I impressed the pants off the client.

Further Exploration

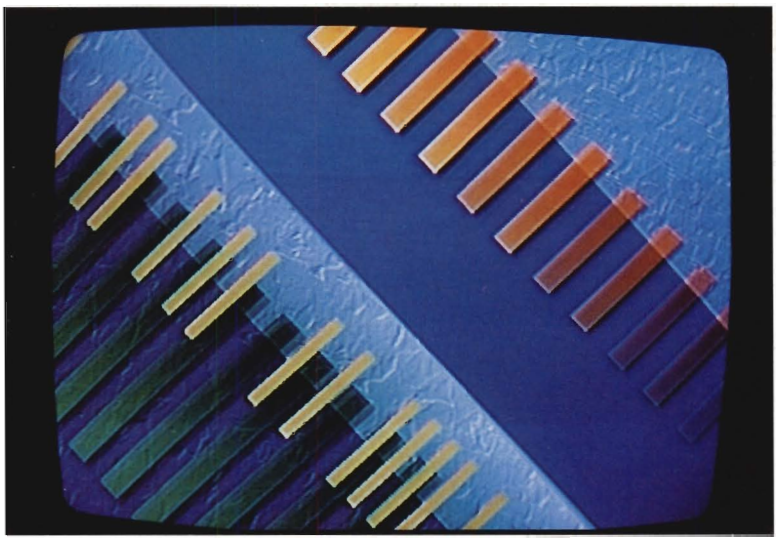
Now that this particular deadline had been met, I had some time to do some serious examination of the entire package with an eye toward future use. The Corporate Producer package also contains animated symbols such as lawyer's scales, medical caduceus, government symbols, a circuit board that flies in to reveal your background footage, numerous examples of stock market and corporate report backgrounds, rotation globes, national flags and maps of various parts

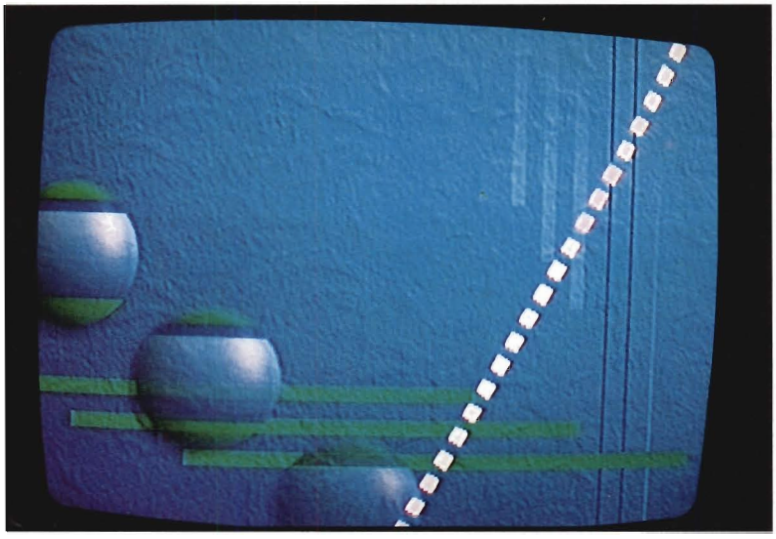
of the world. There are many other elements in the Corporate package including starfields, a video camera, and some actual stock video footage of things such as time lapse clouds and freeways keyed in back of industrial graphics.

Most of the items will be useful to me at one time or another, and will probably more than pay for the package by the "impression factor" yielded in future client presentations. Because of the way DAC provides discounts on subsequent packages in an order, I decided to buy the Animated Background package as well. The backgrounds are more than just good looking, they are stunning. A variety of textures, such as stucco with gradient color shading, geometric highlights which follow circular, vertical or diagonal paths such as those you might see on Cinemax or CNBC are included.

I found that using these backgrounds in conjunction with the Toaster's DVEs elevated the production values of my projects to heights I previously hadn't thought possible. This gave me a way to differentiate my work from others who have recently acquired Toasters and are now competing for the same projects.

Another good way to use these backgrounds is to freeze frames from them, then store them as title backgrounds. Using ToasterPaint, I was able to alter these new framestores to suit many needs and found them to be of tremendous general utility.





The Advertising & Holiday Packages are targeted at those in commercial production. They consist of numerous (30 or more) ways of animating the word "SALE" along with seasonal variations as well as complimentary elements. I was particularly taken by the fact that I had seen some of these very animations used by regional accounts that had commercials airing in my local market. Budgets for these types of production are nearly enormous compared to what I have been charging, making it easy to justify the expense of having these tools in my arsenal. It would give me instant access to a relative wealth of suitable animated opens and closes for clients to peruse before storyboarding their spots.

The Holiday package contains what you would expect, holiday elements such as an animated Leprechaun, for St. Patrick's Day, various Christmas theme graphics, a Menorah, pumpkin graphics, etc. Although many come with sound effects appropriate for use as accents the animations can stand on their own.

There is a new package, targeted at the semi-pro videographer, that I was unable to view before the deadline for this article. It contains animations related to topics such as weddings, birthdays, and religious events, This set should be available on VHS by the time you read this. DAC provides its packages in just about any tape format you can imagine. The basic prices quoted are for delivery on 3/4" U-Matic. Other tape formats are available at costs which vary depending on the format. Tapes have SMPTE time code and come with a reference booklet for easy access to each sequence if you have Time Code capability with your system.

Great Expectations

The primary target markets for DAC have been small market Television stations and independent commercial production companies. They are, however, very interested in the growing market of Toaster users. Although the current animations have been produced on high end systems such as Cubicomp and Dubner, DAC founder and President Tom Hammil plans to purchase a Toaster in the very near future. It looks like there may be Toaster-rendered animations in future packages offered by DAC. For now, I can honestly say that the existing product complements my Toaster system nicely and will more than pay for itself in usefulness. VTU

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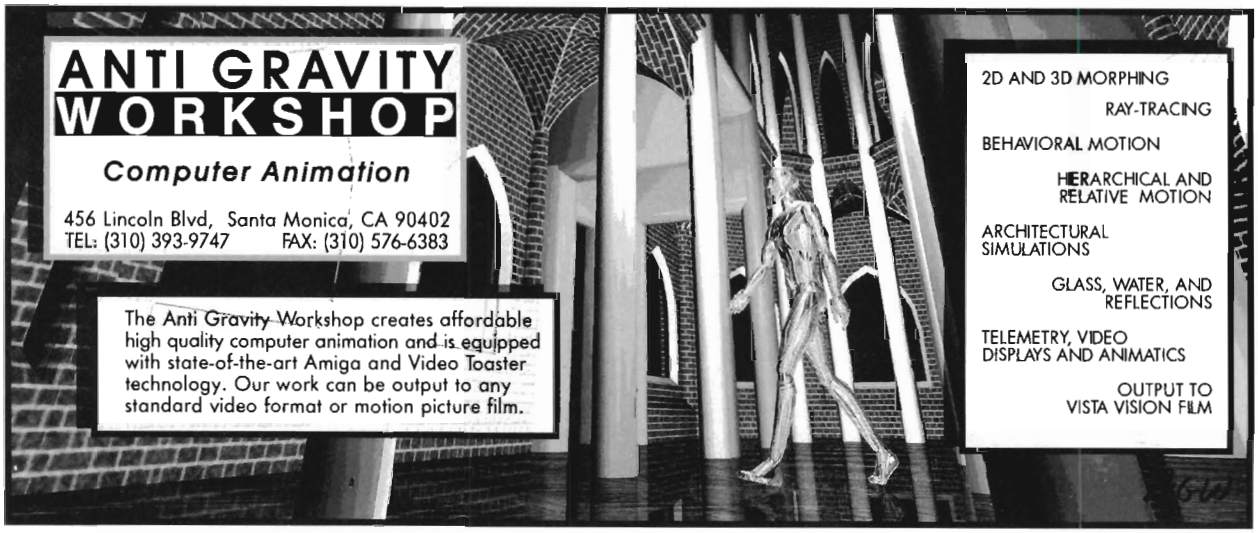

Slices continued from Page 22

Frequencies 5
Contrast 2.5

Leave all other settings as they are. Now exit, selecting Use Texture. Render the image. You will see the black fractal noise pattern on the cube's surface, where before it was a transparent pattern. The "smear zones" where black and white blend together appear gray now; they were semi-transparent earlier. This provides a simple demonstration of how different levels of brightness are treated by the transparency mapping function.

