THE DESKTOP VIDEO MAGAZINE

VIDEO TOASTER® USER

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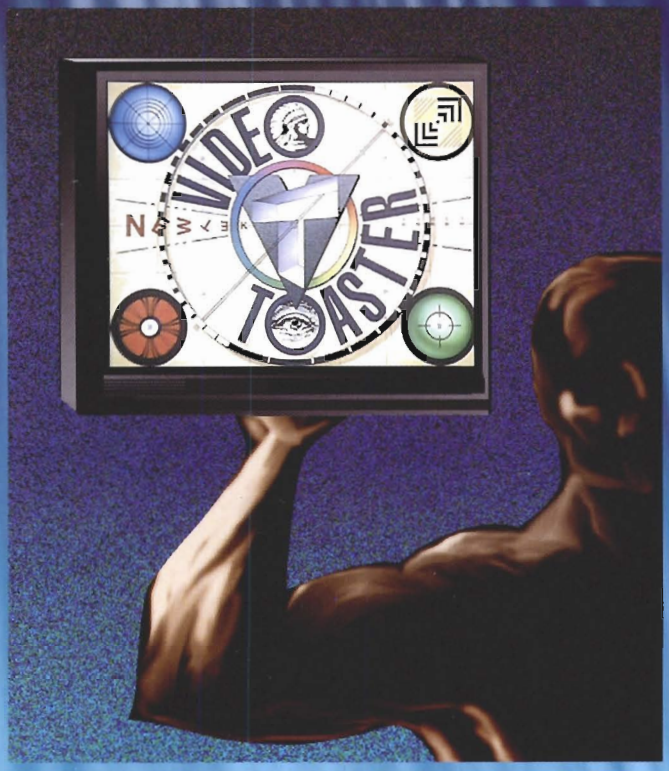

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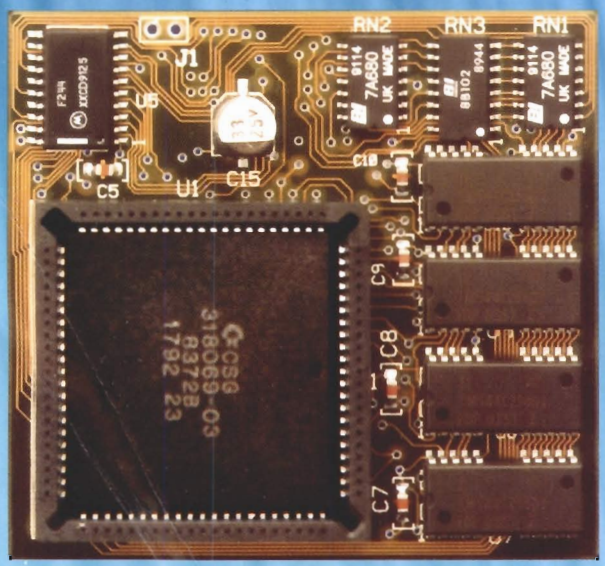

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VIDEO TOASTER USER

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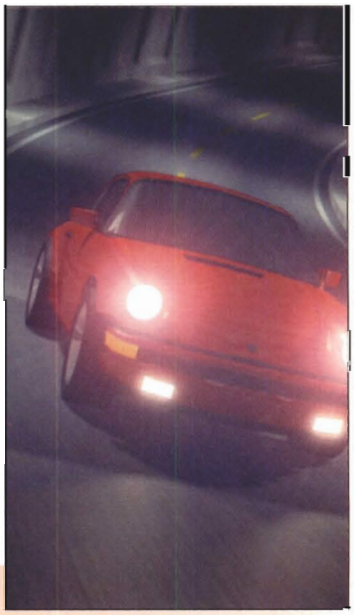

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SUBSCRIBER UPDATE

1993 is shaping up to be a big year for NewTek and Video Toaster User. If there's any way that you can arrange to be in Las Vegas in mid-April for NAB, I would highly recommend it. I think we're going to hear some very important announcements from NewTek at that event. Of course, if you can't be there you can count on VTU to bring you all the hot details.

Hot NewTek product announcements and much more will be published in the upcoming Video Toaster Buyer's Guide (VTBG), scheduled for release in early May. The VTBG will feature all the information you need to set up a Toaster-based video production studio or expand an existing one. It will also contain a complete and up-to-date listing of every Toaster-related product on the planet. The VTBG will be a valuable resource that you will turn to time and time again and will retail for only $6.95. VTU subscriber's, however, will receive the Video Toaster Buyer's Guide as part of their subscription. Look for it in May.

Another important Video Toaster User event that you'll be hearing much more about in upcoming issues is the 1993 Video Toaster User EXPO. This event is scheduled to be held in October of this year down in sunny Southern California. The VTU EXPO will be held near Universal Studios and will be a hotbed. of Toaster activity including exhibitions, seminars, workshops, performing arts and a celebrity-judged Toaster animation contest. Look for more information about VTU EXPO in the next issue of Video Toaster User.

As I mentioned at the top of this column, 1993 is going to be a huge year for the Video Toaster. Because VTU is THE desktop video magazine, you can bet we're going to be in the thick of it.

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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 telephone 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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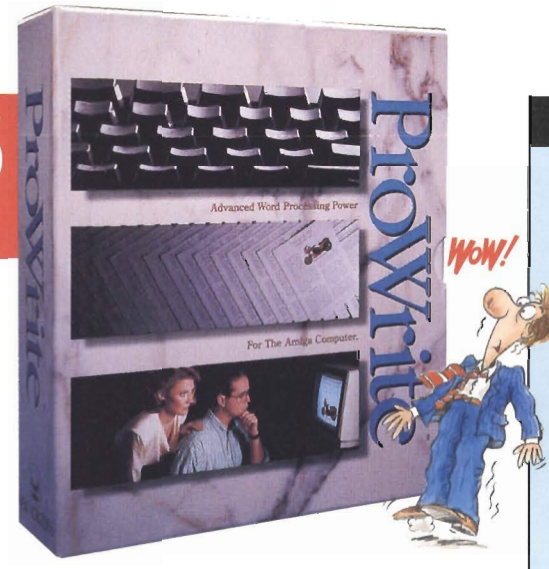

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And of course, ProWrite 3.3 retains the speed and ease-of-use that has made it famous with thousands of Amiga users world-wide.

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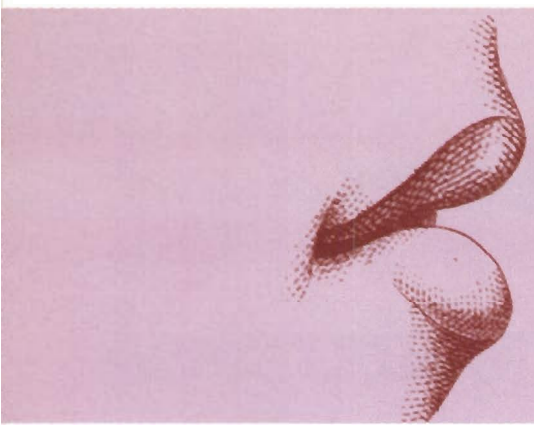
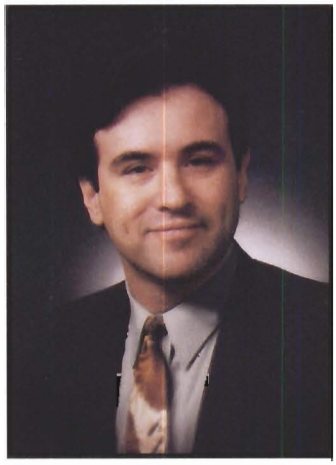


TOASTER TALK

By Jim Plant



I've been spending a lot of time trying to figure out what I find so exciting and interesting about desktop video. Why does desktop video capture my imagination? Is it the technology? Maybe. Is it the potential for more effective communication? Probably. Is it the money? Of course. But, what else is there? These thoughts have been rattling around inside my brain for the past few weeks and I think I've finally come up with an idea.

Surprisingly, I think the answer is right under my nose in the pages of Video Toaster User. I was recently thumbing through the latest issue for the 50th time and for some reason, I kept coming back to "Toaster ProFiles." This is the section that features short vignettes about real-world people doing interesting things with the Toaster. I found myself continually drawn to this section, reading over the stories, even grabbing the last couple of back issues to re-read earlier profiles. I began asking myself, "What do I find so fascinating about these people and their stories?"

Finally, it dawned on me. Most of the people featured in "Toaster Profiles" had consciously made the decision to get into video production and were now making money doing exactly what they wanted to be doing! None of these people was looking for new jobs. None was bored. Through desktop video these people took control of their own lives and made them better.

I suddenly realized that for the past six months, I had read or heard story after story about somebody who had bought a Toaster, practiced and polished their videomaking skills, started producing video programs or selling videotapes and making lots of money. And what fascinated me even further was the fact that these desktop videographers came from all walks of life.

There were, of course, people selling videos on how to make money in video—and many videos on how to use your Toaster. However, there was also the locksmith who started producing instructional videos for other locksmiths. There was a lawyer making videos that taught other lawyers how to make more money producing video depositions and yet another video that showed how to animate accident recreations. There was even a 7-11 employee who got tired of getting robbed, so he quit his job, made a crime-prevention video and sold thousands of copies to convenience stores across the country.

Following a hunch, I went down to my local bookstore and started yanking all kinds of specialty magazines off the rack. How about car magazines? Inside there are ads for videos on restoring classic cars. Computer magazines? There are videos about using your favorite computer program. Fashion magazines? Videos about applying make-up. Home magazines? Videos on how to remodel your kitchen. Business magazines? Videos on making money in the stock market. Almost every magazine featured at least one ad from somebody making money selling information in a video format.

I realized I had stumbled across the *big secret*. The secret was information. This is, after all, the Information Age. And as our society grows increasingly complex, we are continually developing an ever-growing number of segmented interests. This is not a new phenomenon. It has been developing for the past decade. And two prominent information vehicles—television and magazines—are the leaders in specialized diversification.

In the early 20th century, we had dozens of general-interest publications. In the 1950s and '60s, magazines numbered in the hundreds. Now, there are literally thousands of magazines covering thousands of subjects. And desktop video's sister technology, desktop publishing, has helped change the financial model that makes special-interest, small-circulation magazines economically feasible. Today, with millions of VCRs in homes across America, and hundreds of cable channels set to flow into these TV sets, the infrastructure to communicate via video is now in place.

I predict that shortly after these mega-cable systems come online, we will see things like the Gardening Channel, the Home Improvement Channel, the Automotive Channel, the Golf Channel, the Tennis Channel, the Fishing Channel, the Hunting Channel, the Fitness Channel, the Fashion Channel, the Computer Channel—with the potential for many more. The possibilities are endless.

As you divide and subdivide these and other genres, and the viewer numbers grow smaller and more focused, the entire economic structure of television advertising will shift from expensive general-interest ads reaching millions of viewers to less-expensive more-focused ads reaching thousands of viewers. This shift has already begun to some extent and that is one reason why the networks—the kings of mass-market media—are in big trouble. The giant 500-to-750-channel cable systems will only hasten the networks' decline, ushering in a new television era.

So where does that leave you—the desktop videographer? Sitting in the driver's seat! Think about it.

With so many channels available, the demand for programming will be huge. Lots and lots of special-interest programming. Lots and lots of *cheap* special interest programming. Remember, if you only have a few thousand viewers watching your program, you can't charge much for advertising. And if you can't charge a lot for advertising, you can't have mega-buck production budgets.

So, answer this: Who will produce all the low-cost programming? The big production studios with their million-dollar studios? I don't think so. How about the entrepreneur with a low-cost Toaster-based production studio? Dumb question, right?

And there is more good news. Besides the wide-open cable programming market, there is another exciting and very lucrative market for desktop videographers to exploit. This is, of course, the special-interest/how-to video market that I referred to earlier.

Jane Fonda's Workout Video series is the pinnacle of this genre. The kind of videos I'm referring to, however, are related—but on a smaller-market scale. Thousands of videographers have identified specific subjects where people want more information (via video). More importantly, they have made huge profits satisfying this thirst of knowledge.

Desktop video has made a dramatic impact on this market by radically changing the financial model for a profitable video project. Just like desktop publishing has made it profitable to publish small-circulation special-interest magazines, desktop video makes it possible to create videos that can be profitable with only a few hundred or a few thousand sales. A huge number of video projects that would have been economically unfeasible using traditional production methods suddenly become viable using desktop video technology.

Now I understand just what it is that so intrigues me about desktop video. It's not the technology at all. It's what the technology represents. It's the unlimited opportunities that unfold before me. It is the freedom to change my life via my newfound power to communicate. Hmmm—I wonder if there is a market for a video on starting your own magazine? VTU

16 Bit Desktop Audio

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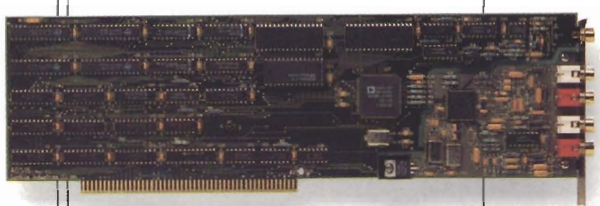
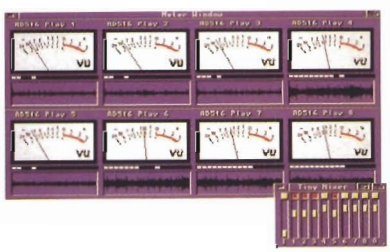


Finally, true CD quality 16 bit audio is available for your Amiga! SunRize's new AD516 gives you eight tracks, plus a time code reader and a DSP chip. Included with the AD516 is Studio 16™ version 2.0. This new release of our popular 16 bit editing software puts a complete sound studio on your desk!



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

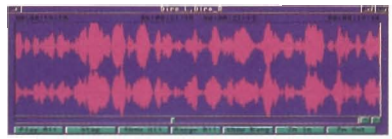
The Video Toaster goes a long way towards solving your video problems. But what about sound? Do you want to do ADR or voice-overs? Do you need to synchronize background music with your productions? How do you add footsteps, door knocks, and other sound effects to your video or animation? Do you need 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.

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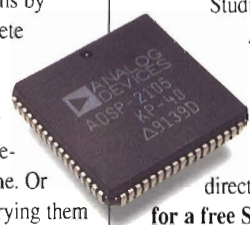

Studio 16 2.0 comes with either the AD516 (16 bit, 8 track, stereo, $1495 list) or the AD1012 (12 bit, 4 track, mono, $595 list). Also available is the DD524 digital I/O card for direct interface to DAT. **Call today for a free Studio 16 information packet. Tel: (408)374-4962. Fax: (408)374-4963.**

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European Representatives: **FINLAND** Power Computers +358 (18) 781 8992. **FRANCE** Storm +33 (1) 43 57 46 57. **GERMANY** AS&S +49 (069) 5 48 81 30. **ITALY** AP&S +39 (0432) 759264. **SPAIN** PiXeLSOFT +34 (088) 71 27 00. **SWEDEN** DisplayData +46 (0457) 503 80. **SWITZERLAND** Microtron +41 (032) 872429. **UNITED KINGDOM** HB Marketing +44 (0753) 686000.

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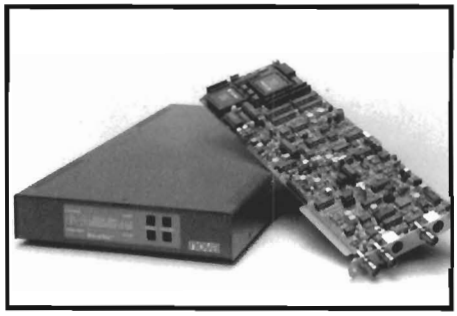
NEW PRODUCTS

NovaMate for Amiga

Nova Systems, Inc. announce the NovaMate time base corrector/frame synchronizer. This unique TBC is available as a card that plugs into an Amiga or PC, and also as a standalone desktop unit and a rack-mount version. NovaMate satisfies a wide range of requirements for VCR signal-correction and video interfacing, from Toaster-based desktop video to commercial insertion and satellite systems.

NovaMate's features include composite and Y/C input and output, full-bandwidth processing with adaptive digital comb filtering, infinite window correction, freeze-frame/field-1/field-2, and serial control with ten programmable memories. NovaMate carries a full two-year parts and labor warranty with guaranteed 24-hour turnaround service.



Nova Systems, Inc.
50 Albany Turnpike, Canton, CT 06019
203-693-0238
203-693-1497 FAX

A Real Education

Have you thought about making the leap from amateur to professional video producer? Or maybe you just wanted to brush up on your skills, but haven't been able to find any video courses that offer Toaster-specific instruction.

Heifner Communications has unveiled their new, state-of-the-art video training facilities for the Video Toaster professional. Their studios offer a cluster of video workstations as well as a knowledgable, Toaster-literate staff to go over the ins and outs of video production with Video Toaster.

Amoung the course selections offered are Computer-Based Video, Animation, Paint, Image Manipulation, Editing and Basic Video Production. Their coursework is designed to allow a selective approach to your video training requirements.

Heifner Communications is authorized by NewTek, Commodore and Amilink as well as by numerous other hardware manufacturers. Their staff has extensive hands-on experience and has been involved in the daily use and evaluation of new products, as well as in the production of top quality video.

Heifner Communications
4451 I-70 Drive, N.W.
Columbia, MO 65202
314-445-0757
314-445-6163 FAX

Ready-to-Wear Music

Okay, you have video as pristine as new fallen snow. You have sound sharp enough to shave with. Your titles have that understated flair that brands you as a professional. You have 3D that'll make your clients' eyes pop out of their skulls. Something still seems to be missing? Could it be music?

Before you panic and start scrambling through your collection of ancient 8-tracks, you might take a look (listen?) at ProMusic's Music Library software. This software database for your Macintosh or PC-compatible system offers a comprehensive listing of ProMusic's extensive music and sound-effects CD library, allowing you to quickly reference and order specific themes and sound effects for your clients' individual needs. You can search for music by name, description, category, synonym, and catalog number.

The ProMusic library includes music themes for corporate, sports, light industrial, hi-tech, rock/pop, light rhythmic, romantic, period music, Christmas, childrens productions, country, folk, comedy, drama, marching bands, orchestral, pastoral, scenic, ethnic, classical, showbiz and contemporary projects as well as hundreds of individual sound effects for specific scenes.

ProMusic
6555 N.W. 9th Avenue
Suite 303
Fort Lauderdale, FL 33309
305-776-2070
305-776-2074 FAX

Toaster Transitions a'Plenty

Have you ever had that feeling that your project would be perfect if only you had just a few more wipes to choose from? The Computer Room offers not one, but four volumes of original Professional Toaster Wipes to supplement your video switching needs.

Each volume contains 31 new crouton files and a new project file that loads the croutons directly into one of the A-F banks of your Video Toaster, allowing you to use them without needing to learn a new set of procedures.

Volume 1 features a wide variety of holiday wipes, ranging all the way from New Years to Christmas. Volume 2 features music wipes for the MTV wannabe. Volume 3 offers transitions suitable for those working with a religious three. Volume 4 gives your wedding videos 31 new options to set yourself apart from the pack.

The Computer Room
9625 East Arapahoe Road
Englewood, CO 80112
303-799-9733
303-799-9734 FAX

Mapping in the USA

United States is the name of a new package for LightWave artists from The Associated Image Group in Texas. Consisting of a disk of LightWave-format map objects depicting the entire country (excluding Alaska and Hawaii) as well as the individual states. Objects are available flat and extruded, with or without divisions between the states. Also included are images depicting use of the map objects as well as a bonus image that can be mapped around a sphere to create an Earth object.

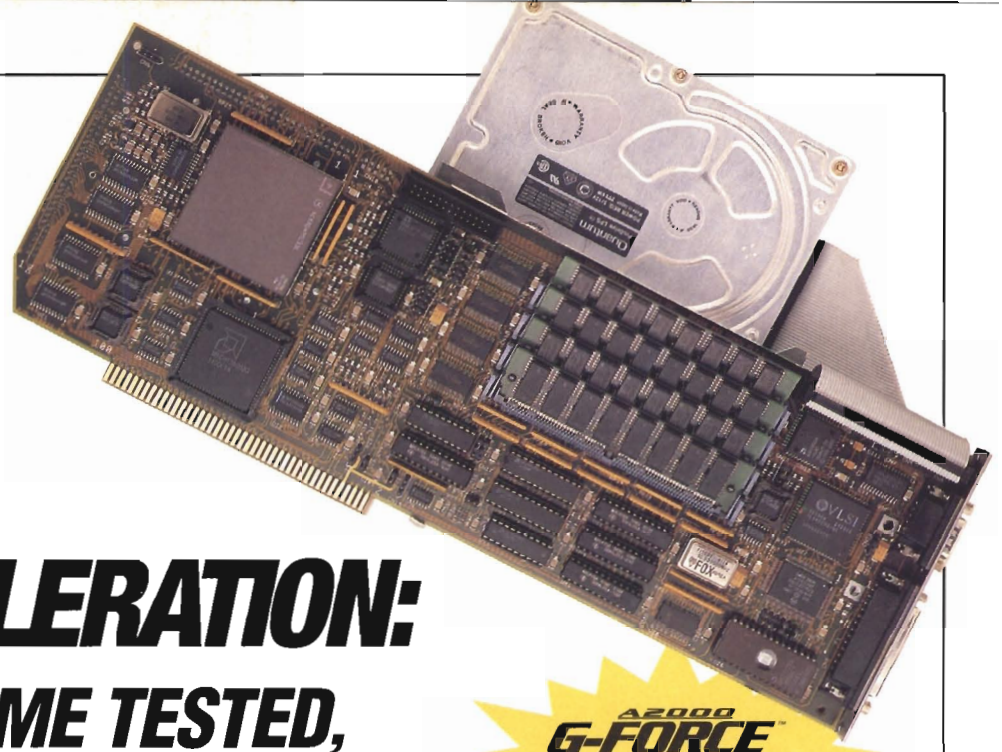
The Associated Image Group, Inc.
14900 Landmark Blvd., Suite 600
Dallas TX 75240
214-788-0066

New Improved Toaster CG

For those character-generating gurus who demand flash and flair, Innovation Systems has released the Montage Video and Titling Effects software for the Video Toaster.

CONTINUED ▶

FOR THE AMIGA® 2000 SERIES



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  - Ability to transform your accelerator into the ultimate hardcard with GVP's new improved snap on Hard Disk mount kit
  - On-board future expansion possibilities with the GVP exclusive 32-Bit expansion bus (including GVP's EGS 110/24). This feature alone literally obsoletes ALL other accelerator products.
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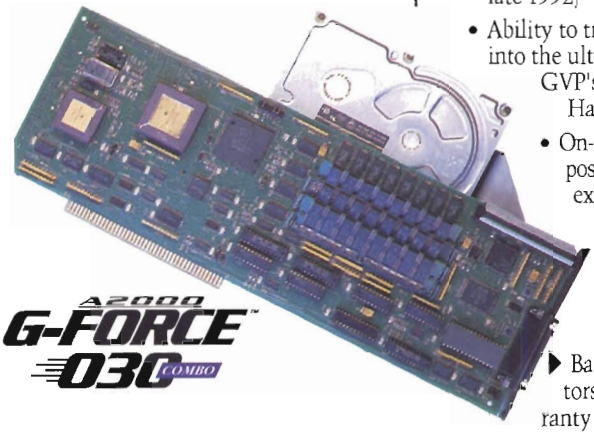

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Montage is the first CG application which can render directly into the digital Framestore format, which gives you improved signal quality and display speed as well as actually improving your Toaste's video optput signal.

Along with seven scalable 24-bit typefaces with 64 levels of anti-aliasing and proportional vertical and horizontal resizing, montage allows you to sequence and Framestore pages with Toaster DVE effects with automatic playback of multiple effects.

Of course before you can create effects for your text, you need to create the text, which is why the Montage features full editing control, easy click-and-drag title composition and a convenient mouse and keyboard interface. The editor also has a unique "video-safe" title indicator which assures you of maintaining full visibility for your text.

InnoVision Technology
1933 Davis Street, Suite 238
San Leandro, CA 94577
510-638-0800
510-638-6453 FAX

Do It Yourself 3000/Toaster

You have an Amiga 3000. You have a Video Toaster. Never the twain shall meet — not!

L&N Productions has recently released a videotape which shows you step-by-step how to install a Video Toaster into your Amiga 3000 computer, giving you access to two powerful platforms in a single space. This clear-spoken VHS tape offers simple, clear instructions on how to overcome the apparent physical incompatibilities between the two units. Supplementing the video is a instruction guide spelling our the video's instuctions in plain text, with multiple installation options.

L&N Productions
P.O. Box 391
Brownsville, CA 95919
916-675-1227

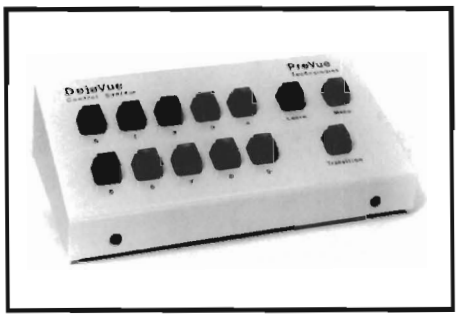
Haven't We Been Here Before?

"I love my Toaster, but I wish it were easier to perform complex transition sequences on the fly." If this is something you've said to yourself, then DejaVue from PreVue technologies might be what you've been looking for.

While mouse and keyboard control is effective for setting up Toaster DVEs, it can become rather tedious after a while. DejaVue is a remote device capable of memorizing and instantly restoring all currently Switcher settings, allowing you to perform multiple video effects quickly at the touch of a few buttons. It connects to your Amiga via the second mouse port.

DejaVue's control panel consists of 13 pushbuttons in two rows. Ten of the buttons designate memory registers. The LRN button stores all current Switcher settings into one of the registers and the numbered buttons restore the settings. The TRANS button triggers an automatic transition using the current settings.

To perform a recall, simply press the desired register button. The recall button can restore everything including Program input number, Preview input



number, Overlay input number, key clip level, key invert, wipe pattern, lever arm position, transition rate, background video selection and CG page and still store contents.

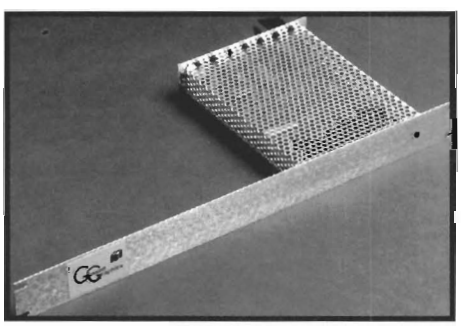
PreVue Technologies
P.O. Box 2617
Grass Valley, CA 95945
800-356-8863
916-272-1528 FAX

The Gossett Converter Family

Gossett Graphics has announced a new family of video converters for high-quality conversion of signals between NTSC and S-Video, giving Video Toaster users a wider range of video format options and reducing generation loss.

The N2S (NTSC to S-Video coverter), S2N (S-Video to NTSC converter) and Q2N (high-quality S-Video to NTSC converter) are standalone platform-independent "black boxes" that provide quality conversion capabilities to the professional and semi-professional user.

Each unit features full video bandwidth to 6 Mhz, 400+ line resolution both horizontally and vertically, numerically precise digital filtering for optimum lin-



ear color separation, high-quality ADC and DACs without digital artifacts, low color noise and vertical and horizontal alignment between luma and chroma.

The S2N is exactly complimentary to the N2S unit. The Q2N offers the additional feature of creating a high quality NTSC signal from a low-quality Y/C source, such as a computer generated S-Video. None of these units requires any user intervention once installed.

Gossett Graphics
1169 Burgoyne Avenue
Mountain View, CA 94043
415-968-4704

Mannequin, Man!

Apples Animation of California have released a low-cost hierarchical human figure object for LightWave 3D. Mannequin man, while not containing much surface detail (e.g. the head is an elongated sphere), should suffice for renderings that don't require great verisimilitude in human modeling. For example, it could be used as a size reference. Besides the head, body parts include upper body, hips, shoulders, upper and lower arms, hands, thighs, calves, and feet.

Apples Animation
2216 Terracewood Ln.
Escondido, CA 92026
619-740-0035

Ultimate Backgrounds

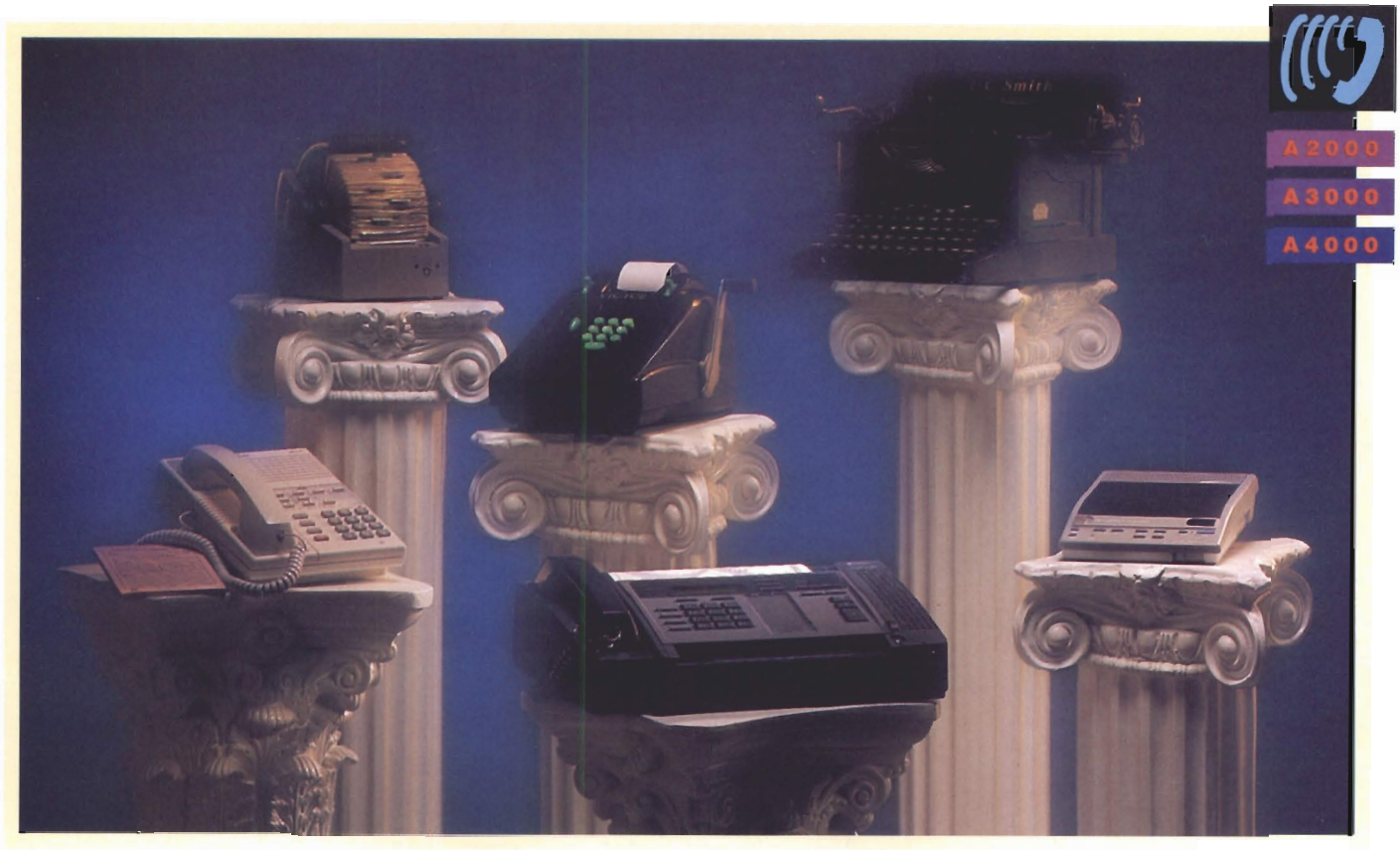
United Pixels & Lines announces the release of the first in a series of background image libraries. The Ultimate Background Series contains 60 carefully selected high-quality 24-bit images available in a variety of Amiga formats, including Video Toaster Framestore, JPEG, IFF, and DCTV, as well as in Macintosh and IBM formats. Images are royalty-free, and the package includes a VHS Browser videotape.

United Pixels & LInes
4038 128th Ave. S.E., Suite B303
Bellevue, WA 98006
206-863-9070

The City of the Textures

Texture City, makers of the highly successful image libraries Pro-60 #1 and the Pro-100 #1 CD-ROM, announce the release of Pro-60 #2, their second floppy-disk-based collection. Texture City's image libraries contain a wide variety of high-quality pictures useful as video backgrounds, texture maps in graphics programs, and in many other applications. Picture categories in Pro-60 #2 include Earth, Foliage/Plant, FX (mostly abstract), Metal, Scenic, Space, and more. All images are 24-bit IFF in 752 x 480 resolution, minimally compressed via JPEG. All libraries include software for browsing and unpacking the images.

Texture City
3203 Overland Ave. #6157
Los Angeles, CA 90034
310-836-9224



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PRO·FILES

Olympia High School

Jeff Waddington is the communications instructor at Olympia High School in Olympia, Washington. As he puts it, "My job is to teach the language and technology of video."

The video production program started six years ago. Waddington was approached by the school's administrators inquiring as to the viability of such a program. He jumped on it. "With television playing such a big role in our lives, I felt it was important to offer comprehensive video instruction. The course would give insight into nuts and bolts production as well as provide keen television viewing skills," he explains. "The students learn all aspects of video production both in front of and behind the camera." By the end of the school year, each student is required to serve as writer, director, camera operator, graphic designer, editor, and news anchor for ONN (Olympia News Network).

"The elements of our very first production suite consisted of two reel-to-reel VCRs and a black-and-white tube camera," Waddington remembers. "I first heard of the Video Toaster back in 1988 from the local cable access station. With the capabilities the Toaster boasted, our video program would be boosted onto the cutting edge of broadcast technology. I contacted NewTek every few months to make sure I hadn't missed the release of this new invention." Olympia High School was, in fact, one of the very first educational outlets to get a Toaster. "Each year we've been able to add to the facility through our school district's Technology and Vocational funds," Waddington says. "This year, we used the money to purchase our second Toaster."

In addition to the two Video Toasters, Olympia High School's production studio houses a dedicated copy stand, three Quasar SVHS camcorders, three Panasonic 7750s, AmiLink edit controller with A/B-roll capability, a Panasonic MX-10 to handle the audio, and a patch bay with 50 connections. "With the two Toaster systems working in tandem, we're able combine up to four transitions at once, take framegrabs of ChromaF/X or DVEs, and luma-key over two layers of video," Waddington comments. He quickly adds, "Since adding the Toaster to the facility, kids don't mind staying after school."

A new ONN episode is produced every two to three weeks and is aired over the school's closed circuit cable system. Afterwards, the 25-minute news show is aired over Thurston County's community access cable channel in one continuous block of programming. Other schools in the area have followed Olympia's lead in installing Video Toasters of their own. "Four of the five high schools in the area now produce their school's news shows with Toasters," Waddington notes.

Waddington's role as communications instructor doesn't stop once he's out of the classroom. His expertise in the field of desktop video in a scholastic environment is called for at conferences and conventions all over the country. Most recently, he presented to a standing-room only crowd at Dallas's Infomart to the National School Board Association's Technology and Learning Conference. "Video is no longer an elite form of communication. Desktop technology is to video what Gutenburg was to printing, and the Video Toaster is a big key to that democratization," Waddington says. "Having these new communications tools helps bring what were once lofty concepts and lingo to a place where they can be broken down and seen for what they really are; one person trying to make contact with another."

Jeff Waddington
Olympia High School
Olympia, Washington
206/733-8811

Dr. Kenneth Larson

Based in Minneapolis, Minnesota, Dr. Larson is a general practitioner with a special interest in preventive dentistry. He uses the Video Toaster both as a presentation and educational tool.

Dr. Larson was first introduced to computer-aided dentistry while a dental officer at West Point. "We had at our disposal an elaborate interactive computer and video setup. Cadets could learn about a range of subjects from dental hygiene to treatment plans for gum disease," Dr. Larson recalls and then adds with a smile, "Of course,

back then (1968-69), we were using mainframes that would take up whole rooms and teletype stations for keyboards."

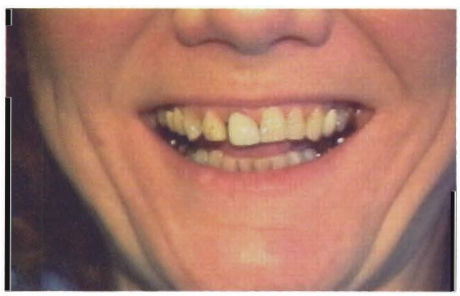
When he first started shopping for a new computer, Dr. Larson wasn't clear as to exactly how he wanted to use it. "We have used computers in our office for ten years to manage the administrative functions, but I wanted something to use for graphically communicating with my patients," he explains. One of the graphic imaging solutions Dr. Larson looked at was a Fuji intra-oral imaging package introduced in the mid-'80s. This solution looked promising until he learned of the $50,000 price tag. Toward the late '80s, he found another turnkey imaging solution available for a mere $20,000. "There were many available choices," Dr. Larson states, "but it came down to choosing between a TrueVision product running on a Mac or IBM, or the Amiga with the Video Toaster. I chose the Toaster because I could get more of what I wanted for the dollars I was willing to invest."

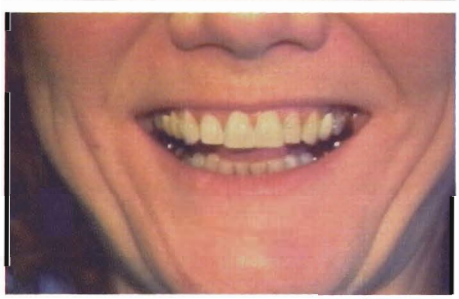
Dr. Larson first started using video in his office by videotaping inside patients' mouths with the small Panasonic GP-KS102. He fed the signal into a consumer

SVHS VCR and monitor. Using the shuttle/jog and still functions, Dr. Larson was able to go over, in detail, dental problems needing attention. "This use of video imaging is very helpful, but the real fun begins when I load some of the images into the computer," he comments.

Dr. Larson uses the bigger Sony V-5000 for capturing a patient's smile. From there, he takes a framegrab of the smile. Using either DCTV or the Video Toaster, Dr. Larson paints in any corrections he sees. Taking the "before" and "after" into framestore format, he puts together his presentation. "Joe Blomberg at Alpha Video in Minneapolis wrote an ARexx program that does most of the work. I go into the Toaster's character generator and set up the patient's name for the production. I then enter the Amiga 'Shell' and modify the ARexx stencil to fit this particular patient's needs (i.e. how many times the 'before' and 'after' images will cycle)," Dr. Larson explains.

His "homework" complete, he has the patient sit down in front of the monitor. With a wall-mounted video camera focused on the chair where the patient is sitting, Dr. Larson turns on the VCR connected to the system and starts the program. "The first thing the patient sees





is his own live picture. Then, a full-blown presentation begins, complete with opening and closing credits." Patients are given their own copy of the tape explaining Dr. Larson's recommended treatment. "I find this experience very satisfying," he says. "The quality of communication that results from using this medium is outstanding."

Dr. Larson is currently producing a video about gum disease, its symptoms and treatments. He has just recently purchased the SunRize audio board and is in the throes of a "paralysis of possibilities." "I hope eventually to build a small production company to develop materials for my colleagues," Dr. Larson says.

The Amiga and the Video Toaster have become a big part of Dr. Larson's practice. "I would not want to practice dentistry without this communication capability." he remarks. "It has made my work more pleasant, enhanced rapport with our patients, and has paid for itself in increased productivity. It is a choice I will benefit from for years to come."

Dr. Kenneth Larson
Minneapolis, Minnesota
612/827-409

Fly Fishing Video Magazine

Jim Watt is president and co-founder of Bennett/Watt Enterprises Production. He and his wife, Kelly Bennett, travel all over the world to bring the excitement of fly fishing to ESPN viewers with Toaster-producedFly Fishing Video Magazine. As Watt says, "The fish are the stars, and the local guides the experts. This simple formula has spelled success since their show first aired July 4, 1992. In fact, Fly Fishing has rated in the top three slots for Saturdays on ESPN's Outdoors block during the peak viewing hours from seven in the morning to seven in the evening.

Watt has performed a variety of duties in front of and behind the television camera since 1964. His first job was as a cameraman at a small local station in Kansas City, Missouri. He quickly moved on to a freelance cameraman/director position with NBC. During his eleven-year tenure at NBC, he had the honor of being one of two cameramen allowed with President Nixon during his historic trip to China in 1971, and the sole cameraman to accompany Secretary of State Henry Kissinger during his world tour in 1972.

In 1978, Watt decided to move to Seattle, Washington and start his own production company, "James Watt Video." Some of Watt's assignments as an independent producer/director included shooting or producing segments for ABC's 20/20, CBS's 60 Minutes, ABC World News Tonight, and NBC's The Today Show.

During a shoot for NBC News in 1981, Watt came up with the idea of a video magazine about fly fishing. After the assignment, he contacted a local hunting and fishing lodge and videotaped the very first Fly Fishing Video Magazine. "Unfortunately, the concept was just a bit ahead of its time," explains Watt. "The saturation of VCRs in the consumer market didn't justify enough sales to continue the effort."

It was early 1985 when Watt met sound technician Kelly Bennett. Their winning combination of talent and enthusiasm formed a dynamic freelance production team. James Watt Video was soon renamed to Bennett/Watt Enterprises, Inc. to reflect this new partnership. Some of their early work together includes news coverage of the Mexico City earthquake and a two-month assignment in Seoul, Korea for the Summer Olympics. The two married in the fall of 1986.

In January 1987, they decided to revive Watt's idea of producing a fly fishing tape series. With a mountain of experience in producing and no experience or knowledge of hosting or marketing a show, they attended a trade show for television programming called NATPE. There, they hoped to find out if television stations might be interested in running such a series. "It was an enlightening experience which encouraged us to pursue the video magazine concept," Watt reflects.

By August of 1990, Fly Fishing Video Magazine had been featured in Fly Rod & Reel, and the subscription base had grown steadily to over 1000 households.

Later that year, the two were introduced to Video Toaster. "We were in LA looking for a production switcher when went to Walt Davis Enterprises in Hollywood," Watt remembers. "There was a guy that had just brought in this new production device and he was demonstrating it to the employees." The guy Watt is referring to is Video Toaster expert Joe Conti (see June/July 1992 VTU).

"For seven years, Fly Fishing was made up of simple cuts and occasional fades," Watt recalls. "When I saw the Toaster, I had to have it." He then adds, "I saw the price tag, and then I *really* had to have it." The Watts returned to Seattle, borrowed money from friends, and bought the Video Toaster. Afterwards, they then flew Joe Conti up to train them.

Although the first season of Fly Fishing is under their belt, Watt and Bennett still have much to do. ESPN has asked for another 26 episodes, and they are currently producing a completely new series of tapes. "This new endeavor is a series of physical therapy tapes geared toward physicians," Watt explains. They initially project 24 episodes, but concede the series could be endless.

Watt concludes, "With the Toaster, we're able to produce a quality television show on a budget that looks like a network show." He smiles and then adds, "Hey, wait a minute—I do produce a network show!

Jim Watt and Kelly Bennett
Watt/Bennett Enterprises Inc. Productions
Seattle, Washington
206/392-3935

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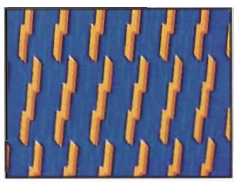

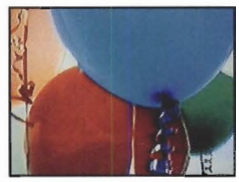

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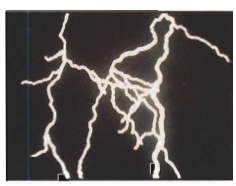
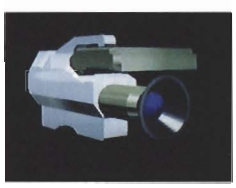
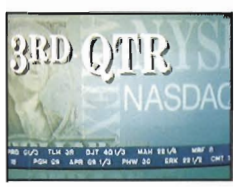

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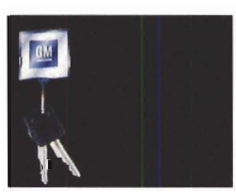

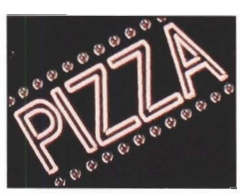

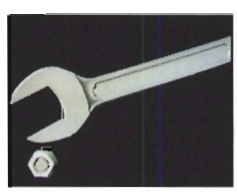
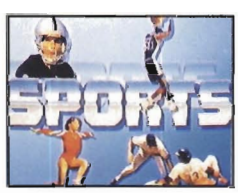

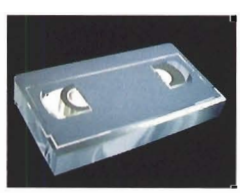

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NUTOPIA

is the Sausalito, California-based studio for LightWave 3D modeling and animation founded last year by rock musician/producer Todd Rundgren.