We're going to walk through the steps of setting up an image like the Star Trek:TNG bumper shot. This is similar to a tutorial in the Toaster manual, but achieves much greater realism (i.e., a cooler look) through the mapping. Of course, this technique can be used wherever you have a need for variable transparency on a surface or an object. For this tutorial, if you have a company logo or a favorite 3D text, use it. The rest of us are going to use the Common Font from the Video Toaster System 2.0 release. You should know how to use Modeler for this, as the steps involved require an operating knowledge of the program.

Part I: Setting Up the Object

The essence of what you do here is to separate the front, back, and side facing polygons of the font (or logo) into separate objects.

1. Load the characters "1," "9," "9," and "2" into the Modeler. Use the Common Font from the LightWave objects drawer.
2. Position each number so that they form 1992.
3. Select and remove the polygons that make up the face of the 1992.

a) Select Volume (Exclude mode) and drag out a volume that surrounds only the front polygons of the letters (it can overlap the side polygons, but it should not include them fully).

b) Press W to bring up the statistics menu.

c) Select the plus sign beside the "Polygons in Volume" entry. There should only be six polygons by that entry.

d) Select Polygon. The six front polygons will highlight.

e) Click on Cut. This removes the front of the characters from the side and back polygons.

4. Go to a new layer.
5. Click on Paste. This restores the front polygons of the numbers only. (If you are using your own object, give the front polygons the name Face, and give the side polygons the name Sides, before saving the objects to the hard disk.)
6. Click on Save As. Save the front polygons as "1992.front".
7. Return to the original layer.
8. Select and remove the polygons that make up the back side of the 1992. Use the same technique described in step 3, only cut out the back polygons. After cutting, do not paste or save them. they are no longer needed.
9. Click on Save As. Save the side polygons as "1992.sides".
10. Exit Modeler.

Part II: Creating the Transparency Map

The essence of what you do here is create a brush consisting of a gradient blend between black and a medium gray.

1. Enter ToasterPaint.
2. Click on the leftmost range painting color well. It will highlight with a white box.
3. Click on the fourth color in the palette, the light gray. Notice that it now appears in the range color well you selected earlier.
4. Click again on that range color well to turn it off.
5. Click on the rightmost range painting color well. It will highlight with a white box.
6. Click on the first color in the palette, the black. Notice that it now appears in the range color well on the right, and that a color ramp from gray to black extends between them.
7. Go to ToasterPaint's Transparency/Warping control panel.
8. On the right side of the panel, just above the sphere with the tiny square on it, click on the third button (of the four that are above the sphere). You should see a vertical bar appear on the sphere, replacing the tiny square.
9. Click on this bar and drag it all the way to the left edge of the sphere control.
10. Press w on the keyboard. The entire screen will fill with a left-to-right, gray-to-black color ramp.
11. Save this as an RGB image with the name TransMap.

Note for advanced users: you could cut a portion of this image out as a brush rather than save and use the entire image. Even a brush as tiny as one pixel high and as wide as the entire screen will work! Just remember that brushes cut out from ToasterPaint must meet two conditions: the beginning of the brush should be cut from the left edge of the screen, and the brush must be an even multiple of 16 pixels wide.

If you work with odd-sized brushes, use ToasterPaint's texture mapping technique and remap it to meet these requirements. Cut out the brush, enter the texture map drawing mode, and starting from the left edge drag out a new brush that is 16, 32, 48, etc. pixels wide. This will allow LightWave to accept the brush and map it properly.

Part III: Assigning Transparency and Rendering the Image

Essentially, what you do here is load the front and side polygons of the object, make the front polygons semi-transparent, and assign the side polygons a transparency map using the brush created in ToasterPaint.

1. Enter LightWave.
2. Load the 1992.front object.
3. Load the 1992.sides object.
4. Load the Random Stars objects (from the Space directory in LightWave 3D)
5. Go to the Images menu. Load the TransMap.
6. Go to the Surfaces menu. Select the surface named Sides.

a) Set the Surface Color to 0, 0, 192 so the object is blue.

b) Click Transparency, then click the Texture button that appears.

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c) Set the Texture Type to Planar Image Map.
d) Set the Texture Image to be TransMap.
e) Set the Texture Axis to be X.
f) Click Automatic Sizing, and click OK in the dialog that appears.
g) Click Use Texture.
7. Select the surface named Face, and set the surface color to 192.
8. Select the Backdrop menu. Make the background solid black.
9. Enter Layout.

Note: If your layout screen shows only the spherical shape of the stars object and you cannot see the 1992 or camera, check the Grid Size. If it is not 1.0, set it to that first. Also check the camera's location. It should be around X 3.3, Y 0, and Z -12. Loading the stars object affects the grid size, and therefore your distance from the center of things where you want to be.

10. Select Object edit item button.
11. Select the 1992.sides object.
12. Select Stretch.
13. Select Numeric. Enter 4 for the Z value. Press Return.
14. Now select the Camera edit item button.
15. Select Move and move the camera so that it is slightly below the 1992 object, and a little to the right of center.
16. Select Rotate and rotate the camera as necessary to see the 1992 object.
17. Set a key frame for all objects in the scene.
18. Render the image.

You should get something like the image in Figure 1. The blue color of the 1992 object does not show very clearly on the RGB monitor during rendering. Blue is a soft color and does not reproduce well in shades of gray. Don't be fooled and interrupt the render!

How does this work? You assigned the brush created in ToasterPaint to be mapped in a transparent fashion onto the extended 1992.sides object. LightWave read the gray-to-black blend as instructions to treat the object as "semi-transparent to fully transparent." LightWave rendered gray as semi-clear, and black as fully-clear. A gradient from white to black would be treated as fully-solid to fully-clear. The map was projected along the X axis, from left to right. Its width extended from one end of the 1992.sides object to the other.

The possibilities here are limitless. You can see similar effects on network and cable television daily. Try a few of your own and you'll find that this effect is captivating.