Its many resources include 13 Toaster workstations on a Novell network, various high-quality video recorders, a Macintosh Quadra 700 with ToasterLink, a Silicon Graphics workstation (rarely used) and lots of artistic freedom—which allows for an abundance of creative experimentation. Lightwave author Allen Hastings constantly provides updated versions of the software which lets Nutopia play with all the latest cool features.

Nutopia artists Till Krueger and Eric Myers use two of the workstations for modeling and scene setup and the rest for rendering. Nutopia's images are rendered to disk and later transferred to tape.

The Toaster images presented on page #17 are from an animation that recently aired on cable's Discovery channel. Other images shown are potential cover art for Rundgren's new CD, as well as stills from *Theology*, an

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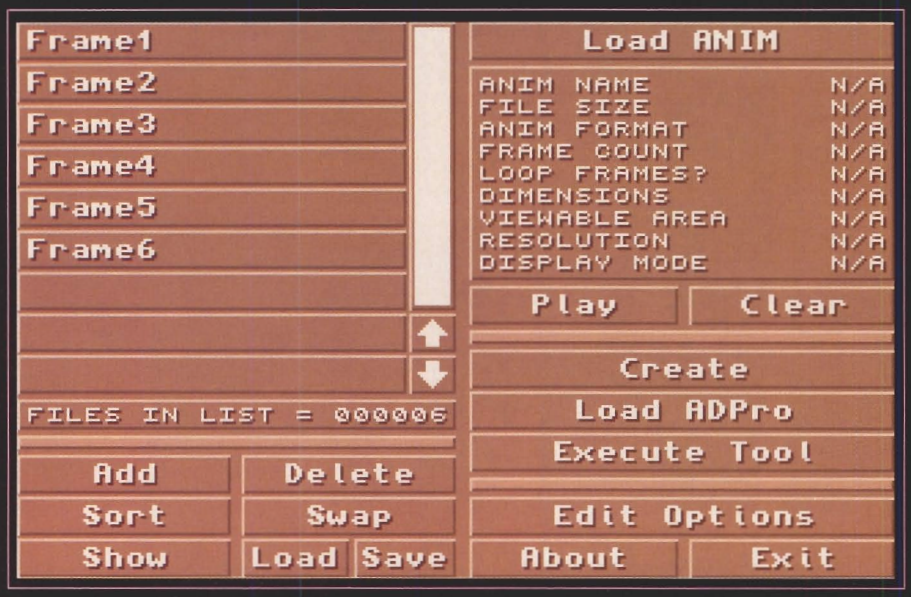

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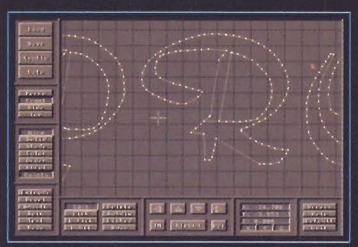

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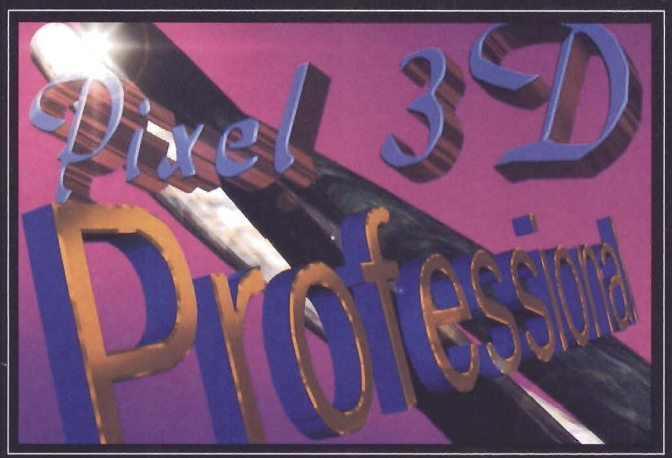

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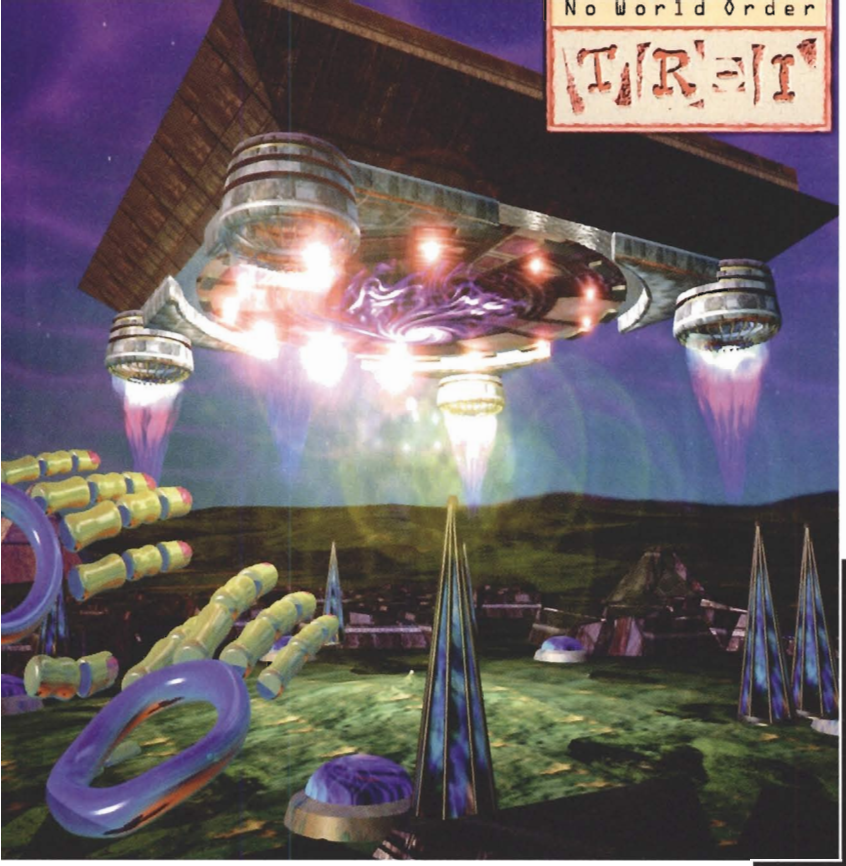
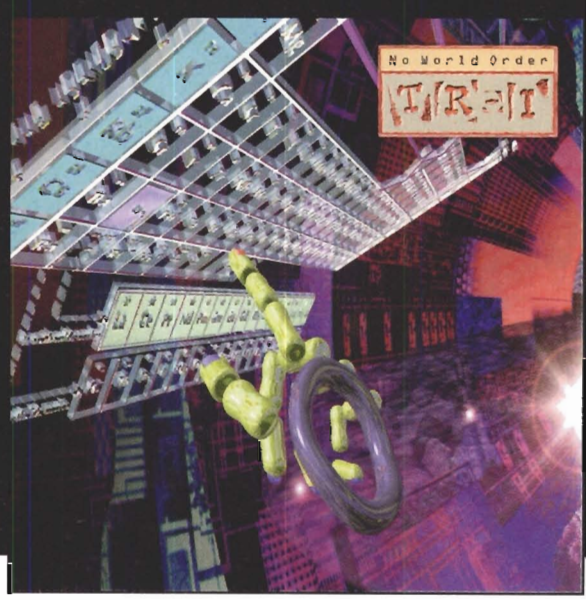


acclaimed 3D computer animation short video developed as a showpiece for Nutopia.

Currently, the company is working on three music videos for the aforementioned Rundgren CD—so keep your eyes peeled to MTV.

For the future, Nutopia has plans to develop 3D animation for films. And from the look of these images, they're off to a good start.

The art on this page was produced for Todd Rundgren's new CD. If you are wondering which of these will be the actual cover, well that's up to you. You see, the cover is designed so you can flip to your favorite side and have *that* as the cover—16 sides in all!



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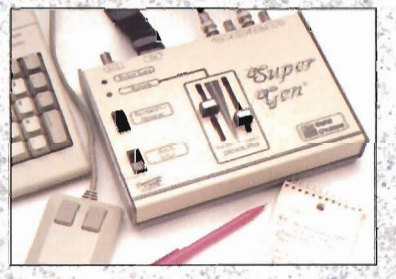

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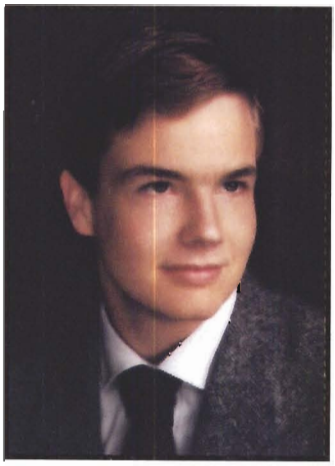
TAMING THE WAVE

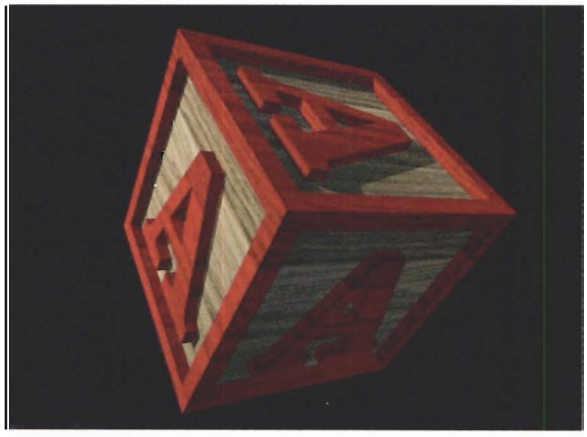
By David Hopkins



Well, now that the holidays are over, the turkey and pig population has been greatly reduced, and empty boxes and gift wrap litter the nation's dumps, it's time to get serious about LightWave. 1993 is the year of the Toaster, and don't you forget it! Let's get a bit of fluff out of the way, and then we'll get into a real modeling project.

Taming the Waterfall

I want to be sure to comment on the large number of entries I've received for my "Taming The Waterfall" contest that wraps up about the time you read this. The winner will be announced in the next installment of this column, and will receive a whole bunch of goodies shortly thereafter. Most important, however, is the fact that most entries have included a letter saying how much they welcomed a challenge like this. They discovered that it is easier to learn when presented with a project to solve in the process. With that idea in mind, let's do some modeling!



Building a Child's Block

In this tutorial we're going to build an object similar to the one depicted in Figure 1. It was originally created for and included with my Taming The Wave Training System, and provides a good exercise in object construction. The typeface in this block is one supplied by Unili Graphics, but we'll use the Toaster's Common Font in our exercise since everybody has it.

Since this is a new year, it's time to get organized in your 3D work, and this starts with a tidy hard drive. Before we begin the project, make a new drawer in your Toaster/3D/Objects drawer and name it "ToyBlock." We'll use this as the base for saving various pieces as we build them.

Now start Modeler, or if it's running, select New to clear the layers. Of course, this deletes any remaining objects in those layers, so save your data first if necessary.

The place to begin is with a single letter. You'll base the block's size on the letter's proportions. Normally, you would want to measure an item and model it to true scale, but a child's block can be any size so we won't worry about it here.

Getting a Letter

Locate the Fonts directory within your Objects drawer. For this example, we'll use a character from the Common Font provided with the Toaster. If you use this idea for your own animations, however, I recommend the Paladium Font from Unili Graphics.

Load the "Common.Cap.A" object.

Making the A Flat

First, press the a key on your keyboard to center the object and fill the window views. Set Volume mode to Include, draw a box around the right-most portion of the letter as seen in the Left view (see Figure 2), and then click on Cut. This leaves a single polygon in the shape of the letter A. We'll use this to cut a template out of the block face, but we should first move it to the center of the Z (in/out) axis.

Moving a Polygon to Center

Click on Polygon Select mode, then the Modify menu, Stretch, and then Numeric. Since our "A" shape exists only in the X and Y dimensions, we'll scale Z to 0, moving it to the Z:0 position. This takes advantage of the fact that if an object has no dimension on an axis, scaling it on that axis simply multiplies the factor times its position on that axis.

Set the Z Factor to 0 and click OK.

Making the Block Face

Zoom out by pressing the , (comma) key twice. Choose Box from the Object menu and, using the

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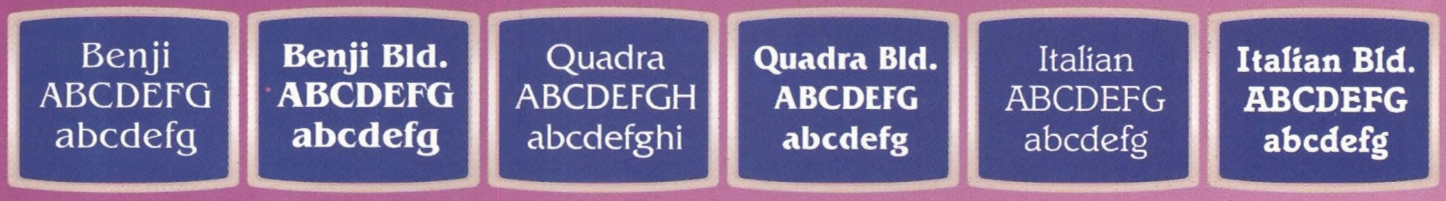

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Back view, create a box from X:-1m, Y:1m, to X:1m, Y:-1m and click Make.

This box provides us with the points that will mark the edge of our block face. Now we need to delete all the polygons, leaving the points.

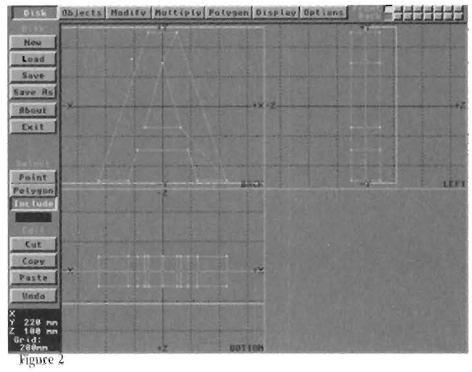
Figure 2

Using Point Select mode with the right mouse button, draw a lasso around the entire object in the Bottom view, or press the w key and click on the top + button. When you release the mouse button, all of the points will be selected. Now, click Cut and then Paste. Now the points remain, but the polygons are gone.

Make the block face by connecting the dots while using Point Select mode. Make sure to follow the exact order shown in Figure 3. You'll be making three polygons, and each one is illustrated by a set of different colored numbers in the Figure. When you reach the last number in each set, press the p key on your keyboard to make it into a polygon. Don't forget that you need to release the earlier selected points before you start the next set. To do this, just press the / key on your keyboard.

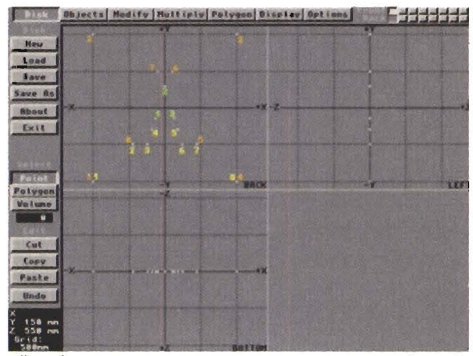
Figure 3

Extruding the Parts

Now that we have the main face with the A shape cut out of it, we need to produce the extruded parts.

Press the / key on your keyboard to deselect whatever you may have selected. Next, click Copy, press the 2 key on your keyboard, and click Paste. You've made a copy of your block face in layer 2.

Switch to Points Select mode and select the face's four corner points. Click Copy, press 3, then click Paste. Choose Stretch from the Modify menu, then click Numeric. We're going to scale these points so that they make a frame for the face.

Set the X and Y Factors to 1.2 and leave the Z Factor at 0. Click OK, then Paste. Hold down the Alt key and press 2 on your keyboard. This puts the contents of layer 2 (the block face) in the background of our current layer. Now press the a key to auto-fit again. You can see that the points on the corners moved out evenly in both directions giving us a frame that matches our square perfectly. By the way, the second Paste just put down a fresh copy of the points after we moved our first set. Press the a key to see the whole object.

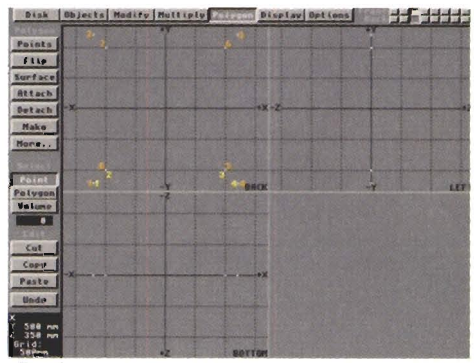
Figure 4

In Points Select mode, make two polygons out of this, using the pattern in Figure 4. Remember that the p key makes a polygon, and the / key deselects selected items.

Now for the letter A itself. Go back to layer one by pressing the 1 key. Draw a lasso with the right mouse button around just the points that make up the A, and click Copy. Press the 4 key to go to layer four and Paste. Press a to zoom in on the points, and connect them into two polygons as shown in Figure 5.

Let's name some surfaces before we do any extrusion. Click Surface from the Options menu. Create the following surface names:

BlockFace
LetterFace
BorderFace

Don't forget that you need to click Create after each name, not press the Return key.

Go to layer 2 by pressing the 2 key. Click Surface from the Polygon menu. Locate the BlockFace surface name and click OK. Go to layer 3 and set the surface name to BorderFace. Finally, layer 4 should be set to LetterFace.

Hold down the Shift key and press 3 to put both layers 3 and 4 in the foreground. They'll both appear in white. Switch to Polygon Select mode, and click Cut, then Paste. The contents of those two layers will be removed and then pasted down together in layer 3.

Choose Extrude from the Multiply menu, then Numeric. Set the Axis to Z, the Extent to -200 and change the Units to mm, then click OK. Click Make to effect the extrusion.

Since we extruded in a negative direction, all of the polygons are facing the wrong way, so make sure that nothing is selected by pressing the / key, then flip all the polygons by pressing the f key.

Now, combine layers 2 and 3 by pressing Shift-2 (since you are already on layer 3). Make sure that you are in Polygon Select mode, then choose Cut and then Paste. All of the parts are now combined on layer 2.

Since we used copies to build the other parts, we have duplicate points here. You can merge them if you like, but there are some advantages to leaving them un-merged. First, LightWave does not shade smoothly over the edges of polygons with un-merged points. This is useful when you want LightWave to maintain a sharp edge between a surface that should be smoothed and one that should not. You can decide the value of that for yourself. If you decide you want to merge the points, you can do so using the Merge button in the Options Menu.

Choose Save As from the Disk menu and put this in your ToyBlock directory with the name BlockFaceOriginal. Be sure to save this now so that you'll have at least this much done should something go wrong.

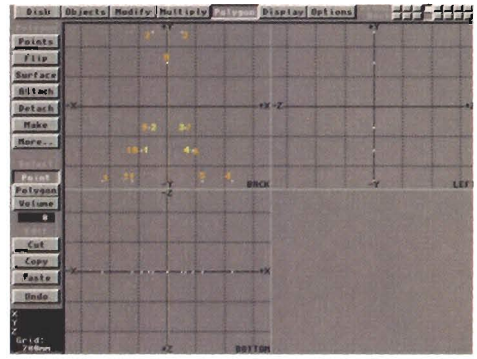
Figure 5

On to the next step: preparing to make copies for the other sides. First, we want to get rid of the outer edge of the border. You'll see why shortly.

In Select Points mode, click on the points which are marked in Figure 6. You should see a total of four points selected by clicking on those two points. Don't forget that if you release the mouse button before selecting all the desired points, you can continue selecting by holding down the Shift key while clicking.

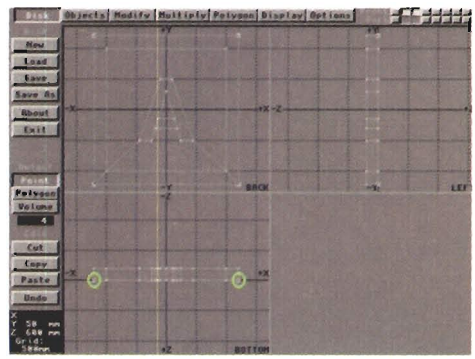
Figure 6

Switch to Move from the Modify menu. Click Numeric and set the Z Move amount to -1 and ensure that the Units are set to m. Click OK.

Click Mirror from the Multiply menu and place the mirror along the X Axis (dark grid line) in the Bottom view, then click Make. Your screen should look like Figure 7. Now you've got two sides of the block.

Using Polygon Select mode, Copy the current layer, go to layer 3, and Paste. Click Rotate from the Modify menu, and then Numeric. Set the Axis to Y and the Angle to 90. Click OK and the rotation will take place.

Go to layer 4 and click Paste. This is the pair of sides in the original orientation, but now we'll rotate it to make the top and bottom. With Numeric Rotation again, set the Axis to X and the Angle to 90. Click OK.

Hold Shift and press 2 and 3. Click Cut and then

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Paste to combine them all on layer 2. Switch to Point Select mode, go to the Options menu and choose Merge.

Guess what? It's finished. Save it under the name ToyBlock_A in the ToyBlock drawer. Some of the steps we took here may have been more complicated than they needed to be because my goal was to give you experience with a number of different modeling actions. Now it's up to you.

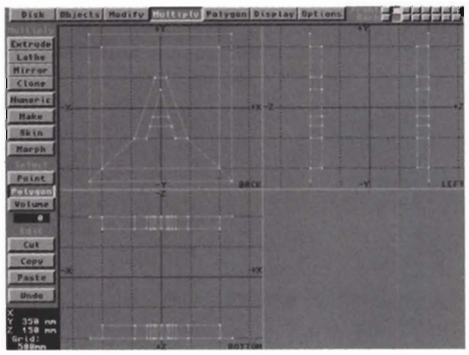

Figure 7

News and Views

On the news front: Rumors are flying hot and heavy about the next release of LightWave. As of this writing, the story goes that LightWave Professional will be released with a hefty price tag of its own to support all of the new features. It seems that Allen Hastings, the program's author, has taken it upon himself to knock out the big-and-still-growing SoftImage system. Still no certain release date in the rumor mills, but first or second quarter of 1993 seems a safe bet. To quote a very tiny line of print in an old NewTek ad, "If you want to Toast, you'd better get your bread ready."