By the way, this tutorial is bound to bring up questions. (Some of you may be wondering about why ToasterPaint brushes must be made in a specific manner to wrap properly, for example.) If you have specific questions, call or write in care of Video Toaster User. I'll respond in the next column. VTU

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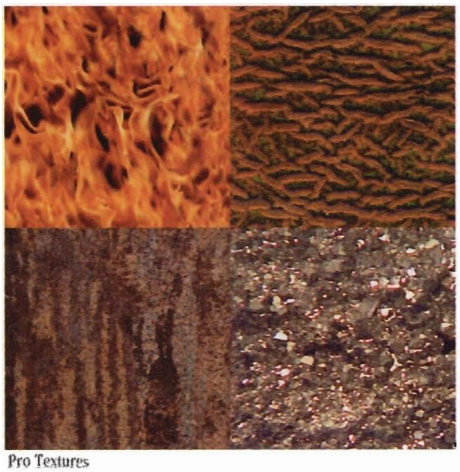
Animwipes in Toaster Switcher 2.0. Or for whatever reason, you just want to create your own Animwipes. Grab a sequence of frames with your Toaster; for best results, stick to fairly simple shapes, non-complex backgrounds, and use high-contrast lighting. Run these through ADPro, reducing each to one-bitplane black-and-white high resolution overscan images. Then load them into Deluxe Paint as an animation, which you can do with a single command, and touch them up as necessary using DPaint's drawing tools. When you're done, save the animation from DPaint and convert it to an Animwipe using Wipemaster or an equivalent utility. You'll see lots of coverage of this technique in this and other publications in months to come, but it's really that simple!

Backgrounds

If you work steadily in video, you know you can never have enough backgrounds. You've tried making your own, but your mind is on the production and you're never quite satisfied with your final product. One way to solve this problem is to use the three programs mentioned above. While all three can produce gradated and tiled backgrounds, ImageMaster is perhaps the most versatile. For example, you can get beautiful and subtle gradient backgrounds by performing a "soft" zoom on a small portion of an image, as described in the October 1992 issue of AmigaWorld.

Sometimes you need something different, like a closeup of a natural texture, or an outdoor scene. You could grab these yourself, if an appropriate location exists nearby and you have the time, or you could simply rely on image libraries. These are collections of digitized 24-bit images, of which, one of the best known is Texture City. This is a assortment of closeups of marble and other stone, wood, other natural surfaces, and outdoor vistas. The collections come on floppy disks, SyQuest cartridges, and CD-ROM disks ranging in size from 40 to 100 images. The image quality is very high, and the pictures are suitable for a wide range of applications. Add the image processing capabilities of ADPro or ImageMaster and the possiblities are endless.



Pro Textures

Sometimes digitized images can be used for other purposes than just as backgrounds, such as texture maps, reflection maps, and bump maps in LightWave. For example, you could use a marble texture as a bump map to simulate cracks in an object's surface. Then there are images intended for just this purpose, such as those found in the Pro-Textures and TexTiles collections. These are both topnotch products and come highly recommended by the staff of Video Toaster User. Pro-Textures consists of three collections of eight high-quality digitized images in 24 bits and 752 by 480 resolution, plus HAM representations of each. These work well as texture maps and some even better as reflection maps. TexTiles offers forty 24-bit 256 x 256 images in a collection called Volume 1; Things That Go Bump... Sample image file names include Leopard, Ropeburn, Fiberz, and Gigerbump. Both of these collections are ideally suited for use in 3D programs, such as LightWave, because all of the images are seamless. That is, when tiled on the surface of a 3D object, the repeated image looks natural and you don't see any edges. The advantage is that you don't have to make a single image stretch across an entire object, and closeups look a lot better.

Also seamless, but much smaller, are the patterns included with ProFills. This ingenious product is a do-it-yourself background kit with enough options to keep the industrious tinkerer happy all day. Both Volumes 1 and 2 come with dozens of patterns and palettes, plus easy-to-use software to build backgrounds in any of a number of different formats. For Toaster backgrounds you'd probably want to use hires overscan. These look great. Some of the patterns that come with Volume 2 are various types of 3D-look bricks, slats, and textures such as wood, stucco, cement, and paper, and lots more. The excellent manual offers specific tips for Toaster users plus techniques for DPaint users, including how to create beveled edges.

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LightWave Support

A lot of people will tell you they bought their Toaster primarily for LightWave 3D—I'm one of 'em. LightWave is a terrific 3D program, and its companion Modeler, which could use a spiffier name, is quite capable. But there's a lot they don't do, which is why I recommend taking a look at a couple of utility programs that can help ease the 3D artist's life a great deal. Axiom Software's Pixel Pro, which began life as Pixel 3D, is useful for converting bitmapped images to 3D, while Interchange Plus from Syndesis is the object format conversion champ.

One of the most time-consuming tasks faced by the 3D artist is modeling. Sure, you can turn out goblets and urns by the dozen, but how about a realistic human head—who has the time? Fortunately, there's been a recent upsurge in the popularity of doing 3D graphics on the computer, thanks to the ready availability of low-priced high-powered computers. This means that just about any object you might need probably exists, somewhere. However, it may not be in the file format you require. That's because there's no standard file format (like IFF) for 3D objects—every program uses its own format. There's no software to help find the object, except perhaps an online search program, but once found there is software to convert it from just about any format to LightWave's.

One way, called Toaster Input/Output or TIO, is built into the Toaster 2.0 software. If you try to load a non-LightWave object, a requester appears asking you to tell the program which format the object is in. Your choices are 3D Studio, AutoCAD, PICT, Wavefront, Sculpt, and Swivel. This list omits perhaps the most popular format for 3D objects on the Amiga, Impulse's Imagine. There is a TIO Imagine converter coming from Syndesis, but until it's available you need to use one of the two programs described here, both of which perform many other useful functions as well.

For example, you may work on a Toaster system in a video production facility, while your colleague, Robin, uses Impulse's Imagine 3D software on a standard Amiga. Robin has recently created a great-looking model of an eagle, complete with flapping wings and moving beak, that you could use in your current animation project, but how to get it into LightWave with the structure intact?

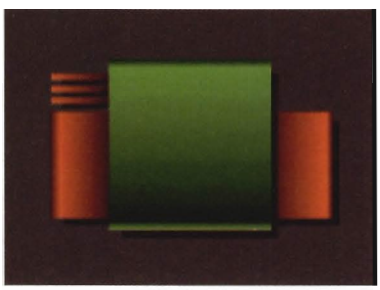
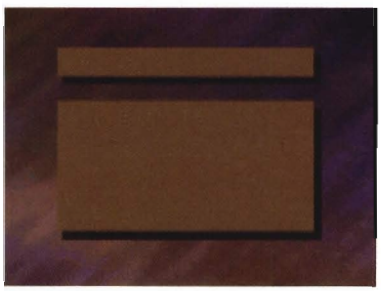
InterChange Plus

InterChange Plus offers the best and fastest way to accomplish this. In fact, since the most popular Amiga 3D programs are Imagine and Lightwave, Syndesis has specially optimized translation between those two formats. A bit of background info: in order to create objects like animated creatures, helicopters with spinning rotors, and cars with opening doors and spinning wheels, you have to build what's called a hierarchical structure. As an example, in the simplest case the helicopter would be the "parent" and the rotor would be the "child." That way, when the helicopter moves, the rotor travels at the same pace as if attached, but can continue to spin independently "in place." This structuring eases the setup of complex intra-object animation with moving objects wonderfully.

While, both, Imagine and LightWave support hierarchical objects, until now, there has been no way to translate such objects between the two programs—you had to basically fuse all parts, losing the object's internal animation capability. This is partly due to the vastly different ways in which the hierarchy is saved. In Imagine, the hierarchy is built into the object, which is actually called a grouped object, while in LightWave, objects themselves know nothing of hierarchy, which is only saved in the Scene file. That is, the Scene file tells LightWave which objects to load and how to link them hierarchically.

Through stubbornness and sheer brilliance, however, Syndesis has overcome all hurdles and accomplished the nearly impossible. That is, of course, you can now load an Imagine grouped object into InterChange Plus and save it as a LightWave scene file plus all the converted parts as separate objects, and vice versa. Centers of rotation are translated properly, as are surface types. When converting from Imagine to LightWave, InterChange Plus gives each surface its sub-object's name followed by an accurate human-readable description. Here's an example from converting the Galleon.new object that comes with Imagine 2.0: "WINDOWS: medium strong purplish red R95G31B40 Dff Sff G0." The code that starts with R indicates the surface's RGB color values, the next two indicate that Diffuse and Specular values are 100%, and the last indicates no Glossiness, which was indeed the case. None of the buttons next to Glossiness in the Surface requester were pressed in, which I'd never seen before.

InterChange Plus, born as Interchange, has always used a modular approach to minimize memory usage. There's the main program plus a slew of converters, so you only need to load the parts you're going to use. The program comes with a custom script that uses a

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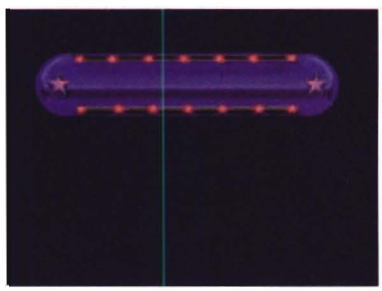
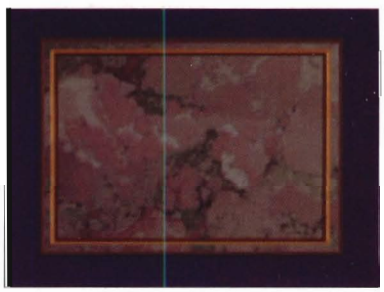



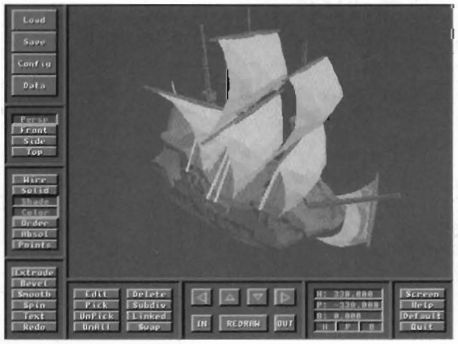
new feature to load the program and all converters simultaneously, which you can customize to load only the converters you use. You can import and export these formats: LightWave, Imagine, Turbo Silver 2.0 and 3.0, VideoScape 1.0 and 2.0, Sculpt 3D/4D scene files, and PAGErender 3D. You can also get converters for the above-mentioned TIO-supported objects.

InterChange Plus does a whole lot more. One of ImageMaster's latest features is the ability to load (but alas, not save) region files (ISHAPES) that contain geometric shapes you can draw with to define the area of an image to be manipulated. For example, one of the ISHAPE files included with ImageMaster is a diamond, which you can draw anywhere on the screen, clicking and dragging to define the size—it always maintains proper proportions. ISHAPEs are actually simple text files, and the documentation tells you how to create them, but wouldn't it be easier just to draw them with, say, Modeler or Imagine? Easier done than said with InterChange Plus's ISHAPE converter! Unfortunately, the included ProDraw/Aegis Draw converter doesn't import, only exports, so you can't define ISHAPEs with those programs.

Other one-way converters include Vista DEM, which can import but not export digital elevation map files, based on US Geological Survey landscape data, and convert them to other 3D formats. While InterChange Plus can also import-only the CAD 3D format used on Atari ST computers, it can export Sculpt 3D/4D script files, which can then be modified by those with a background in programming. InterChange Plus can also perform simple object modification functions, including scaling, snapping all points to a user-defined grid, elimination of duplicate points, and output of a text file describing an object's vital statistics. One special new function allows saving surface attributes from one object and loading them onto another.

Pixel 3D Professional

Pixel Pro has considerable object-conversion pow-

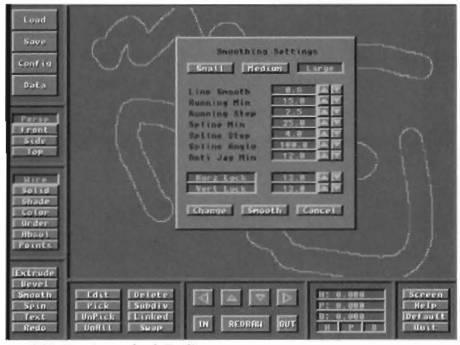


Pixel 3D Pro-Imagine "Galleon" object

ers, and it may fill all of your needs in that area, if you don't need to convert structured objects. However, conversion isn't its sole *raison d'etre*. Where Pixel Pro excels is in converting two-dimensional images into 3D objects. As mentioned above, it's common for a client to want a 3D animation of his logo sculpted in chrome and flying through space. You could build the logo by hand in a modeling program, but unless you're a masochist you might prefer to simply point a camera at a picture of it and digitize it. Once you've converted it to black and white with Art Department Professional, you need simply load it into Pixel Pro, extrude it, and voila—instant 3D logo!

This process isn't as easy as it looks. One of the hardest parts is determining what's a straight line and what's a curve. Pixel 3D 2.0 often had trouble with this, even with its built-in smoothing procedures. Unfortunately, these only worked on incoming objects, and couldn't be applied after the fact, often making the whole thing a hit-and-miss procedure, requiring point-by-point editing afterward in a modeling program. Specifically, curved areas often ended up with distinct stairstep looks.

Programmer Scott Thede has attacked this problem with vigor, and has succeeded in vanquishing it. The smoothing function now works on objects already



Pixel 3D Pro-Smoothed Outline

in memory. The requester has been completely revamped, with settings like Line Running and Spline Fitting that are explained in the manual. I ignored these, since the default settings performed an admirable job of fitting the 3D shape closely around

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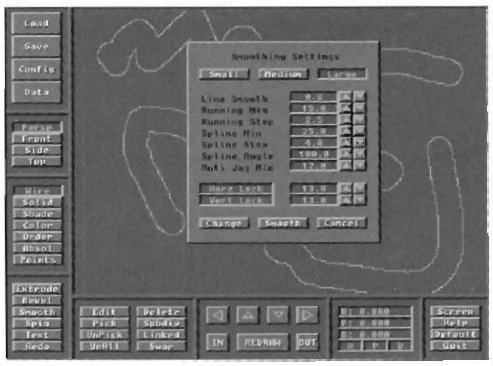
my test bitmaps' curves and straightaways, using more or less points as needed.

In most ways, Pixel Pro resembles its predecessor. Once you've imported a bitmap or 3D object, you can work with it from a perspective view, in which you can rotate the object interactively by clicking and dragging on its screen image. You can set the display to various



Pixel 3D Pro-Smoothing Requester

combinations of wireframe, solid, shaded, color, and zoom in and out. You can perform basic extrusion of an imported bitmap.

Newly added, is the ability to view the object against a grid in one of the three standard orthogonal view; front, side, or top. From here you can move any of an object's vertices simply by clicking and dragging it, an intuitive process that's far superior to that used by most other Amiga modeling programs. You can also select multiple points, singly or in groups, for mass movement or subdivision of polygons.

In Conclusion

Those are the features in the preview version that I'm using. Others, including various types of extrusion, spinning, and bevelling, and more, will be in the final version which will soon be available. Watch the pages of Video Toaster User for a full review of Pixel 3D Professional plus tutorials, also coming soon.