On the "things-to-buy-since-I-had-to-take-back-half-the-stuff-I-got-for-Christmas" front: *StillStore* from Graphic Imaginations. This is a must have program for LightWave users with lots of images. A professional interface (for the most part) allows you the ability to JPEG-compress your images and still see them. You see, StillStore creates a tiny version of the image before it compresses. When you need an image, just click on the name and you'll see the little color preview. If you want to decompress it, just click on it. StillStore is really nice, and has made me a believer in JPEG compression. Plus, clients always think it's really cool to go through all of your textures. Figure 8 shows StillStore's main screen with three of the dozens of nice textures supplied with the package. It even has a database so you can keep track of the source of each image, artist, etc. I'm glad to see a package of this caliber appear on the VT platform.

Figure 8

If you have questions, comments, suggestions, or any other type of information you wish to share, or would like information about the Taming the Wave Training System, please write to me at:

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Contact Info:

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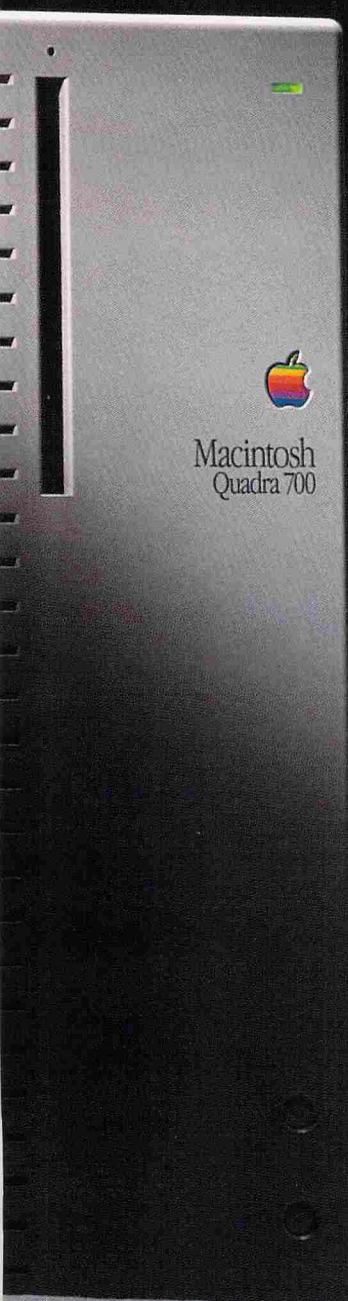

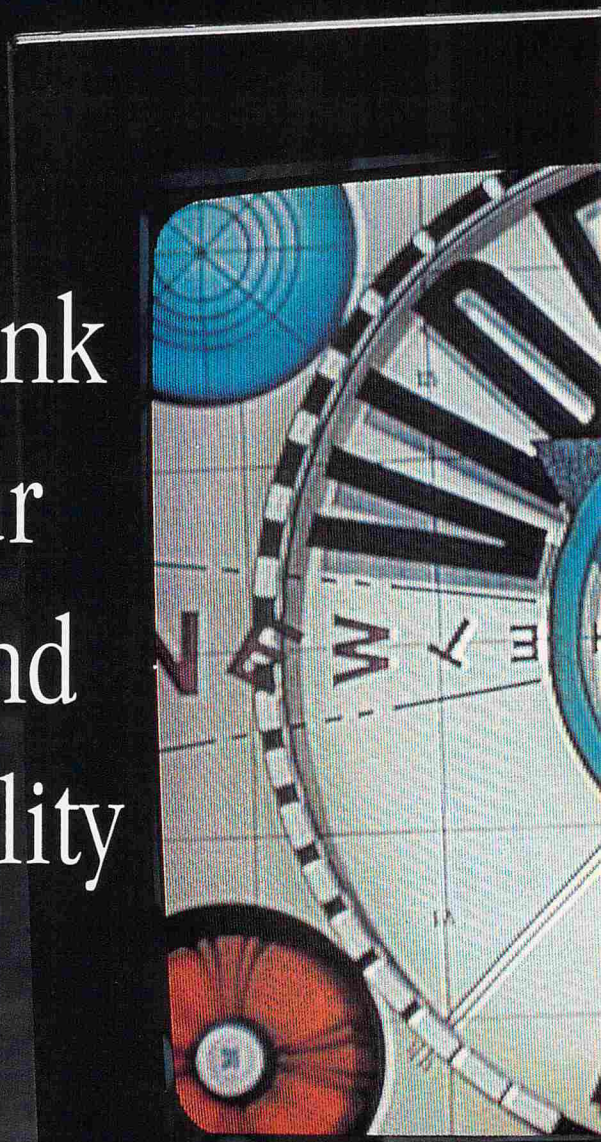

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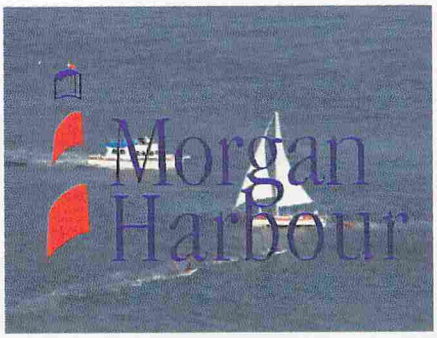

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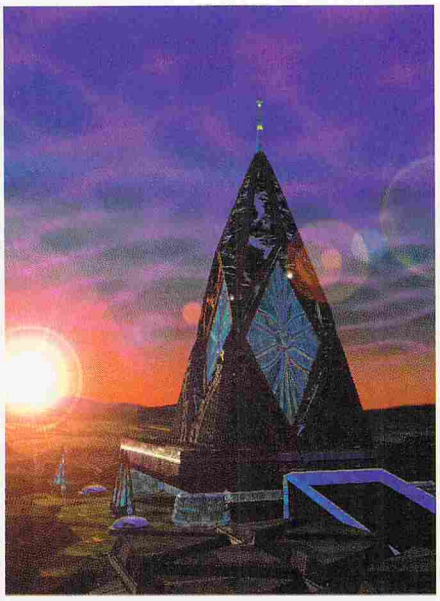

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Morgan
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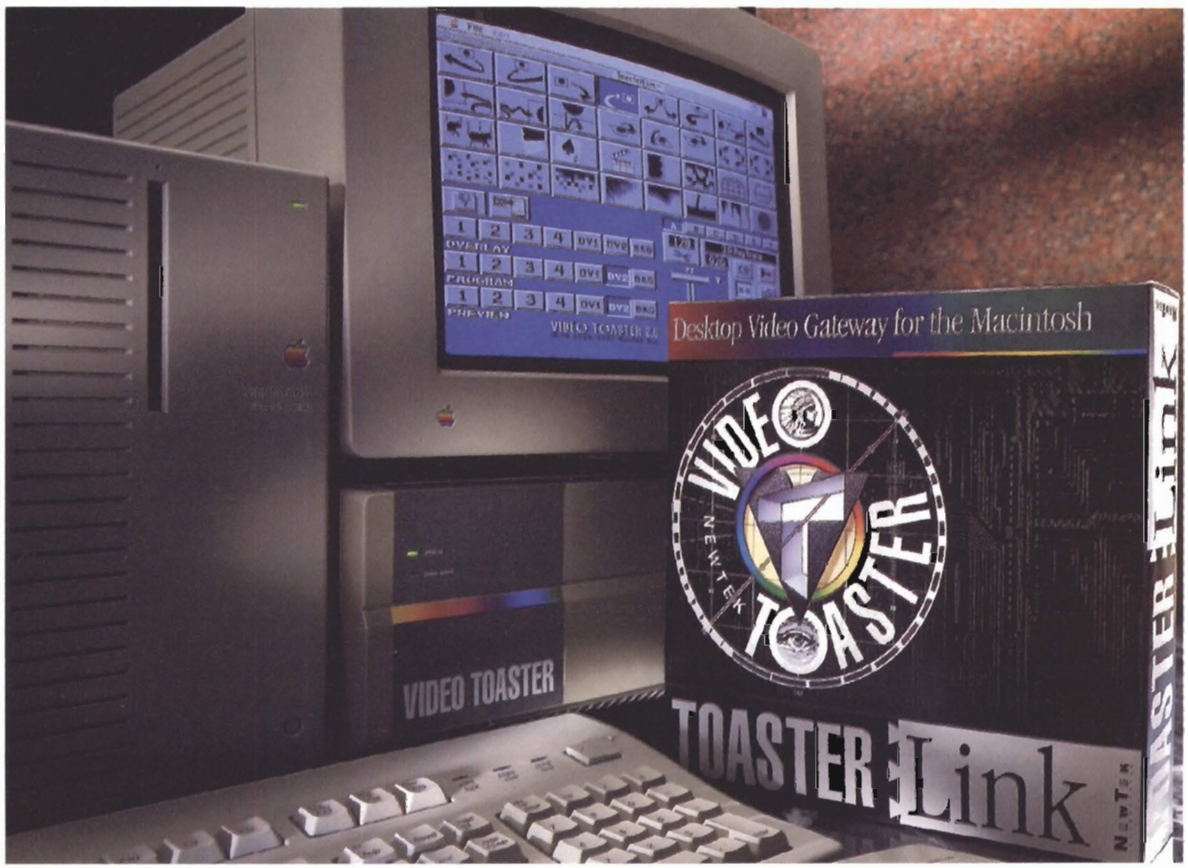

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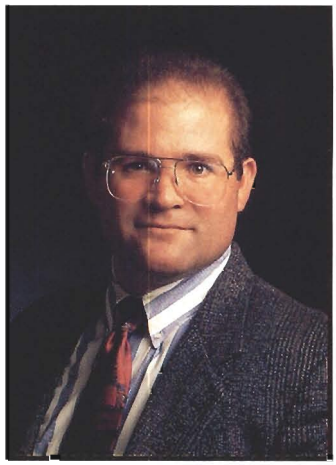
SLICES

By James Hebert



Last month we initiated a discussion of the Video Toaster's digital channel, which is employed by the Switcher for digital effects and framegrabbing. This month we focus on DV1 and DV2, the internal digital video sources called the framebuffers. They can be used for a great deal more than mere digital effects, however, as you'll soon see.

Before going further, let me review the digital channel as it was covered last issue. (This is an encapsulated reminder, the kind you see at the beginning of the second episode when your favorite television program runs a hot two-parter. If you recall none of this material, pick up the previous issue of VTU and read the Slices column. You may wish to reread it anyway, since familiarity with the framebuffers is paramount to mastering the Switcher.)

Remember, the Freeze button and the DV1 and DV2 buttons let you in on what's happening with the framebuffers.

- With the Freeze button pushed in, there is a freeze frame image in one (or both) of the buffers.
- With the Freeze button out, the buffers will act together—either both are in or both are out. If they're in, the buffers are processing live digital video. If they are out, the digital channel is available but not active.

You should also recall how to activate and deactivate the digital channel.

- Activate the digital channel by selecting a video source, unlocking the Freeze button (if necessary), and selecting DV1 or DV2 (also, if necessary). This causes the Toaster to process the incoming analog source as a digital source. A source button and both DV1 and DV2 will be pushed in on one bus.
- Deactivate the digital channel by selecting a new video source on the same bus, or reselecting the original one. This returns you to an analog signal.

You should know what it means to make a source digital, and understand why this should be done.

- Depending on the digital video effect you wish to engage, either the program source or the preview source should be made digital prior to the effect. The most obvious consequence of ignoring the location of the digital channel is the stutter or jump on the program output when the effect is triggered. This can be eliminated with proper setup of the Switcher.

One of the digital channel's unique features is the 1/15th-of-a-second digital delay in the signal that it processes. I call this a feature because a delay is inherent when digitizing a signal—it cannot be avoided—and you can take advantage of this delay. I had you demonstrate the presence of the delay to yourself last issue by making a source digital, and performing a half-wipe between the analog source and its digital counterpart. If you used a video camera aimed at yourself, you saw that half of the screen waved when you waved, and the other half waved just a little bit later. If you moved your hand quickly, or jerked it back and forth, you definitely saw the delay.

This allows you to create some terrific effects. For example, in the default System 2.0 project, the same half-wipe between an analog source and its digital version is highly effective with effects like A36 Shatter, C26 Diamonds, E32 Explode, E42 Weave, E46 Spiral, and a host of others. Follow the steps below and you'll see what I mean.

Set up the digital channel now. On both the Preview and Program rows, select an analog input to which you have video connected. If the Freeze button is pressed in, click on it once to release it. Now click on either DV1 or DV2 on the Preview row. You should have the analog source depressed on Program, and the analog source button along with DV1 and DV2 depressed on Preview. Select Effect C26; Diamonds. Hold down the right mouse button and manually drag downward until the effect is roughly half-finished. To help with setting up the effect, check your RGB monitor. You should be able to discern a faint diamond pattern. It's particularly effective to maneuver the transition until the diamond tips touch.

Take a look at your Program monitor now. You should be seeing the video as if viewing it through a glass window made up of tiled, leaded-glass diamond shapes. It's a pleasantly appealing effect when there is a great deal of camera movement. The entire scene shifts and provides a lot of interesting movement for the eye. And it works extremely well with many of the Toaster's animated or organic effects.

While playing around in the studio with this trick, I came across one possible drawback: how do I bring this effect on screen without simply cutting to the effect already in progess? Was there no way to bring the effect on while the video was rolling? Since the Toaster is in mid-transition, it would be difficult to use *another* transition to show this *unless you use the one Switcher effect that can be combined with others*: Smooth Fade. Smooth Fade performs a dis-

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solve between sources, and can be used in tandem with the majority of Switcher effects. The trick, which is, I admit, not easy to do, and which will require practice on your part, is to set up the effect, then use the keyboard controls to select the Smooth Fade effect while the Toaster's main display is invisible. At that point, moving the mouse with the right mouse button held down will dissolve the half-finished digital effect on and off.

OK, James, put down that holiday nog and explain that to us *again*.

After you have set up the Switcher, positioned the half-finished wipe as you like it, and you can see the digital delay, let go of the mouse. *On the numeric keypad*, press the) key—this is the right parenthesis key. *On the main keyboard*, press Shift-A. *On the numeric keypad*, press 4 followed by 8, then Enter. (Make certain you press the correct keys, otherwise this will not work.) The parenthesis key activates the Select Effects mode, A48 selects the Smooth Fade effect on bank A, and Enter confirms your choice of this effect. So far, this activity has done nothing to change the program output, which is still displaying the half-analog, half-digital video.

At this point, grab your mouse, press and hold the right button, and drag the mouse. The Program output will change as you drag. You'll be able to dissolve the delayed digital source on and off screen, providing you with a way to bring the digital delay effect into your video productions cleanly and smoothly. Note that if there is very little movement in the scene, you may have a harder time viewing the delay effect. I recommend practicing this with some sports footage, or maybe some video from the time your baby got hold of the camcorder and went downstairs with it. (Don't laugh, I've *seen* such footage. Oh yeah, the baby was fine afterward, but the camera, however...)

Assuming you are the daring sort and intend to use this effect while producing live video, here's a word of advice: *Make a note of the effect number you used to set up the original half-finished wipe.* You'll want to remember it so that you can get back out of the Smooth Fade mode and return to the whatever-effect-it-was mode (in order to return to the Switcher screen itself and continue switching normally). You'll need to use the keyboard to reselect the original effect. Only then can you complete the transition and only then can you get back to the Switcher screen. If this seems difficult to fathom, try the effects out on your system and you'll understand. In a sense, you're layering effects, and you need to return layer by layer to regain your point of origin.

Food for thought: Using some of the Toaster effects, or perhaps one of your own design via a third-party effects designer (either Toaster Toolkit or ToasterVision), you could recreate your own "protected interview source" effect. It's popular with television news, even more so with late-night "reality" programs where camera crews accompany undercover law enforcement personnel on raids. There is always someone in the footage who should not be identified, so the post-production crew places a roving digital effect over his face or eyes.

If you have A/B-roll capability, one quick way to recreate this effect within the Video Toaster is to run your original footage through the Toaster with Effect F22, Mosaic Out, half-on (or half-transitioned), and record it onto a second tape. Synchronize both tapes and run them through a pair of the Toaster's inputs. Set up the digital delay on one input, and run the analog signal through another. Use a positioner effect such as D17, Pos Wipe In, to place a box over the subject's face. The digital signal will show through the box, partially in mosaic.

If you use a mixer such as Panasonic's AVE-5 unit, which can do such imaging effects on its output, you don't need to run the video through the Toaster the first time. Simply send one video output from the playback VCR directly to the Toaster, and another through the AVE-5 and then to the Toaster. With the original video on input 1 and the processed video on input 2, you can achieve the same look. The AVE-5 does the work of processing one output while passing the other, and since it is the same original source, they'll remain in sync. It's a neat trick.

As many have found, creative time spent with the Toaster yields many new discoveries. It's not just a basic video tool; it's much more than that. If you need a real break, and can take yours home sometime, invite your friends (or kids) in and you'll spend hours having a laugh riot with eight-field frame grabs, and ToasterPaint texture mapping of frame grabbed images. You'll be able to alter people's head size, change their hair, tweak their skin color, point their ears, and mix-and-match facial attributes. Hey—if you can't have fun with your tools, let your tools have some fun with you. In the process you'll find new tricks of your own. I promise.

Next issue: Freezing video in the framebuffers—perfect grabs every time.

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Dr. VIDEO

By Rick Lehtinen

Last month, the doctor promised an antidote for a condition known as ground loop.

Ground loop, *n.* 1. A mystical, often mythical problem some bench technicians use to explain what is wrong when they can't figure out what is really the matter. 2. A serious, sometimes dangerous occurrence encountered when operating equipment together that is powered from different outlets of power circuits.

As more Toaster owners use their equipment for live work in sites such as concert halls, discos and athletic events, they will surely run into this problem more often.

Ground loops typically occur when users power interconnected video equipment from more than one AC source (i.e. from outlets in different buildings or which are fed from different electrical services). According to the electrical code, all outlets are supposed to be grounded. This is the purpose of the funny U-shaped third prong on most electrical plugs. It is called the ground wire.

In theory, grounds are supposed to function like vacuum cleaners for electricity, sucking up any stray voltage that occurs due to capacitor leakage, component failure, or in the worst case, catastrophic and hazardous short circuits. Unfortunately, in the real world these grounds are not always present. Or they may have once existed, but have since deteriorated somewhat in their ability to conduct away unwanted currents. The result is that stray voltages often lurk around AC outlets. These voltages may be higher or lower, depending on the quality of the ground system.

This becomes a problem for video users when equipment is connected to electrical outlets with different enough ground potential that it causes current flows between the devices along the shields of the coaxial cables or the drains of audio cables. Remember that the video signal is electrically tiny; one volt or less. The hum of a ground loop can easily be several times this. I have personally seen differences in ground potential which were large enough to draw a large arc.

A simple cure is to do what you can to keep all the equipment fed from the same AC source, or at least from outlets that feed from the same side of the electrical breaker box. This may mean running extension cords to remote cameras.

The most notable ground loop story I ever heard was from a former network engineer who once had to work an extremely long shift in a remote production trailer behind a major sports complex. Nature called. It was cold and snowing when he got out of the truck, and he'd forgotten his gloves and jacket. (Every time you open the door on one of these trucks, it freezes the other occupants, all of whom are your bosses. If you like your job, you hold your water.) Instead of making the long trek into the stands to find a restroom, he figured he'd just tinkle out back, and let the elements cover his tracks. He thought this was a good plan until his effluent stream came in contact with a neighboring trailer which was fed off a different circuit. He describes the incident from that moment in language too fierce for this column. He made no mention of how it affected the video.

Q: *When I edit tapes together, I sometimes like to adjust the video level control on my color corrector box so that all takes look the same, even if shot in different light. This means I have to shuttle back and forth between the two scenes I want to match. Isn't there a better way to set levels?*

K.L.

Phoenix, AZ

Is there any standard way to measure to measure video level as it comes out of my TBC?

M.K.

Mesa, AZ

Rx: Yes, there is a standard, effective way to measure video. Unfortunately, it requires some equipment and a little skill. The tool you are after is called a waveform monitor. Go into any major TV station or remote production vehicle and you'll see dozens of them.

Any time you have a control or device that manipulates the video signal, a waveform monitor and its companion tool, the vectorscope, are very handy to have. Unfortunately, this type of equipment is costly, and because their displays use an oscilloscope, they can also be hard to read.

At least three companies that are familiar with desktop video are now providing waveform monitors and vectorscopes that work with computers. Their products use a video screen or computer monitor for display (instead of the green phosphor oscilloscope tube).

This simplifies the solution to your problem. You just set up each scene so it reads correctly on the

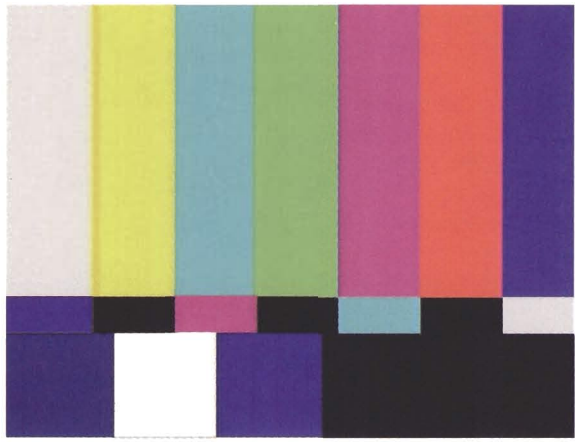
waveform monitor, and your probability of getting two shots to match is greatly improved.

Q: *I make funny TV commercials for a local used car dealer. At the station where we play them, they always demand that I put color bars at the start of every tape. I should think that a big operation should have all the color bars they need, instead of bugging me for them.*

P.H.
West Valley City, UT

RX: Whoa! You misunderstand what the bars are used for. Color bars are a standard video test signal. When a station receives a video tape, (or a satellite feed, or a video live shot from a news helicopter or remote truck) they always adjust the levels on their processing equipment to make the incoming bars look right. This allows them to quickly iron out any video level problems that might have occurred in recording or transit.

The assumption is that the sender lays down color bars and tone at the start of the tape or transmission, and then doesn't change any of the settings as the actual program is recorded. The receiving facility then sets up their equipment so that the color bars look good, and assumes that the rest of the program will then play back correctly.



A properly set up color bar display is shown to the right.

Q: *My monitors all have splotches of color on one side. It makes sort of a rainbow on the screen, but the tapes play back fine on a different system. What is wrong?*

O.S.
Salt Lake City, UT

RX: Splotchy colors on monitors are often a symptom of an internal misadjustment called color purity. Inside your monitor is a cathode ray tube, and around the neck of the tube is a series of magnets which are designed to keep the colors out of each other's way. Sometimes these magnets slip, and the colors get all confused in one part of the screen or another. The cure is to take the monitor to a competent repair technician, and have him check it out. The technician will feed the monitor a special test signal, and then re-adjust the magnets.