We've covered a varied, but by no means exhaustive, assortment of useful tools available for Amiga computers. In particular, there's a wealth of potentially productive graphics software to be had for relatively little cost in the public domain. We at Video Toaster User plan to keep you informed about the best of the public domain, as reported by experts in the field. On the other hand, there's room for improvement. An exciting recent development in graphics software for other platforms, made possible by high resolution 24-bit displays, is the ability to accurately mimic natural drawing and painting media, such as oil and tempera, as well as various paper surfaces and canvas types. Access to such powerful drawing tools would considerably enhance the Amiga artist and videographer's ability to provide useful images for clients, and will no doubt be among the selling points of the next generation of Amiga graphics software. VTU

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Morphing continued from Page 64

DPaint Morphing

Deluxe Paint IV was first out with the effect, and its morph is still the fastest, but not the most sophisticated. Take a digitized picture of a baby's face and another of a grown-up's. If the features are closely aligned, DPaint can automatically create an animation of one changing magically into the other. Well, semi-magically—the morph effect is a bit rough, but they're working on it. The primary limitation is that the program doesn't work in 24 bits, unlike the others discussed here. HAM just doesn't have the color or pixel resolution required for most video productions. Also, you don't have much control over the morph procedure; the program basically moves pixels sideways while dissolving colors. It is great for a quick and dirty black and white hires logo morph, though, if you don't mind a bit of random noise in between.

ImageMaster Morphing

ImageMaster was the first to provide controllable morphing on the Amiga, and this one feature has undoubtedly provided publisher Black Belt Systems with more well-deserved income than any other product in their history. The way it works is simple and intuitive. You load two different images, which needn't be the same size or color depth, as they're reprocessed to 24 bits or a render format specified by you. Go into the Morph section and you're presented with both images side-by-side in black and white. Place a control point on the left-hand "before" image, e.g. at the corner of an eye, then move its twin to the corresponding point on the right-hand "after" image.

One of the newest features in ImageMaster's Morph setup screen is the ability to zoom in on the images for detail work, which is a tremendous boon. After you've placed enough control points, which may be as few as a dozen or as many as several hundred, and specified the number of frames, the program automatically generates a morph image sequence, which when animated is almost guaranteed to catch the eye. Actually, you don't have to morph between two images; you can just drag points around to create fantastic moving distortions of someone's face.

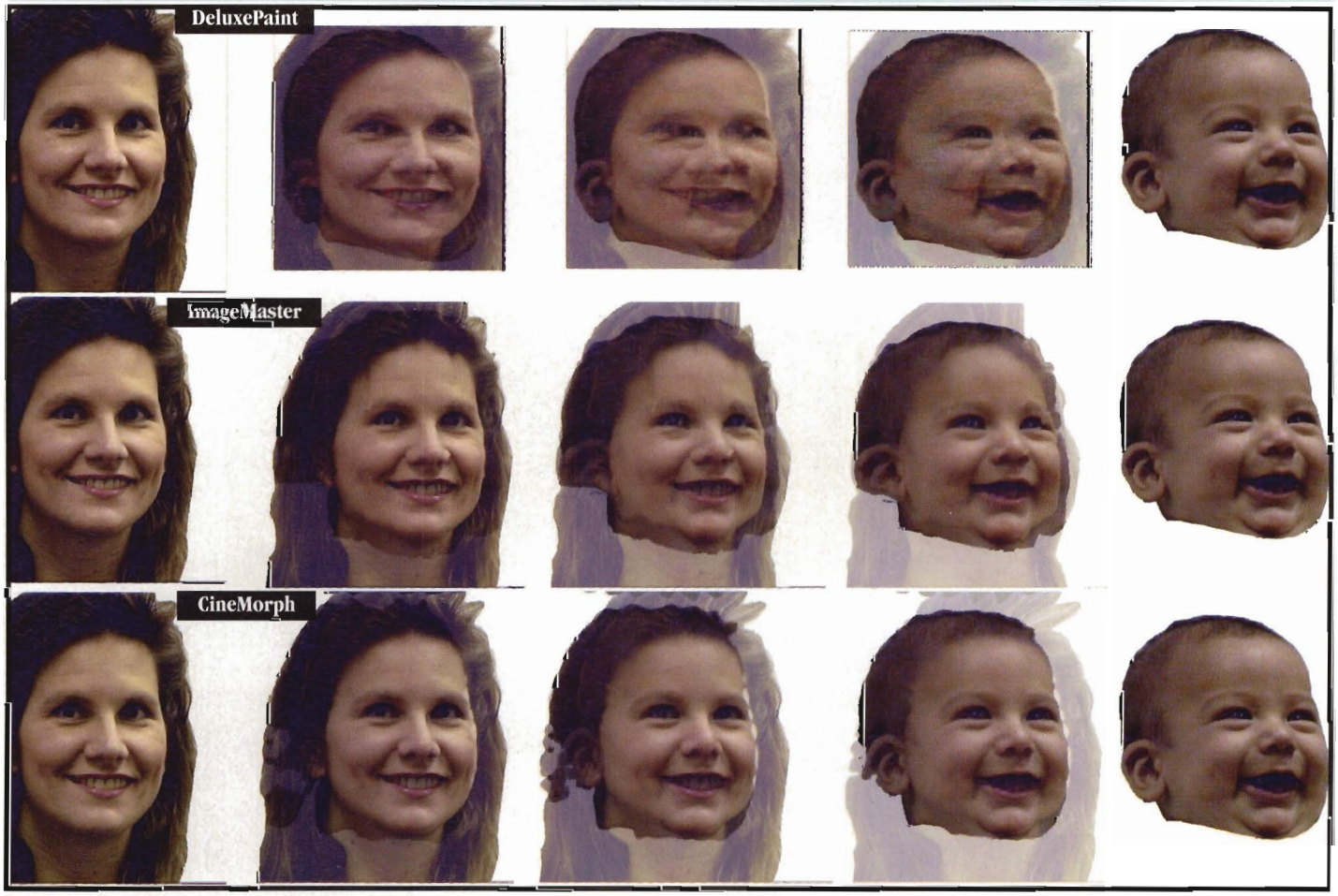
Among ImageMaster's latest morphing innovations are curved paths for morph control points, an onionskin display for seeing the two images overlaid, and antialiasing of output. Also, you can set velocity curves for individual or grouped control points, which means that different parts of the image can morph at different rates. This is useful for morphing between, somebody with little hair and somebody with a lot; you can fade in the hair quickly at the end of the sequence.

CineMorph's Sequence Morphing

In the "Black or White" video, people were dancing as they morphed. This requires sequence morphing. For example, for a one-second transition from Joe dancing to Sam dancing, you'd have to digitize thirty frames of video of each. Your first sequence might be called Joe.001...Joe.030, and the second Sam.001...Sam.030. The first frame of the morph sequence would be Joe.001. The second would be a 1/30 morph from Joe.002 to Sam.002. The fifteenth would be a fifty percent morph between Joe.015 and Sam.015. The 29th would be a 29/30 morph from Joe.029 to Sam.029, and the 30th would be Sam.030. This could be done in ImageMaster with ARexx programming, but there's a new program that's specifically set up for this situation.