Do not try this yourself. Dangerous voltages lurk inside of monitors.

There are, however, two other possible cures for this malady. You can try these yourself first.

One of the easiest mistakes to make in putting together a desktop facility is to mount the loudspeakers close enough to the monitors that they make pretty rainbows in the video. This *faux* ChromaFX is deceiving, because it is only in the monitor, not in the video signal itself. In this case, the cure is to move the speaker.

Another potential cure is to degauss the monitor, described in a previous column. Just make sure you do it several yards away from your computer, or from any floppy disks you may have around. The degaussing tool may inadvertently erase them as well.

Q: *I was visiting a TV studio once, and one of the decks suddenly stopped playing back video. The screen went dark and wavy, and the audio started to sound "warbly," as if it were speeding up and slowing down. The operator called this engineer fellow, who lifted the cover off the deck, and stuck his finger in. In a second, the audio cleared up, and the picture sprang back. What did this person do? One of my VTRs is acting the same way.*

P.M.
San Jose, CA

RX: This is the sort of thing broadcast engineers do for a living. It's what makes them fun people to have around. Lest you suspect that they are all wizards, let me give my take on what you saw happening.

I'd bet that what you witnessed was called a *head clog*. Old oxide and other gunk from a videotape will sometimes shed. When it does, it may surround the tiny video head, effectively lifting it off the tape. When the video signal goes away, the deck's servos may get confused. This causes the audio wows.

Enter the finger. An old trick is to lightly hold your finger behind the tape, and ever so lightly press the moving tape into the head drum. The increased friction wipes away the offending goo, and the video signal returns. Only do this in extreme emergencies, because if you use too much pressure, you can mortally wound the deck. In this case, the engineer knew he was going to have to fix it later anyway, so by saving the day with a quick fix, he kept everybody happy.

If you could have hung around, you would have seen the engineer try these solutions: throw the offending tape into the trash, unless he was sure it was not the source of the gunk; carefully clean the tape path with a tape cleaning stick and approved chemicals; and examine the teeny head tip with a magnifier to check for a jagged portion which might be causing the tape to shed. If the head is bad, he'd replace it.

You can do the same thing on your decks—if you are brave. If it happens on a camcorder, a quick and dirty fix is to fast play a tape for a few minutes and see if that clears it. A friend of mine who teaches camcorder repair warns that a camcorder should be disassembled only by an expert. They are tiny inside, and if you pinch a wire or crack a PC board getting it together again, you will create major problems for yourself.

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Q&A DEAR JOHN

By John Gross

I'm writing this column in an airplane seat flying back from Topeka, Kansas, where I was lucky enough to be able to attend NewTek's annual Xmas extravaganza. This year's theme was a kind of Addams family Halloween/Xmas gathering. In addition to the usual big-league guests that frequent NewTek parties (Joe Conti, Ron Thornton, Todd Rundgren, etc.), NewTek had invited a few special guests: James (Scotty) Doohan, Wil (Wesley Crusher) Wheaton, Carel (Lurch from *The Addams Family* movie) Struckyen and Al (Grandpa Munster) Lewis. One of the night's highlights was when NewTek's Donetta Colboch and I were showing off a Toaster to some guests and we got James Doohan and Wil Wheaton to let us beam them in and out using the transporter effect. I know they liked it!

On to this month's questions:

Q *We've been experiencing a problem with LightWave when animating moving objects right to left across the screen. Let's say we're doing something similar to the old Johnny Carson show opening sequence in which boxes seem to float across the screen from right to left. Framestores are mapped onto the boxes as planar-mapped textures. We have four seconds to move all the boxes across the screen, so we've set the frame count to 120. We create the animation, keeping all of the boxes' motion paths linear, so they flow in one streamless line. We preview it a few times using the wireframe preview, then render it to a hard drive to dump to videotape using AnimTo, part of our AmiLink Professional Edit Controlling Software.*

Here lies the problem: After dumping to tape, when the scene is viewed, the boxes tend to either jerk or "shimmy" across the screen to the point that whatever is mapped on the boxes is hard to see—it is as though they are out of focus. We contacted our Toaster dealer who gave it a try with the exact same results and they suggested we call NewTek's technical support on this. NewTek was most gracious with suggestions, but sorry to say, these were the results:

Lengthen the frame count: *We gave this a try, and while we got less shimmy, it was still out of focus and unusable. Another problem with this is that our animation has a set window of four seconds and no more. Lengthening the time it takes the boxes to move across the screen may lesson the incremental movement of the objects, but you're left with a longer animation than you need. Oh yes, and telling the AnimTo software to dump two frames for every one frame of animation just made it look that much jerkier.*

Lighten the framestores: *This was done in ToasterPaint to each mapped framestore. All this gave us was a lighter-looking shaking box moving across the screen.*

Add lights: *We used distant, point and spotlights on the boxes. Same results.*

The most distressing item about this is that we know LightWave can do this, as we've witnessed more involved motion paths on the Toaster demo tape. The other day, I tried something similar to this idea in LightWave with large white letters moving across the screen (four-second duration) and when I previewed it using Rend24, I got the same shimmy. What am I doing wrong and how do I get a smooth, even flow with objects/boxes?

Al Williamson
University of Florida
Institute of Food and Agricultural Sciences

A You are doing nothing wrong. I would be willing to bet that your floating boxes go by pretty close to the camera, however. Even though we are seeing 30 frames per second in video, the human eye can still discern between those individual images. While it's not quite as noticeable when the objects moving are at a distance from the camera, it is easy to see the "shimmering" you mention when the objects fill the screen.

Unfortunately, there is no easy way around it right now. If you get a chance to see some of the newest animations coming out of NewTek, however, you'll be pleased to see that it looks as if the problem has been taken care of. The animations (even when viewed closely) are *very* smooth and fluid. And if you pause the tape on an individual frame, you can see that there is motion in the frame. This indicates that the images are field-rendered, meaning that instead of 30 images per second, we are seeing 60 images per second! With this added speed, even extreme close-up motion should look great. Rumor has it that the new version

of LightWave (in the works) which incorporates this and many other great new features will be released sometime in 1993. Please don't call NewTek to find out when, however; they won't be able to tell you (believe me, I've tried).

Q *I've been seeing a lot of transparent "title" bars on TV lately. Is there any way to make these with the Toaster?*

Leo Stranson
Fiber Nerve Productions
via CompuServe

A There sure is. It's important to note how you wish to use these, however. If your goal is to have a transparent bar over a still image, ToasterPaint is your answer:

Simply load or create the bars where you want them. If it doesn't look right, click on Undo, change your slider values, then click on Redo.

It helps to give your transparent bars a little bit of three-dimensionality by first selecting Lighten mode and lightening the left and top sides of the box, then using Darken mode to darken its right and bottom sides.

If your goal is to have a transparent title bar over live video, it's a little more difficult to achieve. There are two ways I can think of to do this. The first is to capture all the frames of live video and use it as a background image sequence in LightWave. You can then easily create a semi-transparent box to place over it. This would look the best, but it's a time consuming procedure.

An easier way to put your box over live video would be to create just the box in ToasterPaint on a black background, import this image into CG to lay text over the box and then save it out as a framestore. Finally, you would key this entire image over your live video source (keying out black). Once the key is set up properly, you can click on the Smooth Fade crouton and fade out the key slightly. While this also fades the text out, it gives a pretty good approximation of what I've seen on TV.

Q *Help! I'm having difficulty in playing back frames in LightWave's Record mode. When I render the animation, my framestores are named 001.FS.jim, etc. When I attempt to play them back using the Play Frames button, I do what the 2.0 manual says, namely, delete the three numerical digits. The result is an "Unable to find frame or incorrect version" error. When I delete the three digits plus the .FS. and am left with only "jim" as the framestore name, it loads the first framestore as if everything's OK but then displays the error message again.*

Am I doing something wrong? How should I be playing back these rendered frames? They are rendered in Medium Res, with Save Frames as the directed output.

Any help would be greatly appreciated.
Jim Broek
Providence Video Productions
Escondido, CA

A When you are playing back frames, there are a few things you need to be aware of. The Scene panel's First Frame/Last Frame and Frame Step buttons all determine which frames will

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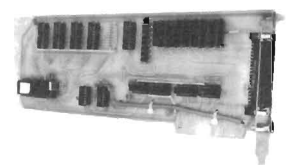

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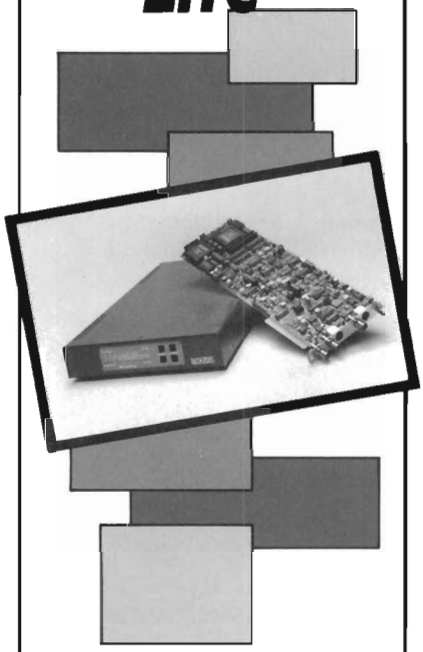

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be played back. Let's say you have a 200-frame animation rendered to the hard drive which you wish to play back. Leaving the First/Last/Frame Step buttons at their default values will allow you to only play back the first 30 frames (the default value for First Frame is 1, and for Last Frame is 30). Setting your first frame to 1 and your last frame to 200 will allow you to play back all frames. However, you still must go to the Record panel and tell LightWave which frames you wish to be played back. You are correct in removing the numerical digits and the ".FS." from the selected framestore name. In your case, all that should be left in the framestore comment field is "Jim." LightWave looks at the framestore comment and then tries to find all the frames that fit in the First Frame/Last Frame/Frame Step parameters.

If you originally rendered the frames with a frame step of 2, your frames will be named 001.FS.Jim, 003.FS.Jim, etc. (assuming you started at frame 1). Trying to play these back with the default frame step value of 1 will result in the first frame being shown and then LightWave, attempting to display a nonexistent frame number 2, will give you a "Frame not found or incorrect version" message.

If you are doing all of these steps correctly, I would recommend checking out the frame names to make sure they are labeled properly. If they are, try loading the problem frames individually to see if they have been corrupted. If they can't load, you have bad frames and you will need to re-render them.

Q *I want to create an old-time-film look on a video production I am working on. I like the Toaster's "old film" effect, but it's too "regular" (periodic) for me. It also doesn't give you the "flashing" look of old-time projectors. Do you have any suggestions?*

Rose Daniels
Rose Video
Los Angeles, CA

A Before the Toaster had the old-time-film effect, I was involved in a production where we needed to do this. Here's how we achieved a nice film look:

First, we went out and bought a roll of super 8 movie film (I have a Super 8 projector) and had it developed (no footage had been shot). We ended up with a blank reel of film. It was all white. Taking a razor blade, we ran the edge of the blade along the film. This provided great-looking scratches when we played the film back. Once the film had been scratched, we projected it onto a white wall and recorded it onto video. An added side effect of recording was that we were also able to record the sound of the projector for background noise.

> "Taking a razor blade, we ran the edge of the blade along the film."

Once we had enough video footage of "old film," we were ready to combine it with our video footage to make our old-time look. We ran the video footage through a TBC to strip the color out of it (ChromaFX would also have worked) and then dissolved in the video of the scratched film. This presented a minor problem because the combined look appeared too washed out—the white video with the black scratches was just too bright when merged with the black-and-white video footage. Enter ChromaFX. We took the scratched video, ran it through ChromaFX and reversed the black and white. We now ended up with black video with white scratches. Recording this to a work tape and dissolving it in with the other footage gave us just the look we were searching for.

Q *I once read somewhere that the size of an image used for image wrapping in LightWave is 1 meter by 1 meter by 1 meter. This doesn't make sense to me, especially since a Toaster image starts out at a non-square aspect ratio (752x480). Is there really such a thing as a standard size for images in LightWave?*

Angelo Ligliaroni
Garden City, NJ

A When using an image as a texture map in LightWave, you must size the image to fit the surface it is going to be wrapped upon. 1x1x1 just happen to be the default values for the image size. With LightWave 2.0 you can click on the Automatic Sizing button and the image size will be adjusted to fit the surface. If a surface measures 50 meters wide by 100 meters tall, sizing the image to fit will stretch the image in the Y dimension, so you may want to account for this stretch when you create the image.

As a side note, once the image is fitted to the surface, if you change the shape of the object during the scene, the image goes along for the ride. There's no need to change the image size to account for the new surface size.

John Gross is a freelance Toaster Graphic Artist working in L.A. He has been using the Video Toaster everyday since its introduction and is still trying to catch up on his sleep.

He can be reached by writing to him care of VTU or by E-Mail on Compuserve at 71740,2357 or on America Online as Bubastis.

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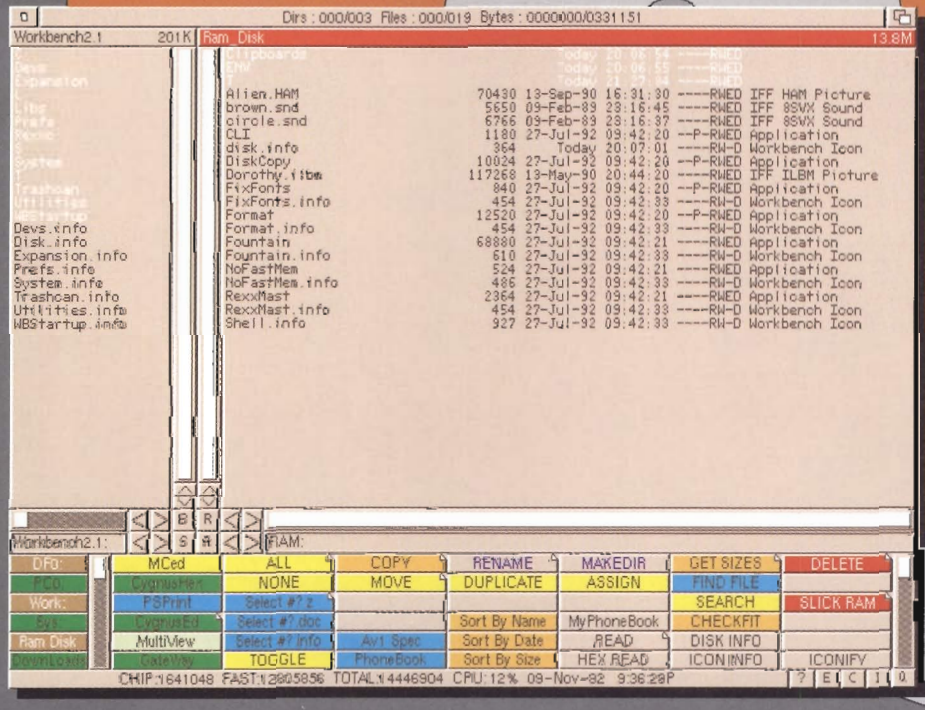

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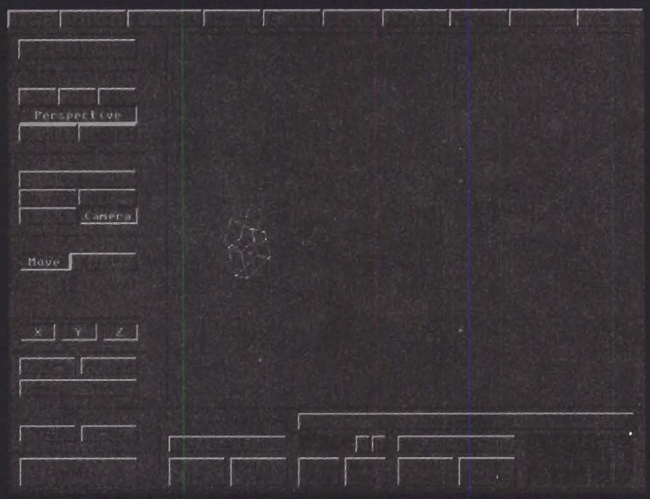
THE NEXT G

There's been a lot of talk going around lately about LightWave being used in various Hollywood productions. This is true, but it's not the LightWave you're familiar with. A new version of LightWave, currently in the works, is already being used by high-end professional artists and animators to create mind-blowing effects and animations.

Before you start trying to place your order, you should know a few things. You can't buy this new version of LightWave yet. It is still under development, and is currently in the testing stage. NewTek is allowing a few high-end users with demanding applications to test the new software. This arrangement is mutually beneficial, because the feedback from these users aids Allen Hastings and Stuart Ferguson, the programming geniuses behind LightWave and Modeler, in their continuing quest to improve these programs.

How much will this new LightWave cost? I'll tell you now so you don't have to search to the end of this article to find out—I don't know. No pricing from NewTek has been announced yet, but once you hear what's in store, you'll be willing to pay much more than you'll probably have to.

When is it going to ship? Again, I don't know. At this time new features are being added weekly (sometimes daily) and no shipping dates have been announced. As NewTek says, "It will ship when it's done." I hope you can take solace in the fact that the longer you have to wait, the better LightWave will be (I know, it's not much comfort).



LightWave Screen

This image shows visible motion paths and the spotlight cone angle display in Layout. All menus are shown across the top of the screen.

Remember, this is just a preview of some features that will probably be in the next versions of LightWave and Modeler. Any of these features may change, improve, or go away, and new features will certainly appear after I've written this.

With all that said, let's take a look at LightWave's next generation.

New Layout Look

The first change you notice is that everything is nicely combined into one screen. Gone is the screen full of buttons that you must access before going into Layout. The program starts in Layout, and all other panels are accessed by clicking on their buttons at the top of the Layout screen.

One of the hardest things to get used to in LightWave 2.0 was how items in the Layout screen moved strangely when the view direction was other than "straight ahead" (down the Z axis). Now, items move intuitively when viewed from any heading. This is one of those features that you can't imagine how you did without for so long.

This is incredibly useful when you wish to move the lights or the camera while looking through them. Yes, I did say them. There is now a new View mode - Light. It is incredibly easy to get perfect lighting angles the first time because you can see the scene from any light's point of view.

Chiaroscuro

Speaking of lights, there are some interesting changes to light sources. You have the ability to clone and name lights. Spotlight cone angles are now shown in Layout to aid in your aiming of the lights (see the illustration on this page, which also shows a visible motion path, another new feature). LightWave has incorporated the feature that I predict will be overused the most—lens flares. Lately, I've seen computer-generated commercials with impressive lens flares. These flares were painstakingly created, frame by frame, by hand in post production. With LightWave it's a lot easier—you click on the lens flare button for any light and make sure the light is visible in the camera view. LightWave can automatically generate perfect lens flares for you. You can adjust the intensity, the flare pattern, and whether lens reflections are generated or not. LightWave is even smart enough to get rid of the flare whenever the light source goes behind an object. As far as I know, LightWave is the first 3D program to incorporate computer-generated lens flare, and you can expect many programs to play copycat.

Besides lens flares, there is a major new feature in the Lights panel called shadow mapping. Shadow mapping gives you shadows (from spotlights only) without the need to ray trace them. They are generated quickly and you can adjust edge fuzziness. They are not as accurate as ray-traced shadows, however. For instance, a semi-transparent object shadow mapped will cast a solid shadow while the same object

AVE 3D: ENERATION

by John Gross

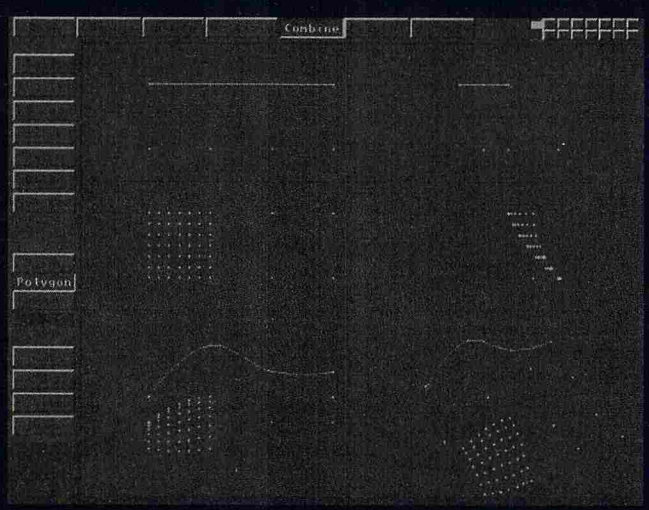
ray-traced casts semi-transparent shadows. For logos and solid objects, shadow mapping works well, at a small cost in rendering time.

Mapping and Morphing

New features in the Objects panel include the ability to clone multiple copies of an object and two new types of object mapping: Displacement and Clip. Displacement mapping is a wonderful tool that lets you deform an object with ripples and bumps by applying an image that actually transforms the object's shape. This, of course, can be animated over time. Displacement mapping is superior to bump mapping because bump mapping is only an apparent transformation of the object. Displacement mapping can produce actual waving flags, bumpy terrains or real waves.

In Clip mapping, an object and its shadow are transparent in the areas specified by the clip map. Clip mapping actually "carves" away part of an object. In transparency mapping, where the surface still exists although invisible, you can still see specular reflections on the invisible part. In Clip mapping, the invisible part is gone, and reflects no light. One of Clip mapping's main advantages is that it works with shadow mapping, and affects all of an object's surfaces with a single map.

The new Replace Object button lets you instantly replace one object with another. Now you can set up complex animations using primitive versions of your objects for faster response, then replace them with the more complicated final objects. It also lets you make a change to an object in Modeler, then replace it without having to clear and then reload it.



Modeler Screen

This screen shot depicts an array of eight splines with one spline selected with a spline patch in the corner. The new Combine menu shows many new commands.

If you like morphing, you'll be happy to hear that you'll be able to morph surfaces in the new LightWave. And creating morphing envelopes, or any envelopes for that matter, has been significantly improved. Envelopes can be created and manipulated interactively with the mouse. You'll also be able to offset envelopes or scale the frames to change the lengths of animations without having to delete and create new key frames.

There are a few new ways of wrapping images around surfaces. Cubic image mapping allows you take one image and wrap it around all sides of a cube. You do not need to have six separate surface names to get the same image map correctly on all sides.