CineMorph from GVP offers other new features as well as sequence morphing (it also does single-image warping). First, instead of using isolated points, you work with a grid called an overlay mesh, all of whose points are connected. This is useful for setting up "contour lines" which make it easier to identify corresponding parts of faces or other objects to be morphed. The default mesh display mode uses straight lines between points, but an option allows for curved lines or "splines." In addition, images can be morphed in either linear or spline mode. The former is faster, while spline mode morphing uses curved paths and may look more natural, although processing takes slightly longer.

As with ImageMaster, editing of control points is intuitive and powerful, although in practice I found it not quite as convenient, because all the grid points are connected. The



program does help you out somewhat in this regard by preventing you from moving a point "past" an adjacent point. Instead of fixed zoomable views, the program displays the before and after images in two movable, resizable windows. You can select and move points and groups of points interactively. You can also set tweening curves independently for points and groups. These are basically the same as ImageMaster's velocity curves. You can add and delete rows and columns of points, but not single points. You can save and load control point setups.

Since the program is designed for morphing image sequences, a number of functions support this feature. First, while editing a sequence, you can move between pairs of images with a single keystroke or a click of the mouse. You can set key frames to avoid having to create unique mesh setups for each frame of the morph, although in special cases that may be necessary. Also, you can set up groups of consecutive morphing seqnences. In the Jackson video, dancer A morphed into dancer B, who morphed into dancer C, and so on. CineMorph's Group function makes setting up this type of animation simplicity itself. In fact, the manual even contains a tutorial that takes you through the steps of just such an animation.

As for final output, if you use Generate you'll output 24-bit frames, which must be recorded to videotape with a single frame setup. However, there's also Render, which creates frames or animations in any of the traditional Amiga display modes, which is great for a color preview of the morph. While Black Belt has speeded up ImageMaster's morph considerably, CineMorph has the edge in speed, possibly because both input images must be the same size.

Conclusion

Which to get? If you don't need this capability right away, wait for the release of ASDG's Morph Plus, which wasn't ready in time for this article—it may be a contender. If you do need it now and don't care about the rest of what ImageMaster can do, get CineMorph—it's a fine program. Otherwise, and particularly if you'll mainly be morphing between two still images, get ImageMaster for its vast array of other capabilities. But if you need to make custom AnimWipes, DPaint's morphing might just suffice—try to get a demo.

As a last word, be aware that truly spectacular results require *plenty* of work. ImageMaster and CineMorph give you power, but with that comes responsibility for many details. A simple two-image morph can require hours of setup and experimentation. And chances are, no matter how good your morphing software is, you'll need to touch up the frames manually before you go to tape. Who knows, there soon may be a new union job category in Hollywood: Morph Technician! VTU

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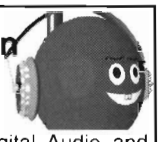

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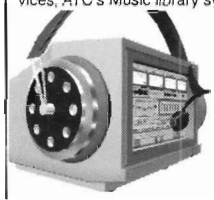

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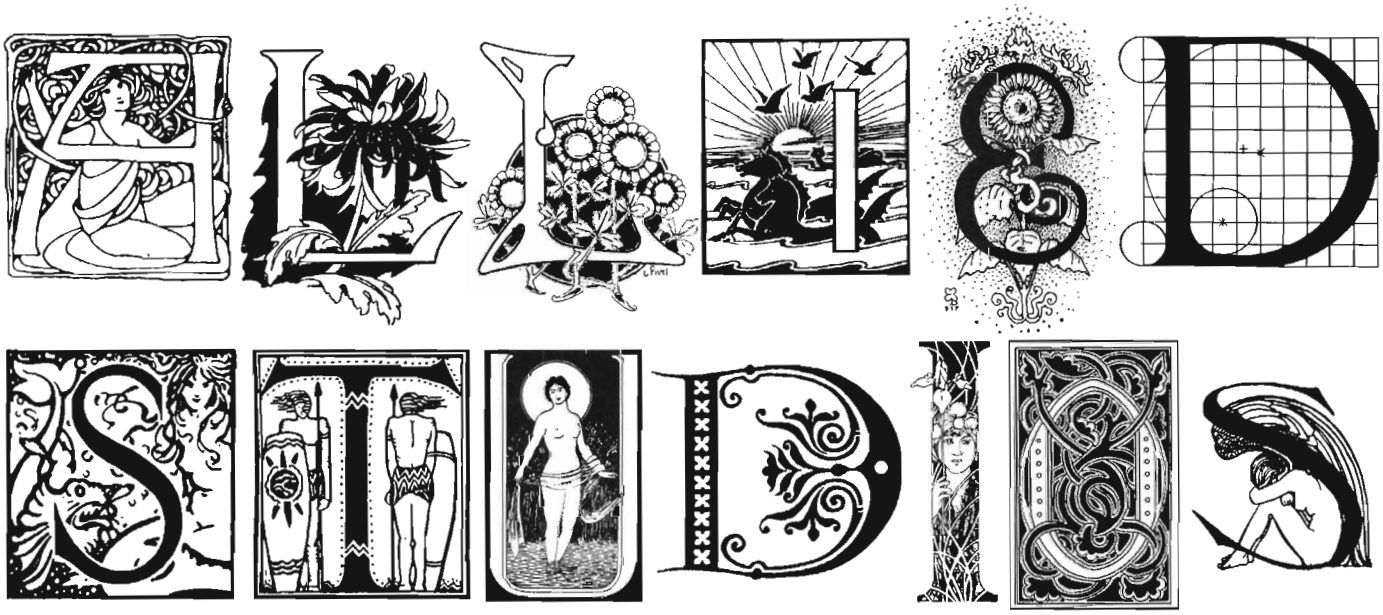

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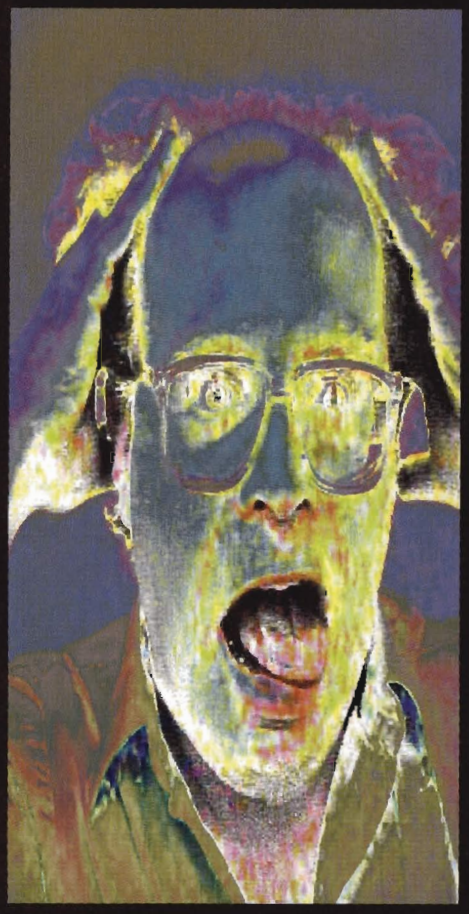

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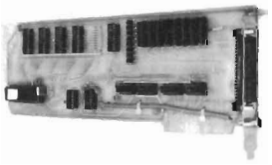

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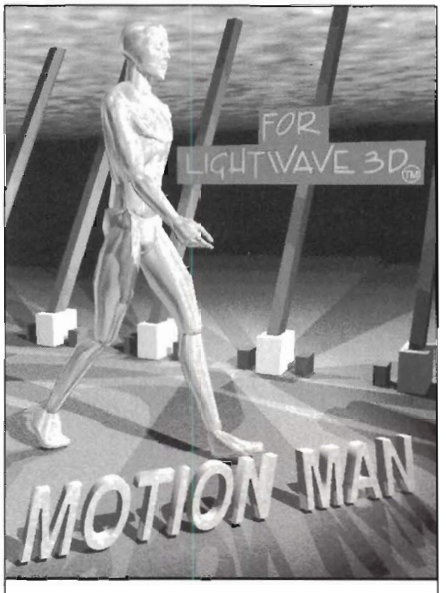

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November 4 - 5
Holiday Inn
I-70 and Chambers Road
Denver, CO
Guests: Kiki Stockhammer

Interbee
November 10 - 13
Tokyo, Japan
Guests: Tim Jenison, Paul Montgomery,
Kiki Stockhammer
NewTek University
November 14-18
The Registry Hotel
Bloomington, MN
Guests: Paul Montgomery, Kiki Stockhammer

December

Video Expo
December 8 - 10
Inforum
Atlanta, Ga
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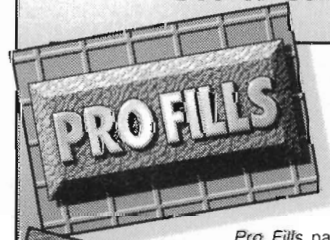

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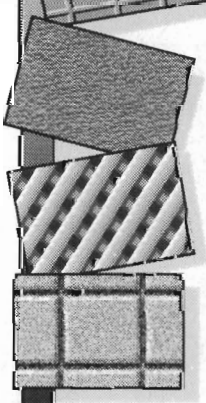

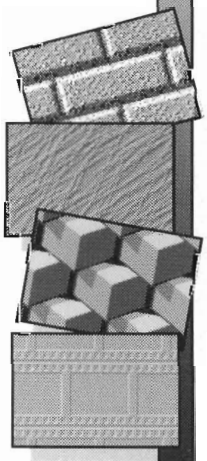

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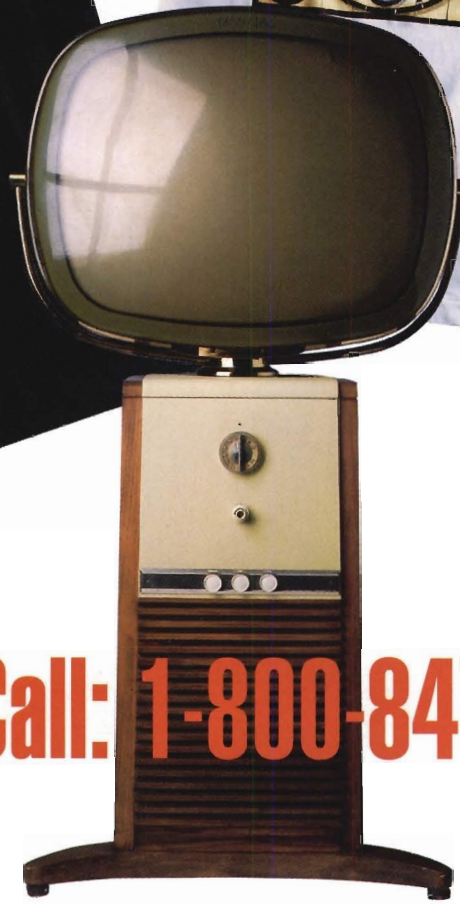

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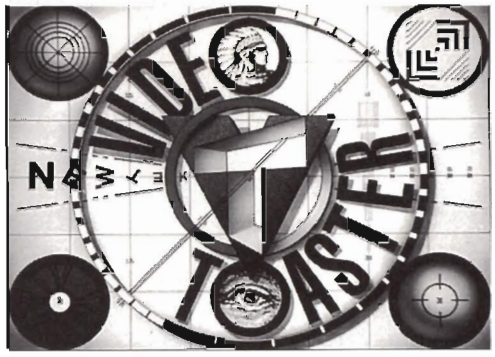
Do you need  to have more...

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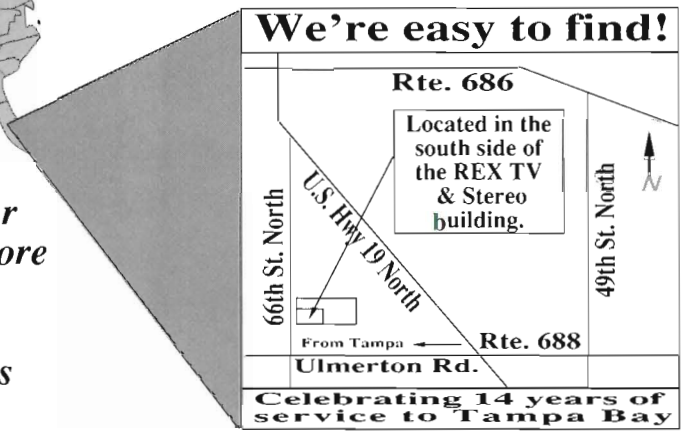

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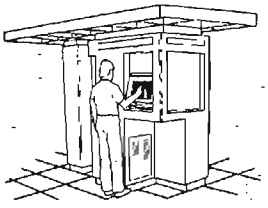

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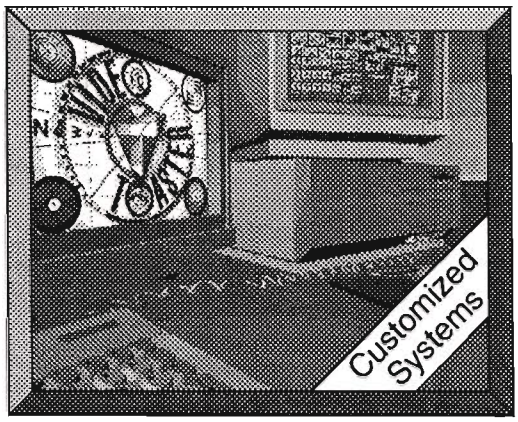

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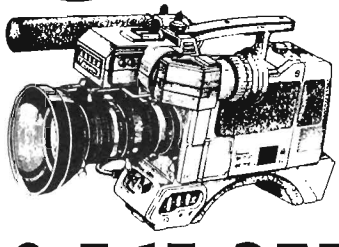

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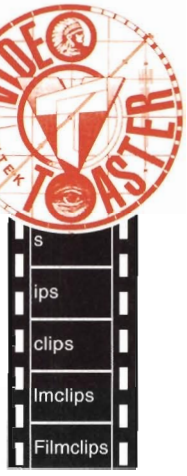

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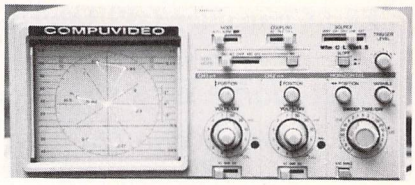

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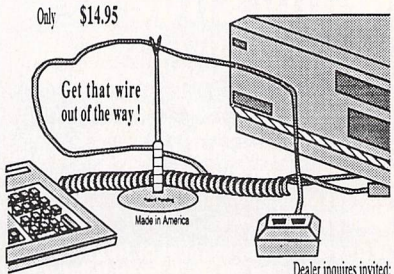

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LAST WORD

By Lee Stranahan

If you're an avid LightWave 3D user, you might want to skip this column. It could make you mad. If you're not a LightWave user, or (better yet) if you don't ever plan on using LightWave at all, then please stick around. This column is for you.