Front projection mapping allows an image to be projected straight onto an object no matter what angle the object or camera is at. This is very useful for "keying" an image onto an object. The original application for which this mapping technique was developed provides a perfect example of its use. Imagine a sea monster poking up through a plane of water. If you use an image of a lake as the background image and as a front projection map on a plane positioned vertically in front of the sea monster's lower half, there will be a seamless lake in front of and behind the monster when it pokes its head up through the "water."

There is no limit as to how many points/polygons you can have in a scene except for the amount of memory in your system.

Looking at the Camera panel reveals LightWave's many new rendering options. Motion Blur, Particle Blur and Depth of Field effects are all possible with the new version. There is also a new antialiasing feature with adjustable antialiasing settings to smooth out any image. Basically, there will be little need to use High or Print resolutions anymore. A medium-resolution setting with low antialiasing will give you better-looking images than using Print Res in LightWave 2.0.

The Backdrop panel has been renamed Effects. Some of the new items here include a Solid Backdrop button with a separate color requester (instead of having to select Zenith Color Only) and alpha image composition. If you save an image as an alpha image, you will be able to use it to control foreground image transparency. Using the alpha channel is extremely useful for creating traveling mattes for keying logos and objects into.

There are also a number of interface changes that will make working with LightWave a lot easier. For example, certain buttons are ghosted until other buttons are activated. If you have a surface with 0% Specularity, for instance, the Glossiness settings are ghosted, because Glossiness has no effect unless some degree of Specu3larity is set. If you happen to click on a ghosted button, LightWave will inform you that you need to have another button selected first. This makes LightWave

These images, all rendered by LightWave 3D author Allen Hastings, demonstrate a number of new features in LightWave and Modeler. Allen also provided the written descriptions accompanying each image.

Amsterdam

This image was inspired by a collection of items that I brought back from Amsterdam on a recent trip. It demonstrates LightWave's new Depth of Field feature, which calculates the blurring that occurs in real photography when the lens aperture is opened up. In this case, the lens was focused on the near corner of the ten-guilder note, and objects closer or farther than that distance appear increasingly blurred.

Tunnel

Three new LightWave features are evident in this image. The camera was attached to the car, which is traveling at about 100 miles per hour, and Motion Blur was switched on, resulting in the streaking of road and tunnel wall details. The headlights and foglights were enhanced with the Lens Flare option. And finally, the shadows were computed by the new Shadow Mapping method, which can produce soft-edged shadows in far less time than with ray tracing.

friendlier to new users.

Along the same lines, when you access one of LightWave's control panels, the screen behind it becomes ghosted so it is easy to know which panel you are working in. There are also context-sensitive help screens with keyboard shortcuts, accessible by pressing the Help key.

Every data entry field with clickable up and down arrows for cycling through a list of choices (e.g. selecting a particular object or surface from all those loaded) has been replaced by mouse-activated pop-up menus. It is now incredibly easy to select one item from a long list.

One of LightWave's greatest new features is the ability to do character animation. Allen Hastings has developed a new method of "skeletal deformation" for bending and twisting objects in Layout without having to do any morphing whatsoever! If you saw the Discovery Channel's Invention piece on the Video Toaster recently, you'll be amazed to hear that the opening sequence with the dancing chrome toaster was done entirely with the new LightWave. If you didn't know it, you would think that some other high-end computer program was used.

If you think that there are many changes to LightWave, keep reading.

New Modeler

When you click on the Modeler button, the LightWave screen slides aside, revealing the Modeler screen. Stuart Ferguson has been hard at work implementing major changes in this software.

First, Modeler now supports ARexx. A Macro button in the Disk menu lets you activate custom ARexx macros from within the program. Macros can be created to do all sorts of things, such as automatic centering of objects, spelling out words from fonts directories, and creating all sorts of mathematically-defined objects.

Also supported are Adobe Type 1 PostScript fonts! Creating great-looking text is as easy as clicking on the text button, choosing your PostScript font and typing out the text. Since many companies use PostScript fonts for their logos and artwork, all you need to do to create quick 3D animations is to use the same font they do.

Some of the new modifying tools are: Jitter, which "roughs up" an object; Smooth, which does just the opposite by smoothing out a rough object; and Quantize, which transforms an object into cubic blocks.

Tired of modeling objects out of polygons? With the new Modeler, you'll be able to use splines (curves) instead. All you'll have to do is put a few points down, connect them into a spline and then lathe or extrude the spline and voila!—instant object. Splines allow you to create very smooth objects without having to add a lot of points around curves. You could make an S with four or five points connected into a spline curve.

Connecting three or four spline curves together creates a "spline patch," which is a kind of skin around the spline "cage," greatly easing the task of modeling objects such as faces and flowing curtains.

If you like splines, you'll love the new Boolean operators. The new Combine menu offers such tools as Drill, Core, Add, and Subtract, among others. These Boolean operations let allow you cut out parts of one object by using another object as a "cookie cutter." Or you can combine two objects together and cut out all of the overlapping parts.

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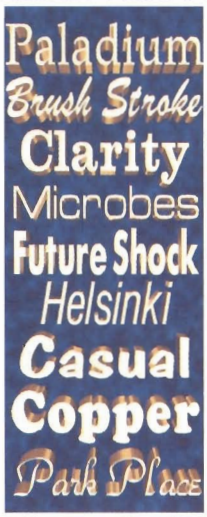

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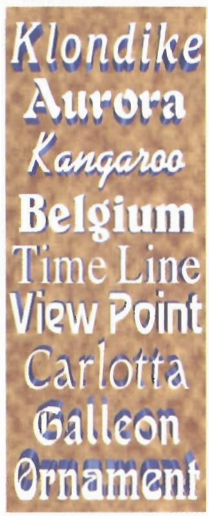

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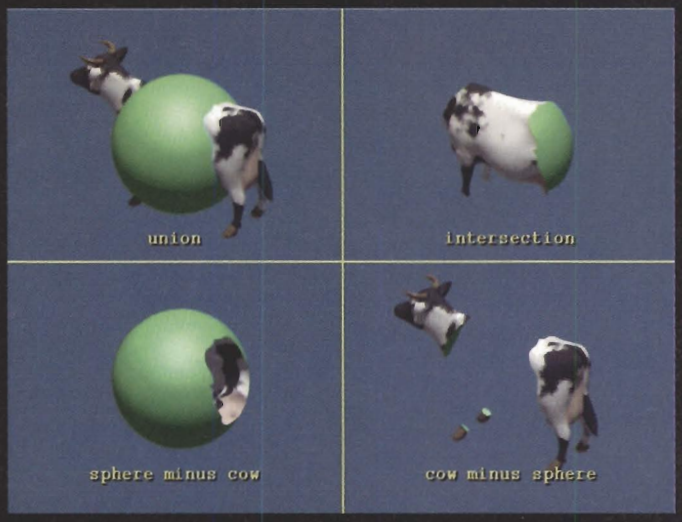
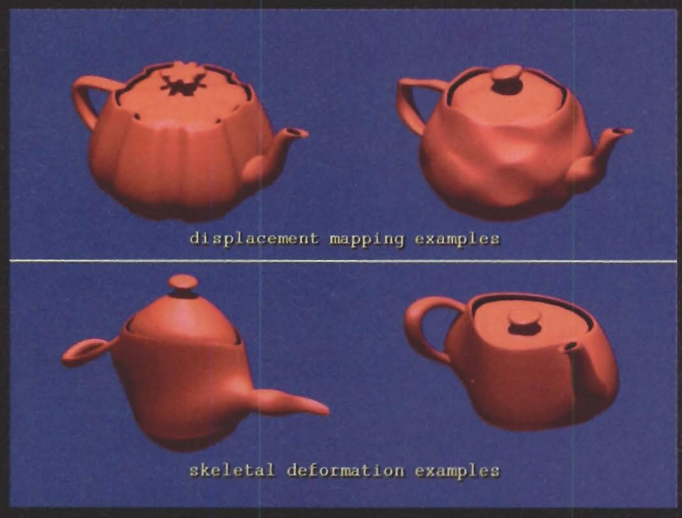


Boolean

This image shows four of the ways in which two objects can be combined using LightWave Modeler's new Constructive Solid Geometry (Boolean) features.



Deformation Chart

The familiar teapot object was given four different looks in this image, without requiring any modeling changes or morphing. The top two examples demonstrate image-based and procedural Displacement Mapping. To create the two lower examples, a skeleton was defined for the teapot. The bones of the skeleton were then moved, rotated, and scaled, causing the skin of the teapot to distort accordingly. Both of these new techniques can be animated over time, and the resulting shapes can be saved as new objects.

Rail Extrusion is another Combine menu option that will allow you to take an object, such as a flat disk, and extrude it along a spline curve (rail). You can also use more than one rail to stretch and deform your object as it is extruded along the path. This is a great way to make organic shapes and flared objects.

Under the new Polygon menu are some great new options. Bevel takes any object or portion of an object and bevels the polygons using adjustable bevel values. Using Modeler 2.0 to bevel polygons is tedious at best, but with the new version it is almost too easy.

The Subdivide button lets you divide triangular polygons into smaller polygons. There are two ways to subdivide; faceted and smooth. Faceted subdivision divides polygons but keeps them in the same plane as the original large polygon. Smooth subdivision also divides polygons, but the resulting polygons are slightly offset, making the new outline smoother. With Smooth Subdivision you could take the apple object and keep subdividing smoothly until the apple is extremely rounded and smooth.

Many of Modeler's "little" changes should help make your modeling life easier. The two requesters used to create and change surfaces have been combined into one so you can create and assign a surface all at once. If you've used Modeler 2.0 and have been frustrated by pressing the Return key to create a surface, only to find out that all you've managed to do is make the requester disappear, you'll be happy to learn that you'll can press Return and actually create and/or assign the surface all at the same time.

Modeler's requesters have been changed to match LightWave's, including the "pop-up" Surfaces requester. A large Display Options panel, accessible from a keyboard shortcut, lets you change your preview modes, turn off visibility of points, polygons, grid, and so on. You can also change grid zoom levels and select from three different types of grid-snap options.

Stuart Ferguson is giving us a brand new Modeler with so many new options and easier ways of doing things that it will make your head spin. As a matter of fact, clicking on the Help button reveals a Keyboard Shortcuts panel that just about fills the whole screen!

But wait—there's more!

Not only are the new LightWave and Modeler easier to use, they are much faster. This new version of LightWave is optimized for 68040 processor support. Currently, rendering math-intensive operations such as fractal noise or bumps really bogs down while using an '040. That's because the '040 lacks hardware support for some of the math operations included in the 68882 floating-point processor used with the 68030. That all will be changed with the next version. Here's an example of the speed difference: I loaded the Textures example scene and using LightWave 2.0, rendered it on a Progressive Peripherals '040 card (Amiga 2000). In High Resolution, the image took 47 minutes to render. Rendering the same scene with the new LightWave cut the rendering time down to a little under four minutes. And using High Resolution is probably overkill. The image would have looked better using a medium-res, low-antialias setting.

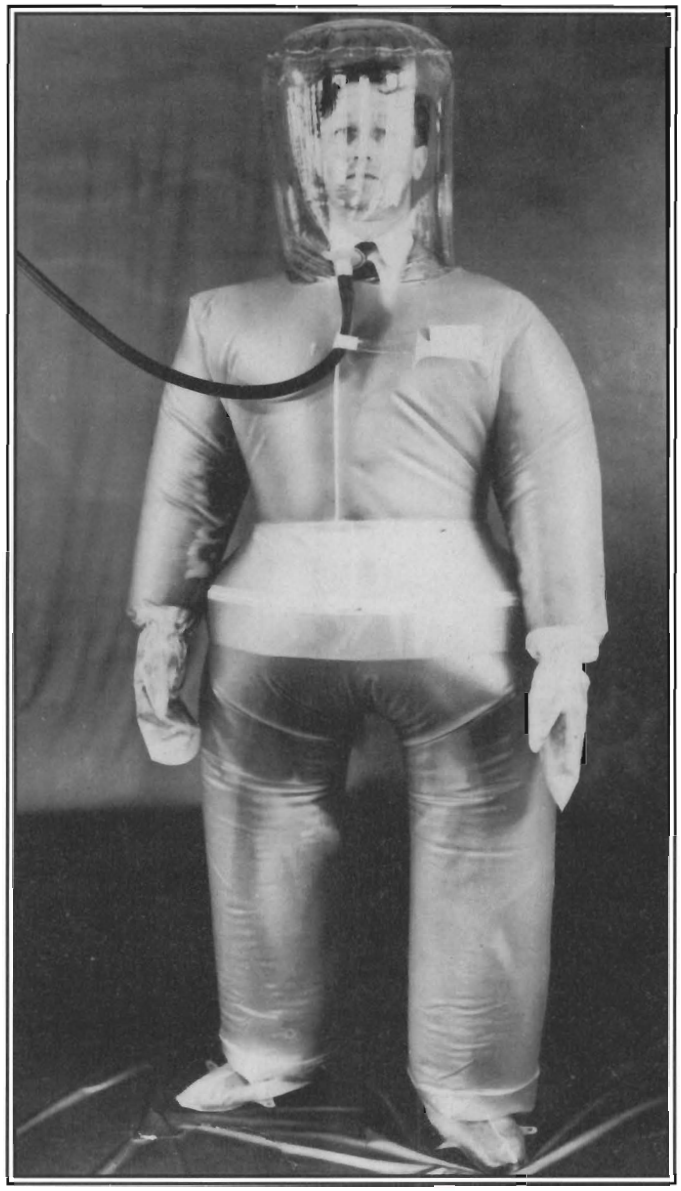
To sum up, among the features you can anticipate using once the new LightWave and Modeler ship are easier and faster methods for creating objects, much faster rendering times and greatly improved image quality within a given rendering time.

All of this is great for LightWave enthusiasts, but the people I believe will benefit most from the new versions are those who have been too busy or afraid to really get into LightWave. While new high-end features abound, the ease of use and interface improvements will allow people to quickly learn the software and generate great-looking images in no time.

And while it's hard, waiting will reward you with the same high-end features that Hollywood is using to change the way they make films. Now all you need is an agent.

John Gross is a Toaster graphic artist and trainer living and breathing in L.A. He is currently working on the new SeaQuest television series.

VTU



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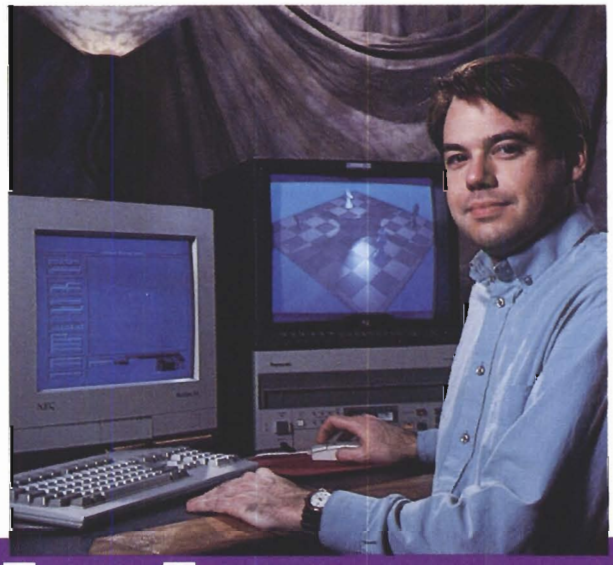

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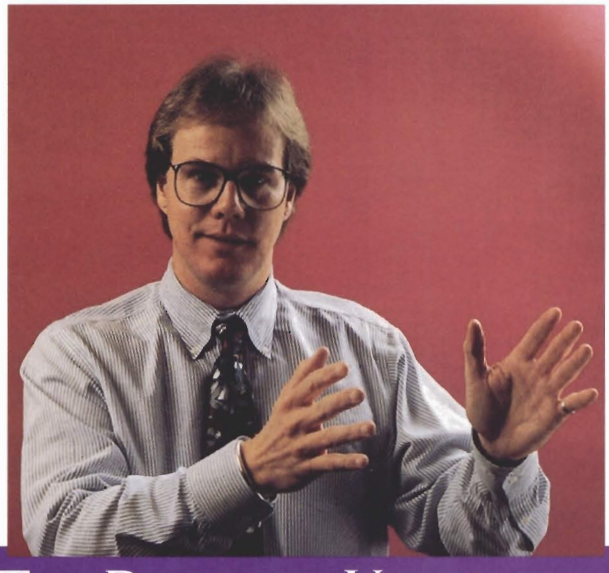

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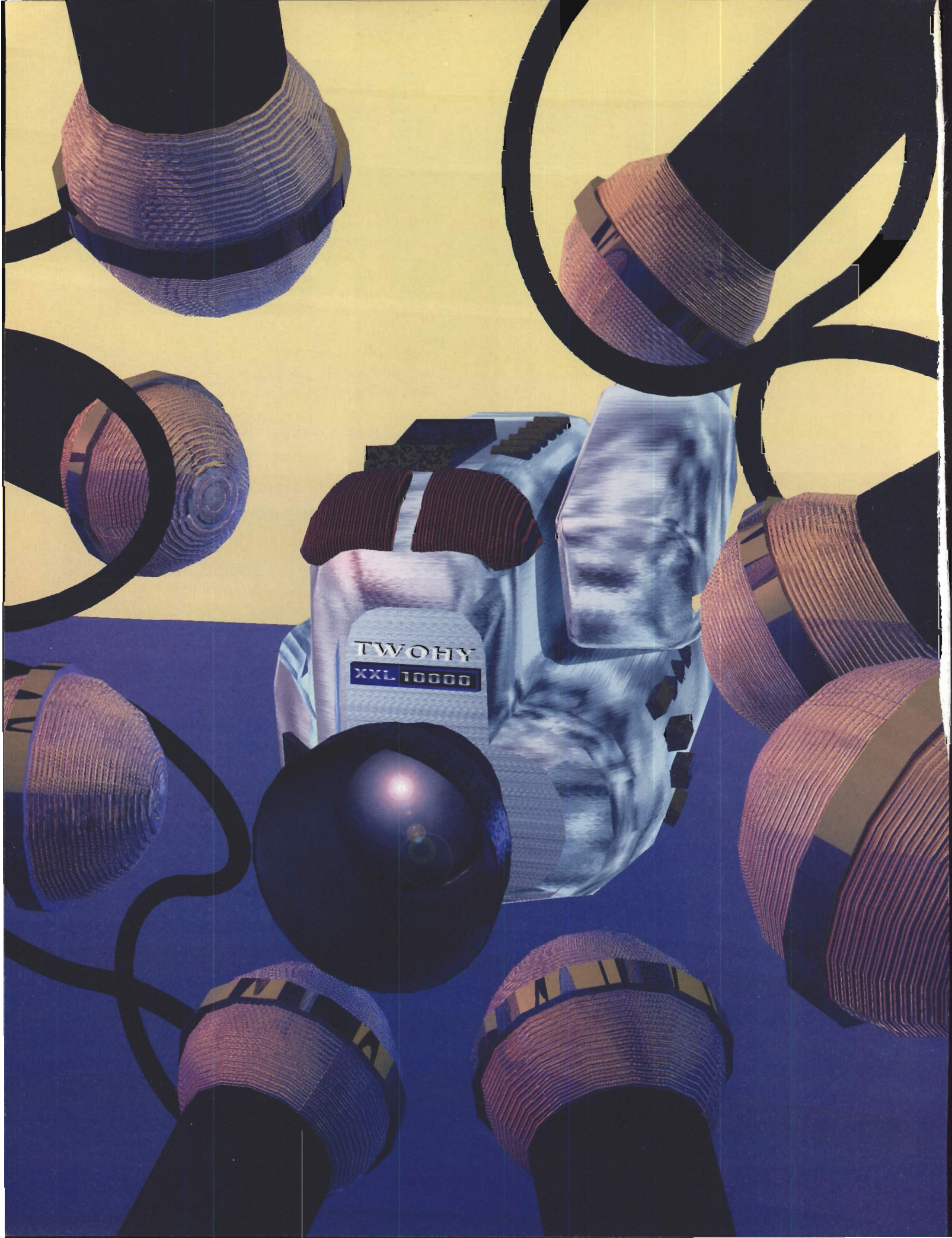
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AUDIO FOR VIDEO

By Frank Kelly

Fact: Good video with bad audio equals a bad video production. If your audio distracts the viewer's attention from the subject matter, it can sabotage your entire effort. Whether it's location audio or post production, audio for video isn't as easy as it might seem. There are literally hundreds of ways to do it wrong, and usually only one way of doing it right. I've been involved in professional audio production for 20 years, so I can help you avoid some mistakes, and I'll also pass along some great news about certain aspects of audio for video that have gotten much easier and less expensive recently. Your Amiga can be used to manipulate audio, create background music, and match audio to video. But before you get out your checkbook to buy any new goodies for your computer, let's cover some basics.

AUDIO FOR VIDEO

Microphones

Microphones fall into two essential types; condenser and dynamic. Condenser mics, which provide superior frequency response, are most suitable for recording musical instruments and other sound elements with a wide dynamic range. Condenser mics require power, supplied internally via battery or externally through the mic wiring. Dynamic mics do not require external power, and are usually more than adequate for documentary sound requirements. Within these two basic categories there are various microphones designed for many applications.

Patterns and Placement

Some professional microphones are available in a variety of sensitivity "patterns" such as unidirectional, omnidirectional, and cardiod. A unidirectional pattern mic records sound only from a specific direction, which is very useful for reducing background noise in vocal and sound effects recording. The unidirectional pattern is most often used in boom and camera-mounted shotgun microphones, because it can be "aimed" at the sound from a distance while staying out of camera frame.

An omnidirectional pattern mic is usually selected when the sound you are going to record is nearby, but may not stay in a tightly controlled area. This is one of the reasons lapel mics are omnidirectional. The omnidirectional pattern of the mic allows side-to-side head movement while speaking, without a perceptible change in recorded volume.

A cardiod or hypercardiod pattern mic is a hybrid of the omnidirectional and unidirectional varieties. It allows for specific directional performance in several directions simultaneously. The cardiod pattern is a favorite of studio recordists because it more accurately captures the dynamic performance of vocal and instrument sounds than other patterns.

Some microphones allow you to select different patterns with a switch on the microphone. Other models are designed with modules or different microphone capsules which can be changed in the field depending on the specific need.

Microphone placement and microphone patterns can be crucial to obtaining a quality audio recording. Think of your microphone as if it were a camera, and your sound a picture. Sometimes you want to take a "close-up" of a certain sound. Other times you will want a wide-angle shot of the sound picture. Your various microphone types and patterns are like specialized "lenses" to capture specific portions of your sound "picture."