LightWave 3D gets my vote for the most misunderstood section of the Toaster. By misunderstood, I don't just mean that people don't understand how to use it. That can be true, but there's a more important problem. I think most Toaster owners really don't understand why to use it.

I think the average Toaster user looks at LightWave and thinks, "It looks interesting, but it's not for me. I do real work: training tapes, weddings, promotional tapes. I could see doing a flying logo...maybe...someday. But my main use for the Toaster is for the switcher effects and the Character Generator. That 3D stuff is nice for spaceships and music videos, but I just don't have a use for it." I'm here to tell you something that you may not have heard before. Powerful forces have been at work to keep this information from you. You DO have uses for LightWave. Lots of them, in fact. LightWave is amazingly powerful for doing the sort of things that regular video people need to do every day.

For instance, LightWave makes a great character generator. Ever wanted bigger text than the Toaster CG can produce? How about rotating lines of text? LightWave can do that, and a lot more. By using LightWave as a CG, you can create effects rivaled only by $100,000 digital switchers and high-end (high-priced) paintbox systems.

Do you need still graphics, like the ones you can produce with ToasterPaint? LightWave is quick and useful for creating still images. Did you buy the Toaster for its digital effects? You can create Entertainment Tonight type moves with LightWave. And the effects wouldn't have any pixelization at all.

Interested? Of course you are. The possibilities that LightWave opens up are nearly limitless. You can produce still graphics, CG, and digital effects that no one would ever guess were done on the Toaster...all with that 3D program you thought was only good for spaceships and music videos.

How do you do these things? It's easy—the first step is to learn to use LightWave. No magic here, folks. When you learn the basics of 3D, it's easy. All the things I've mentioned are so easy that most serious LightWave users would scoff at them.

Therein lies part of the problem: most serious LightWave users do scoff at them. CG? Fake DVE? Where's the challenge in that? Those things are easier than producing a (gag hack cough) Flying Logo.

This is the Snottiness Factor. These 3D guys don't really want you as part of their club. That's why they use words like "spline" instead of "curve". That's why they say "it's got a high degree of Specularity" instead of just saying "it looks shiny." It bothers them that you own the same program that they do, even if you aren't using it. They don't want any association with the real world of video at all, which is why they sometimes delete all those boring video effects and CG fonts and refer to the Toaster as a "dongle."

Don't let these guys keep you out. You have a use for LightWave. It's not that hard to learn and (most of all) it's about the most fun that you can have with the Toaster. Why do you think they want to keep you out? Why do you think they stay up until four o'clock in the morning playing with the damn thing? It's fun to be in charge of a production where you're producer, director, cameraman and world builder.

This gulf between 3D users and non-3D users has got to end and soon. There is something very important at stake here. Ever heard the phrase "use it or lose it?" Well, it applies here.

I've heard people say that maybe LightWave shouldn't be included as part of the normal Toaster software. After all, this argument goes, not that many people really use it. This would be a huge mistake, in my opinion.

For the Toaster power users I know - the people who turn out great videos productions - LightWave is an integral part of the Toaster. Many of these folks are video people who didn't think they had much of a use for the program at first, but learned to use it and now they wouldn't want to live without it. If LightWave weren't there, bundled in with the rest of the Toaster, they never would have bought it. Because it was there, tempting them, now they love LightWave.

Luckily, I haven't heard any of the NewTek powers-that-be taking this separatist line so far. Their philosophy behind the Toaster was "throw in everything at an amazingly low price and let people use whatever they want". Good philosophy. But there is always the possibility that if people aren't using LightWave, they may lose it.

That would be a tragedy. I haven't mentioned this yet, because it might not mean very much to you if you're not already a 3D person, but LightWave is also one of the most powerful 3D programs you can buy. That's why everyone in Hollywood is jumping on the Toaster bandwagon.

Think about that one for a second - you've got one of the most powerful 3D programs in the world on your Toaster system right now. And there's more on the way.

Allen Hastings and Stuart Ferguson, the authors of LightWave and LightWave's Modeler are hard at work on the next generation of software. I've seen some of the work they've done so far, and I am in awe. They've managed to make LightWave much faster, more powerful, and even easier to use. The release version should knock the 3D world on its ear.

It's coming, and I want to make sure that you have it. LightWave's 3D graphics can add a real professional look to your productions, no matter what kind of videos you produce. It's sitting there right now, waiting for you to use it. This column's over. What are you waiting for?

One little note here: it could just be coincidence, but I don't know a single 3D user who's a morning person. Not one. I've asked everyone I know, and all of the LightWave users I talk to like to stay up as late as possible. This goes for me, too. If there's a 3D early riser, I couldn't find them. Weird, huh? VTU

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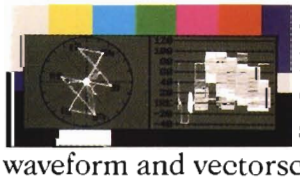

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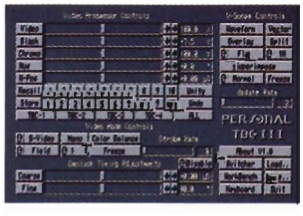

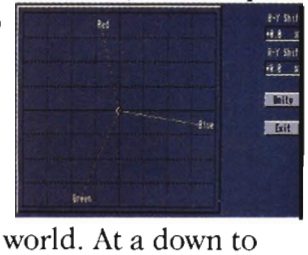

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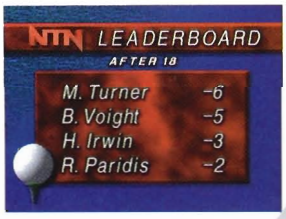

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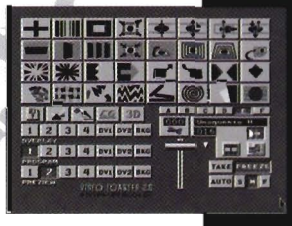

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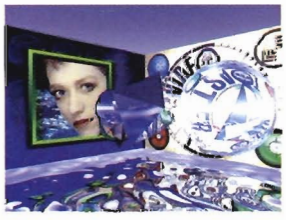
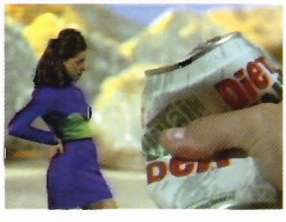


Dual Frame Buffers
Hold two high-resolution 16 million color video frames in perfect broadcast quality.



Luminance Key
More than just simple weatherman over a map, Toaster keying does luminance fade transitions and even key-based digital trails.

Color Processing
Re-color live video or alter brightness and contrast. Effects include sepia-toning, color-negatives, day-for-night, chrome and more.

Still Store / Frame Grabber
Freeze flawless broadcast resolution images instantly and recall them as sources for the switcher and digital video effects.

The Video Toaster is the world's first all-in-one broadcast-quality video production studio. It's giving everyone from desktop producers to network producers the power of a high-end production studio on a desktop. You've seen the award-winning Toaster used on network television, now you can add the same level of quality and excitement to your videos. Find out why everyone from Time and USA Today to Business Week and Rolling Stone is raving about the Toaster, call for your free Video Toaster tape today.

Free Toaster™ Video Tape

Call 800-765-3406

Complete systems starting at $4595 Outside North America call 612-882-1662. Demo also available on S-VHS, Hi8, 3/4", MII, Betacam, 1", LaserDisc and D2 at nominal cost. Next-day delivery available. Price and specifications subject to change Video Toaster, Lightwave 3D and ToasterPaint are trademarks of NewTek, Inc.
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