On Location

Typically, location audio is needed when dialogue is spoken by talent on camera. You can use either a boom-style mic or one that's held or worn by the talent. Having two or more people on camera at the same time almost always necessitates use of a boom style mic. Conference meetings that take place in a central location such as a board room benefit from the use of a PZM, or table mic. News reporters generally use hand-held mics. Other occasions call for the use of a lapel mic, which can be wired or wireless (transmitter with receiver). Until a few years ago, transmitter mics were completely out of financial reach for most of us, costing thousands of dollars. Nowadays, FM transmitter/receiver sets cost under $50, but do not deliver the fidelity of VHF units. VHF systems are now available for less than $200, and have better clarity and interference rejection than their FM counterparts (See Achieving Maximum Wireless Mic Performance in this issue).

You should be aware that certain frequencies used by transmitter mics may also be used by radio-dispatched vehicles like taxis and repair service trucks. For this reason, manufacturers make multiple frequencies available. Before contemplating the purchase of one of these mic systems, it's a good idea to ask what frequencies are available for the mics they have in stock, then check local mobile phone licenses for any conflicts. FCC offices, located in most major metropolitan areas and state capitals, keep those records on file for such references.

"You might be surprised to learn just how much of the dialogue...in today's motion pictures came to the screen after being "looped."

Another important feature to look for in a transmitter/receiver is battery or AC operation in the receiver unit. While battery operation might seem to be an obvious feature to include, most pro models only come in AC versions, although some have terminals on the receiver for external DC power.

If you can afford to, it is usually a good idea to have two different transmitter/receiver sets, each tuned to a different VHF frequency. This lets you mic two people simultaneously. While working in a location where security services have VHF walkie talkies (such as large hotels and convention centers), you can switch to a different transmitter/receiver set if a conflict of frequencies occurs. Another option would be to use a boom mic setup, which eliminates radio-frequency conflicts, but requires an extra person to operate. Boom mic setups are still relatively expensive, and are only appropriate for shots in which your camera is relatively close to the subject. You can expect to pay upwards of $500 for a modestly priced unidirectional shotgun mic with fishpole and windsock.

When recording for film, audio is captured with a portable audio recorder (either reel-to-reel or DAT), then transferred after the fact when the appropriate "takes" are selected by the director. There are often multiple mics, which require the use of a portable mixing console. When recording video, you have the ability to record synchronous audio directly to the audio tracks of the videotape. Recording quality is further enhanced by the wide availability of hi-fi stereo audio, eliminating tape hiss. Many high-end consumer camcorders even have on-board mic mixers.

When recording on location you have to contend with background sounds which may be totally inappropriate for the scene being shot. Here's a case when post production saves the day. Soundtrack "looping" is a process in which the actors are brought back after scenes are edited, and re-record their dialogue on a soundstage while viewing the footage. After this is done, sound effects experts create "ambient" sound and other incidental sound effects such as footsteps etc., to the director's specifications. These sound gurus are called as "Foley" technicians. A Foley technician uses various materials such as boxes of gravel to simulate footsteps, large melons to create punching sounds, any number of household items that can be used to create various sounds. With the use of keyboards and samplers, sound effects can be manipulated with amazing results. You might be surprised to learn just how much of the dialogue you see in today's motion pictures came to the screen after being "looped." Without the Foley effects, the overdubbing of the dialogue would be painfully obvious.

Today's relatively inexpensive technology lets you use some of the same techniques moviemakers do, but on a shoestring budget. One of the first things a good sound person does when on location is to record a few minutes of "ambient" sound. This is the sound of the scene without the actors, and can include passing vehicles, background conversation and/or music, and so on. The ambient track can be used to cover "looping" edits, cutaways from different camera angles, and replacement footage that is used to extend edit sequences while maintaining continuity with the opening shot.

Record your ambient sound on a separate tape. This lets you "mix" it in more easily when in post production. At the beginning of your segment say the date, location, and scene into the microphone. This audio "slate" is a useful marker that can used to identify segments in later editing sessions. If you use your camcorder's built-in mic to record ambient sound, be sure to disable the autofocus function to prevent zoom motor noise as the camera tries to refocus on passersby. If using an external mic, place it in the same area in which the action in your scene will take place. Once you have recorded enough ambient sound to exceed the length of your intended scene, remove the tape and record your acquisition footage on another tape.

In the Studio

A studio environment is usually required when recording narration for video. Most recording studios have a variety of mics on hand, changing them for appropriate use. Vocalists use a condenser or dynamic microphone designed especially for voice recording. These mics can be very expensive, and to be quite honest, somewhat esoteric. Even though I own several myself, I cannot hear any substantial difference in

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SONY
V0-9600, VO-9800, VO-9850, EVO-9800, EVO-9850, BVH-200, 200PM, 2180, 2180PM, 2500, 2700, 2800, 2830 3000, 3100, 2000PS, 2180PS, 2500PS, 2830PS BVU-800, 920, 850, 870, 900, 920, 950, BVW-10, 15, 35, 40, 60, 65, 70, 75, VP-7000, 7020, 7030, 9000, LVR-3000, 4000, 5000, 6000, LVA 7000, 8000, PCM 7030, CVD-1000, DVR-1000, C-10, 20, 28, PVW-2800, PVW-2600 VO-7600, 7630, HDDF-500, HDV-1000, HDD-1000, VISCA

JVC
HR-S622U, S822U, S525U, BR-S605U, S811U, S611U, S810U, S610U, 8600U, 6400U, KR-M800U, 820U, M860U, PR-900U, 600U, CR-850U 600U, 8200, 6600, DS-DT900,

ABEKAS
A-53, A-60, A-62, A-64, A-66

PINNACLE
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ACCOM
RTD-4224

AMPEX
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vocal recordings made with mics that cost less than a tenth as much. If you are on a budget and need to purchase a single mic for narration, I suggest you look into a lapel condenser that can also double as a location mic. If you need to record multiple voices simultaneously, you will find it easier to control recording levels with multiple directional mics and a mixer. If you are installing a sound booth, or have an isolated area where you can record vocal narration, you might benefit from one of the many mics used by broadcasters for voice work. Expect to spend from $250 to $1200.

Mixing It All Together

Using an audio mixer, you can add elements not present at the original event to an audio soundtrack. Additional music, narration, sound effects, and ambient audio can all work together to enhance your finished product. Typically, your audio mixer would be connected to the source VTR's audio out channels as well as any other available audio sources, such as a CD player, tape deck, keyboard, drum machine, and so on. Don't forget your Amiga's audio output! Programs such as SuperJAM! can provide instant soundtracks (See the Blue Ribbon Soundworks article in this issue).

Some pro video decks have three-pin XLR-balanced audio input and output connectors, which differ in signicant ways from the RCA connectors used on consumer equipment. Although you can cross-connect two of the three pins and splice a consumer RCA connector, it is important to realize that the sound levels for balanced audio are different from consumer audio. Your audio mixer may have XLR inputs for microphones but those inputs may not be the correct matching impedence for your VTR. Lo-Z/Hi-Z matching transformers, available at your local electronics store, might work to make the levels somewhat acceptable, but there may be some loss in fidelity. If you are not inclined to build your own specific matching connectors, you can purchase a "matchbox," available from broadcast supply sources such as Allied Broadcast (800-622-0022). While some mixers have both balanced and unbalanced inputs and outputs, they cost more, but can be a worthy investment in the long term.

Do You Hear What They Hear?

Although some late-model TVs have great sound, most do not, so you can't assume that your general-distribution video product will be heard on a state-of-the-art audio system. The finished video is usually heard over the relatively small speaker of a standard television set. TV speakers are very efficient at reproducing midrange frequencies in order to make speech intellegible at low volumes. This emphasis on midrange frequencies results in music that "gets lost" when there is voice mixed with music, unless the "mix" is adjusted accordingly. If you use anything other than your TV's built-in speaker to monitor your audio while mixing, you must be careful.

If you feel the need to use an amplified system for monitoring your sound while recording or mixing, you should get an appropriate combination of speaker and amp. When you select components for audio-for-video use, there are some important things to keep in mind. Contrary to what you might think, bigger is not better—larger speakers and amps aren't necessarily more accurate than smaller ones. A 100-watt amp is designed to drive the large magnets in big speakers, which are designed to emphasize bass over midrange for a more pleasing overall sound. A system such as this would be appropriate for a large listening area where bass frequencies tend to be absorbed by carpet and furnishings.

Unless your edit system is located in your living room, this kind of system is not going to perform accurately for your needs. Record producer Quincy Jones used to bring a pair of car stereo speakers mounted in a shoebox to recording sessions for his "final mix." These gave him a better idea of how his recordings would actually sound over the radio. He later helped to design a "near field" speaker system, now marketed under the name "Auratone," which can now be found in nearly every professional recording studio in the world. A near field monitor is usually a small midrange speaker mounted in a box-like enclosure. Because it is a small speaker, it doesn't require a powerful amp to drive it accurately at low volumes. An amp with 25 to 40 watts is more than adequate.

"If you use anything other than your TV's built-in speaker to monitor your audio while mixing, you must be careful."

If your speakers and amp are properly matched, you shouldn't need to adjust the equalization to obtain a nearly "flat" frequency response. If you need to use a larger component system, there are ways to "pre-equalize" your amp and speakers. You can make the appropriate adjustments with a multiband graphic equalizer, pink noise generator, sound analyzer, and flat-frequency mic, but volume settings are critical. Hi-fi shops and some studio designers offer a service for this adjustment. A few brands of equalizers come with the pink noise generator, analyzer, and flat-frequency mic, allowing you to make the adjustment yourself.

Amiga Goodies For Audio!

First on my list of treats for the for the Amiga is a humble little shareware program called Bars N' Tone, written by Mike Berro. This program can generate a one-kilohertz reference tone from the Amiga's audio output, while simultaneously creating split field color bars from the RGB output. When this image is encoded by a genlock, the values are remarkably close to bradcast reference standards. Since Toaster already has a crouton for split field bars, you probably wouldn't use this utility for the video reference. However, the one-kilohertz tone generator is worth the meager shareware price to have on hand. You can find Bars N' Tone posted on most major BBS services such as Genie and CompuServe.

The importance of using proper reference tones along with color bars at the beginning of your video master becomes readily apparent when sending your materials to broadcasters, post production facilities, or duplication houses. The industry "standard" reference protocol requires 30 seconds of color bars with a simultaneous one-kilohertz audio tone with the level set to the 0 dB mark on your audio meter, followed by 30 seconds of 7.5 IRE black.

Some of the latest developments in Amiga software and hardware can be very useful in audio for video. The most dramatic of these is the AD516 from Sunrize Industries. This hardware/software combination allows your Amiga to record and play 16-bit audio from the hard disk. This unit also has some special features that support SMPTE time code; in fact, you can even use it to create time code window dubs (seeing the time code in the video frame, superimposed over the image). See Jaxon Crow's review of the AD516 in this issue for more details.

As mentioned, Blue Ribbon's SuperJAM! allows you to create musical backgrounds with ease. This and other software packages allow the Amiga, through MIDI, to control a wide range of keyboards, samplers, and sound modules. Blue Ribbon's latest product, The One Stop Music Shop, is a plug-in sound module on a card. This unit offers 16-bit linear sounds based on the E-Mu Proteus, and is also covered in the Blue Ribbon article in this issue. These options will open a whole new world of possibilities for those who are musically inclined. For those who are not so inclined, there are pre-recorded music libraries that are designed especially for A/V production use.

TANSTAAFL

When incorporating prerecorded music in video, it is important to note that performance rights must be secured before you may legally use the music in your production. Use fees for popular music currently available at your local music store are astronomical. The fines imposed under current copyright laws are even more expensive. There are, however, several companies that provide music specifically designed and licensed for broadcast and non-commercial use. Generally these libraries fall into two categories; "Per Production Use" and "Buy Out." With Per Production Use music, a fee is charged every time a particular theme or portion thereof is used. This used to be called a "needle drop" fee. The cost of Per Use music varies greatly, depending on whether the production is to be broadcast, sold as a retail product, or duplicated in large numbers. Buy Out music, as the name implies, is purchased outright, without further payment for future use. There are many different musical styles, most are available in alternate mixes and lengths. The following is a partial list of sources for music libraries:

Network Production Music:
Per Use/Blanket License
(800) 854-2075

Associated Production Music:
Per Use/Blanket License
(213) 461-3211
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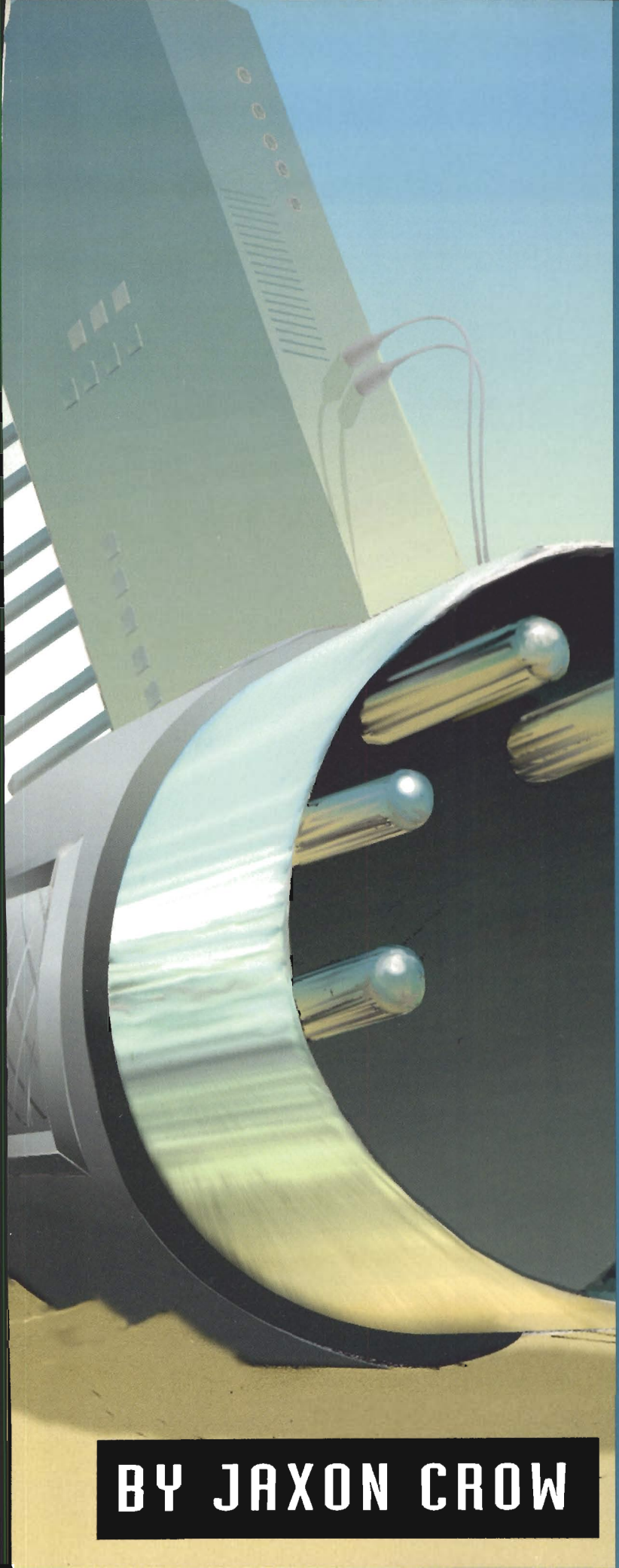


MIDI and the AMIGA

BY JAXON CROW

Among new studio tools available for audio and video producers, the machine that perhaps holds the greatest promise is the computer of choice for independent video professionals—Commodore's Amiga. Its recent popularity, due to the Video Toaster, makes it the logical first choice for many modern video studios. And its multitasking operating system and internal sound capabilities make the Amiga an ideal platform for a MIDI music system. With the addition of some MIDI software, and peripherals such as a MIDI/SMPTE interface, a sound sampler, and/or a sound card, the Amiga can be the center of a professional quality audio production system. Many popular Amiga software packages are particularly useful for scoring and sound editing for video. Algorithmic composition programs such as *Video Music Box*, *M*, *SuperJam!* and *Music Mouse* allow even novices to produce some truly amazing music from the very first try. All of these programs work with the Amiga's native sounds, and none requires the use of additional peripherals. However, by learning a little about MIDI and its applications, new worlds of possibilities in the production of sound and music for video become evident. In this article we'll look at MIDI, with attention paid to some of the programs and tools especially useful for the production of music and sound for video.

MIDI and the AMIGA

What Is MIDI?

MIDI, an acronym for Musical Instrument Digital Interface, is a universal standard of communication implemented by manufacturers of computers, software, and musical equipment from around the world. It is a sophisticated language developed for the transfer of musical data and control information between electronic musical instruments and computers. The language consists of a set of eight-bit binary words representing MIDI note number (pitch), note on and note off times (duration), keyboard velocity (volume), pitch bend, and aftertouch. Other machine-specific information, such as a synthesizer's voice parameter settings, are referred to as system exclusive messages.

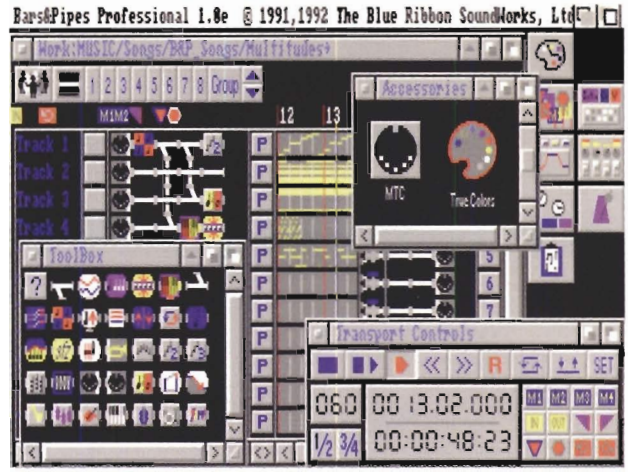
MIDI messages are sent in a serial stream of data, one byte at a time. MIDI messages travel at a rate of just under 32,000 bits per second. The MIDI standard accommodates 16 discrete channels of information. (Some software does support additional banks of 16 MIDI channels. This requires the use of multiple serial ports, or a device such as Blue Ribbon SoundWorks' Triple Play Plus MIDI Interface, which has three separately addressable MIDI outputs.) This system is analogous to the multiple television channels which exist simultaneously in the air. A device is set to receive on a specific MIDI channel or channels, and all messages on other channels are ignored. Some devices can also be set to receive in Omni mode, in which case, messages on all channels will be "read" by the device. A multi-timbral instrument can be set to receive information on multiple MIDI channels, and each MIDI channel can be assigned control over a separate voice, thereby emulating several individual synthesizers.

MIDI is also used for controlling other audiovisual devices, such as special effects processors, stage lighting systems, and other types of sound equipment. Programs such as *Dr. T's Keyboard Controlled Sequencer (KCS) 3.5* and *Bars&Pipes Professional* can provide precise synchronization with video editing equipment through the direct support of SMPTE and/or MIDI Time Code. The new SMPTE/MIDI time code generator/readers, such as Blue Ribbon's SyncPro and Black Knight Peripherals' S.A.M., give the Amiga the ability to lock to video for frame-accurate editing and synchronization.

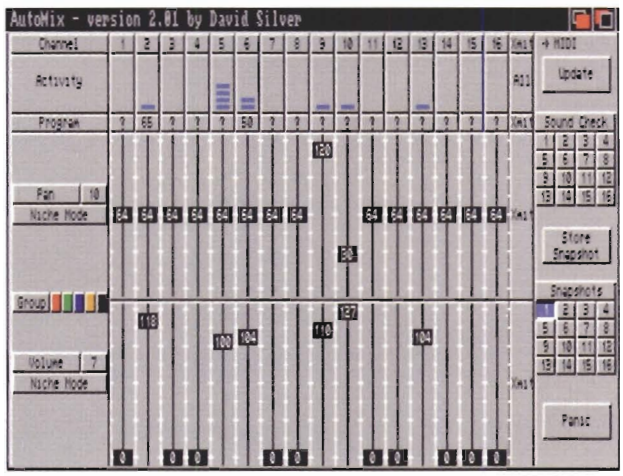
Another use for MIDI is the transfer of sound samples and other sound parameters between instruments and computers. Voice editing programs for the Amiga such as *Synthia Professional* and *Dr. T's Caged Artist Editor/Librarian* series greatly simplify the tasks of creating and modifying sounds. With the Amiga, you have a graphic display of envelope settings and sample waveforms, and the accessibility of full screens of data, as compared to the usual two-line backlit LCD display found on all but the most expensive synthesizers.

MIDI Advantage

While all Amiga models provide an eight-bit four-voice sampler/synthesizer which may be suitable for many applications, MIDI's real advantage is in its ability to control external sound modules. Most of these new MIDI instruments produce a much higher sound quality than that of the Amiga's own internal sounds. Synthesizers that support the MIDI standard were originally quite expensive, but as with other types of electronic equipment, the prices of these newer MIDI instruments have fallen considerably, while the features and sound fidelity have increased proportionately. MIDI-compatible synthesizers are now available at virtually all electronics, discount and department stores at prices starting in the $100 range.



Bars&Pipes Professional



Dr. T's AutoMix (included with KCS)

In audio production, as in video, advances in integrated circuit technology and software applications have brought the cost of high-quality professional equipment to a fraction of those of five years ago. Now available is a new generation of digital synthesizers, special effects processors, and digital hard disk recording systems such as SunRize Industries' AD1012 and AD516.

Musical instruments incorporating MIDI first began appearing on the market in the early 1980s. There are wind controllers, guitar and violin interfaces, drum pads, and an assortment of other instruments and controllers, some of which have no historical counterpart among conventional analog musical instruments.

Great sound tools are no longer exclusively the domain of multi-million dollar sound studios. And, as the cost of digital audio equipment continues to fall, this arsenal of powerful new production tools becomes more and more accessible to modern, independent video producers even on a limited studio budget.

Sequencing and Algorithmic Composition

Sequencing is the process of recording MIDI data into the computer's RAM. Most sequencer programs, including the Bars&Pipes family and the Dr. T's software use a familiar multi-track tape recorder format. However, unlike a real tape recorder, the sounds being played are *not* recorded; instead, the MIDI data representing pitch, note value, velocity, etc. is recorded in the computer's RAM. There are numerous advantages to this system of recording, including the ability to selectively edit and synchronize individual notes and sound cues. A song's tempo can be quickened or slowed to fit time constraints without affecting the pitch. With this flexible multi-track system, it is extremely easy to try different voicings and arrangements for the same piece of music without the need for entirely re-recording any of the tracks, as is the case in conventional multi-track tape recording. MIDI data can be cut, copied, and pasted, in much the same fashion as pictures and text in graphics and word processing programs. Various forms of editing are available, including event list, graphic editing, as well as standard and hybrid musical notation. Frequently, different types of editing are offered within a program, as is the case with Bars&Pipes Professional, or through the use of additional programs such as TIGER (The Interactive Graphic EditoR) and Quickscore, both of which are included with Dr. T's Keyboard Controlled Sequencer.

While MIDI sequencing, the modern-day equivalent of songwriting, is appropriate for composers and others experienced at music creation, most of us, lacking these skills, must use software that contributes more to the creative songwriting process. *Algorithmic composition* refers to the process of using software to make compositional contributions in composing or performing original music. Mathematical formulas (i.e. algorithms) are used within these programs to produce or alter music data, usually in the form of MIDI information. Many different approaches to algorithmic compositions are taken in a variety of programs, each suited to a different compositional requirement and level of musical expertise. Any of these algorithmic composition programs can be operated straight

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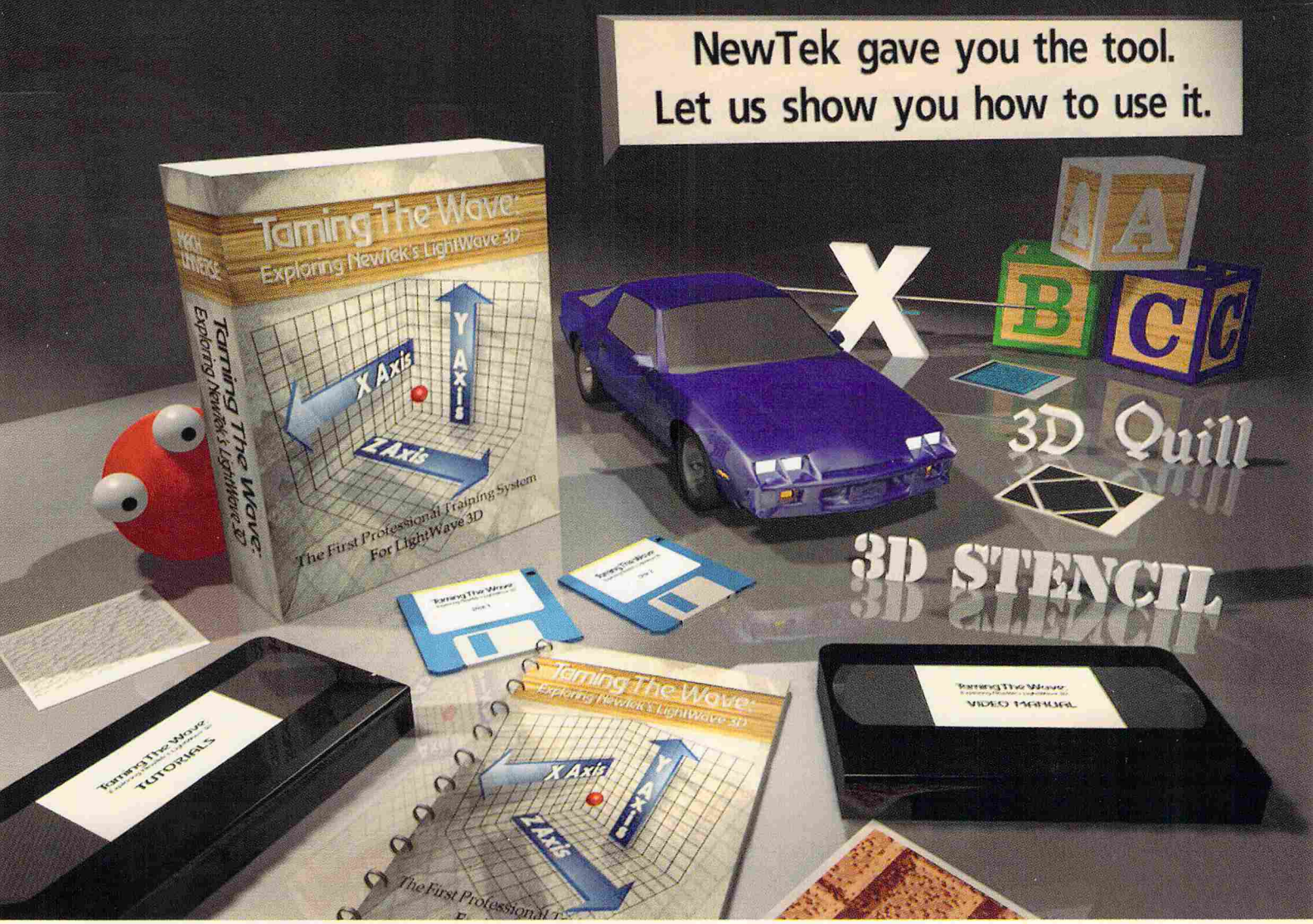

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...Continued from Page 56

MIDI and the AMIGA

out of the box, regardless of previous music experience or additional equipment. Full understanding of and proficiency with them, of course, takes time and practice (as with any other new program or device), but most algorithmic composition software is relatively simple to use.

By now, numerous dedicated algorithmic composition programs for the Amiga have come to market. Many other established music sequencing programs integrate certain aspects of algorithmic composition techniques into their program environments. For example, the Bars&Pipes family relies heavily on its unique set of Tools to produce chords, echoes, and other musical embellishment, either in real time or after the original tracks are recorded. Dr. T's KCS 3.5 Level II employs a completely different approach to modification of musical elements. In Level II, algorithmic permutation takes place after recording in the editing stage, through the use of several screens of mathematical variables. These formulas can quantize (auto-correct note timing), delete wrong notes, or completely change the key, volume, or MIDI channel of the tracks. They can be selectively applied to the original musical tracks in order to create variations. As music and multimedia software for the Amiga becomes more sophisticated, many new algorithmic composition programs have begun to appear which are particularly well suited to video producers.

Compatibility

Most Amiga programs designed to allow non-musicians to create music work with the Amiga's internal sounds, as well as MIDI, so starting out doesn't require special equipment. However, using MIDI equipment greatly expands the sound palette, improves fidelity, and enhances creative potential.

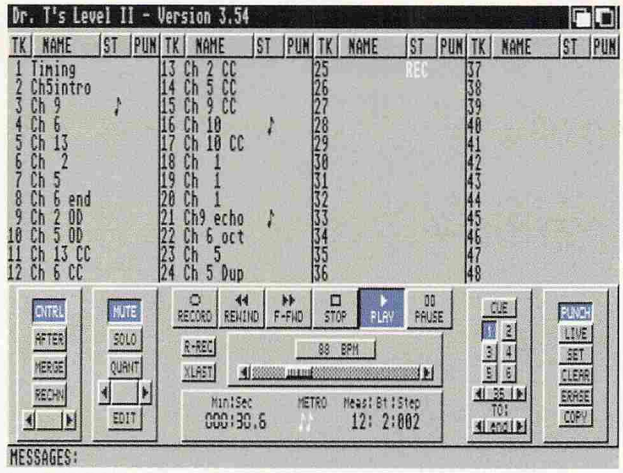
Music Mouse

Music Mouse is one of the earliest algorithmic composition programs, and is also one of the easiest to use and least expensive (at a retail price of $79.00, available for less discounted). The program actually converts mouse movements into musical events, and can control internal sounds, or external sounds via a MIDI interface. Scales (or modes) and patterns are preset within the program; the mouse and keyboard are used to vary volume, tempo, order, grouping and direction of the melody, as well as certain other attributes of the sounds. Commands that you provide from the Amiga keyboard also serve as switches for numerous options effecting pitch content, rhythm, and other automated functions. The program restricts the notes that are played to a group of preset scales, so even if you don't know the first thing about music composition, you can still create interesting music with Music Mouse.

It's an interesting program that's easy to use, but you can't save songs, and everything happens in real time. I have, however, discovered that the MIDI Out can be plugged into the MIDI In. Through the miracle of multi-tasking, you can boot a sequencer program and record Music Mouse's output into the sequencer. The program will transmit MIDI note and controller information, so it can control external MIDI devices. It does not, however, read or supply MIDI timing data, so it cannot be controlled from SMPTE or MIDI Time Code. Music for video applications that do not require crucial timing, such as simple stings, logos, and interludes, can be easily produced with Music Mouse.

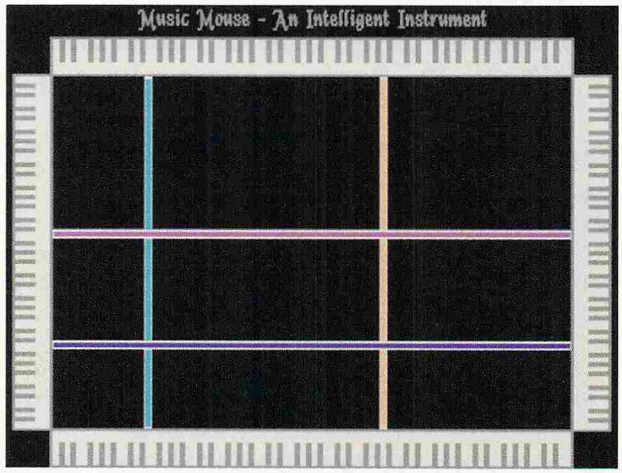
M

Another early program, and one of the most unusual algorithmic composition programs for the Amiga, is M. If you are familiar with music sequencing, you might mistake M for a four-track step-time sequencer. However, its highly advanced features allow variations in pitch, volume, rhythm, note order and density, and percentage of random notes, based on the software setup. These variables are accessible through a system of on-screen grids and windows. Most of the sequences created with M tend to be highly syncopated, and, unlike all other algorithmic composition programs, M does not force your music to conform to a set key or musical structure, so the results can be a bit unpredictable.



Dr. T's KCS 3.5

Composing music with M involves giving the Amiga a set of note and rhythmic values from which to choose. M is great for composing electronic music that sounds very "sequenced" for a video sting or bed. I've used M to compose several background tracks that were used in conjunction with "live" audio and/or narration to create continuity in video segments. By using a MIDI interface, notes can be entered from an external keyboard, and external synthesizers can be played back from the Amiga. M saves files in a proprietary format, or as standard MIDI files, allowing them to be imported into other music sequencer programs for editing or further manipulation. Both M and Music Mouse are distributed by Dr. T's Music Software. M has a retail price of $199.00, but can be found heavily discounted.



Music Mouse

SuperJam! and Video Music Box

Among the newest algorithmic composition software are two programs that are particularly well-suited for producing music for video themes and logos. *SuperJam!* from Blue Ribbon SoundWorks and *Video Music Box* from Digital Expressions can be used by virtually anyone to compose quick and useful musical backgrounds in quite a wide array of styles. The programs bear some similarities, including on-screen editing of musical notes, scales, and chords, but they differ considerably in their structure and feel. SuperJam! is a more comprehensive program, and its graphic interface resembles that used in Bars&Pipes. This sometimes leads to numerous overlapping windows and a rather cluttered appearance. On the other hand, Video Music Box's user interface has a more orderly appearance. Both programs utilize user-selectable "templates" to restrict compositions to a given musical style such as SuperJam!'s Dance or Reggae.

SuperJam!'s "band" comprises six "players," representing Bass, Drums, Guitar, Keyboard, Strings and Lead (or melody) parts. Each of the players can be assigned to any chosen sound. SuperJam! also allows the Amiga's four voice limit to be exceeded by using what Blue Ribbon calls TurboSounds. One oscillator is used to produce up to sixteen sounds simultaneously, so, unfortunately, the Amiga's sound output is monaural. (Reportedly this will be corrected in SuperJam! 2.0.) Many of the program's advanced features are of use to those with a greater knowledge of music theory. SuperJam! can also be seamlessly integrated into the Bars&Pipes Professional program. Even if you have never touched a musical instrument, you can still produce music in an easily recognizable style with SuperJam!.

Video Music Box is a relatively inexpensive new algorithmic composition program designed to produce songs in both MIDI and SMUS (Deluxe Music import/export) formats. It is a quick and easy way to explore a wide variety of musical styles for the

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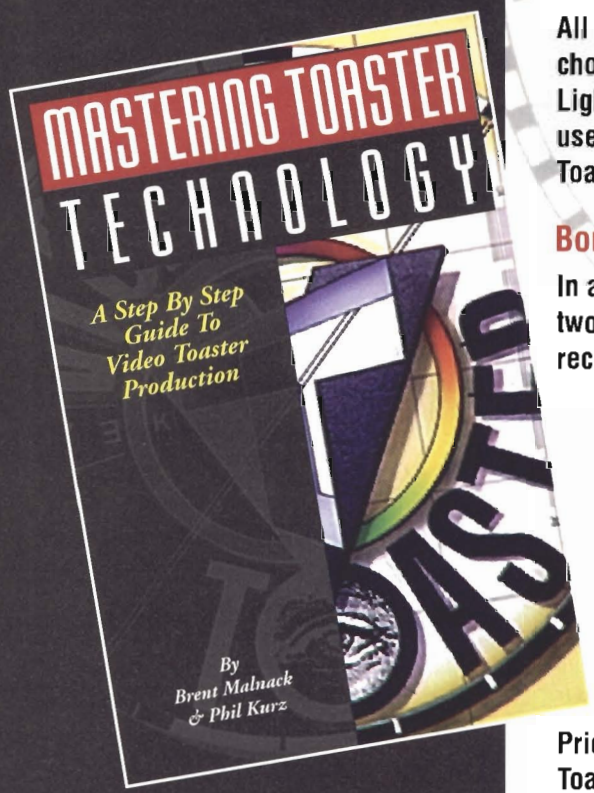

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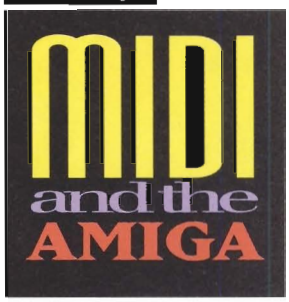
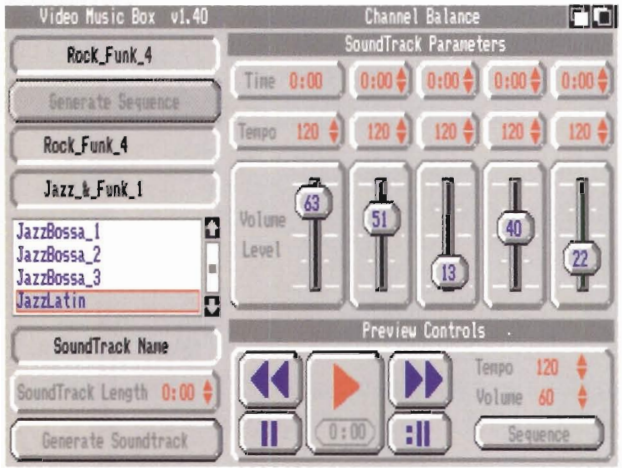


video and multimedia environment. Video Music Box's program structure is based on four basic song elements: styles, chord progressions, sequences, and soundtracks. Styles consist of harmonic and rhythmic information which interacts with the chosen chord progression. Those factors, in conjunction with the song's tempo and the choice of instrumentation, make up a sequence. The resulting sequences can be linked together in the Soundtrack mode, where they can be instructed to play, with volume and tempo changes executed at designated times.

Bars&Pipes Professional

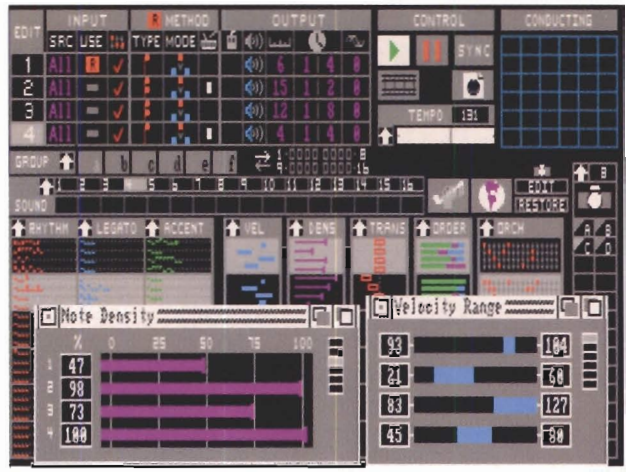
(For the sake of convenience, this section refers to both Bars&Pipes and Bars&Pipes Professional collectively as Bars&Pipes.) Bars&Pipes actually represents a cross between algorithmic composition and conventional sequencing programs, offering a unique and flexible approach to music composition. Sequencer tracks are referred to as "pipelines," and MIDI messages received at the Amiga's input are transferred into the MIDI pipeline where a wide variety of "tools" can be applied to the data stream. These tools can create adjustable echoes, automated harmonies and chords, arpeggiation, transposition, and a multitude of other musical variations. These changes and variations can be automatically kept within the scales and rhythmic structures specified within the song. So, in addition to the quantization (auto-correction of rhythmic errors) available in virtually all music sequencing software, Bars&Pipes can also constrain notes to remain within a key specified by the user. Using Bars&Pipes, even individuals with little or no musical experience can produce some very interesting and complex music.



Video Music Box

Dr. T's Keyboard Controlled Sequencer V3.5

I use quite a variety of music software packages in my Amiga-based MIDI music studio. Thanks to the standardization of the MIDI song file formats, it's a very easy process to begin a song in an algorithmic composition program, and then transfer it to a comprehensive sequencer for additions or alterations. Inevitably, the program I most frequently turn to for its flexibility and editing precision is Dr. T's Keyboard Controlled Sequencer. The KCS program was originally written for the Apple II and Commodore 64 computers, so it has been around a while, and it has gone through many revisions and rewrites. The latest release of this program for the Amiga is KCS 3.5 with Level II. While Level II can be a little difficult to comprehend, many of its algorithmic processing functions have now been included in KCS 3.5's new pull-down menus. The program has settled into a very dependable format, with rock-solid timing.



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KCS 3.5 is divided into three different modes. Track mode, which works much like a 48-track tape recorder, contains many special functions not available in conventional tape recorders. (The track mode is structured exactly like Dr. T's MIDI Recording Studio, an eight-track version of the KCS.) Open mode offers 128 locations for sequences which can be made up of either single or multiple tracks. Special sequences, called control sequences, can be used to start and stop other sequences and to control their volume, tempo and number of repeats. Using what Dr. T's calls "loop-back" recording, sequences can be assembled using control sequences, and the resulting MIDI output can be re-routed to the MIDI input. This "meta-sequence" can then be re-recorded as a single continuous sequence. Song mode can be used to chain sequences in drum machine fashion.

Each of the three modes has a different form, function, and working style, allowing different compositional approaches to be used, depending on the inclinations of the individual composer as well as the requirements of the piece. Each uses a similar edit screen which allows selective editing of notes and MIDI events within the structure of a vertical list. This event-list type of editing allows precise placement of "hits" to correspond with visual cues.

KCS 3.5 offers greater timing resolution, direct control of Dr. T's Phantom MIDI/SMPTE interface, pull-down menus and a number of other improvements over previous releases of this acclaimed program. To edit notes and data, you simply mark the segment to be modified by highlighting it in the event list, pull down the appropriate menu, and select the desired change. KCS 3.5 is not copy protected, allowing hard disk installation and operation without the need for a key disk. The program can now import standard MIDI files without the need to first convert them to Dr. T's own file format.

New Hardware

The release of SunRize Industries' AD1012 and AD516 digital hard disk recording system and Studio 16 editing and synchronization software places the Amiga firmly in the realm of professional audio for video. (See the full review of the AD516/Studio 16 package in this issue.) Blue Ribbon SoundWorks has also just announced *One Stop Music Shop* for the Amiga. This professional-quality synthesizer card occupies a slot in the Amiga 2000, 3000, or 4000. It features a 16-bit, 32-voice multi-timbral Proteus sound engine, sound editing software, and a built-in MIDI interface. Preliminary reports indicate that the One Stop Music Shop will contain 210 voices made up of sounds from E-Mu's Proteus modules. It should be available by the time you read this for a retail price of $649.00.

For those of you who own an Amiga, and have a healthy curiosity about its sound and music-making potential, I've got an offer you can't refuse. If you'll send me up to six blank 3.5 inch disks, along with the appropriate postage, I'll provide you with demo versions of a number of Amiga music/sound programs, including Video Music Box 1.6, SuperJam!, M 1.0, Bars&Pipes and B&P Pro, and Synthia Professional, so you can try these dynamite music and sound programs for yourself!

AD516, AD1012, and Studio 16 are from SunRize Industries, 2939 S. Winchester Blvd., Suite 204, Campbell, CA 95008, (408) 374-4962.

SyncPro, SuperJam!, Triple Play Plus, Bars&Pipes, and Bars&Pipes Professional are distributed by The Blue Ribbon SoundWorks, Ltd., 1605 Chantilly Dr. Suite 200, Atlanta, GA 30324, (404) 315-0212.

KCS 3.5, The Caged Artist Editors, Music Mouse, M, and MIDI Recording Studio are distributed by Dr. T's Music Software, 124 Crescent Rd., Needham, MA 02194, (617) 455-1454.

Synthia Professional is by The Other Guys Software, 55 North Main, Suite 301, Logan, UT, 84321, (801) 753-7620.

Video Music Box is from Digital Expressions, W6400 Firelane 8, Menasha, WI 54952, (414) 733-6863.

S.A.M. is distributed exclusively by Black Knight Peripherals, 255 W. Moana #207, Reno, NV 89509, (702) 847-8088.

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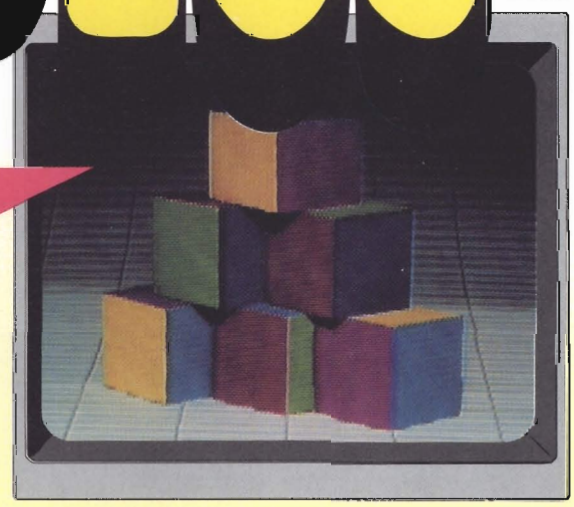

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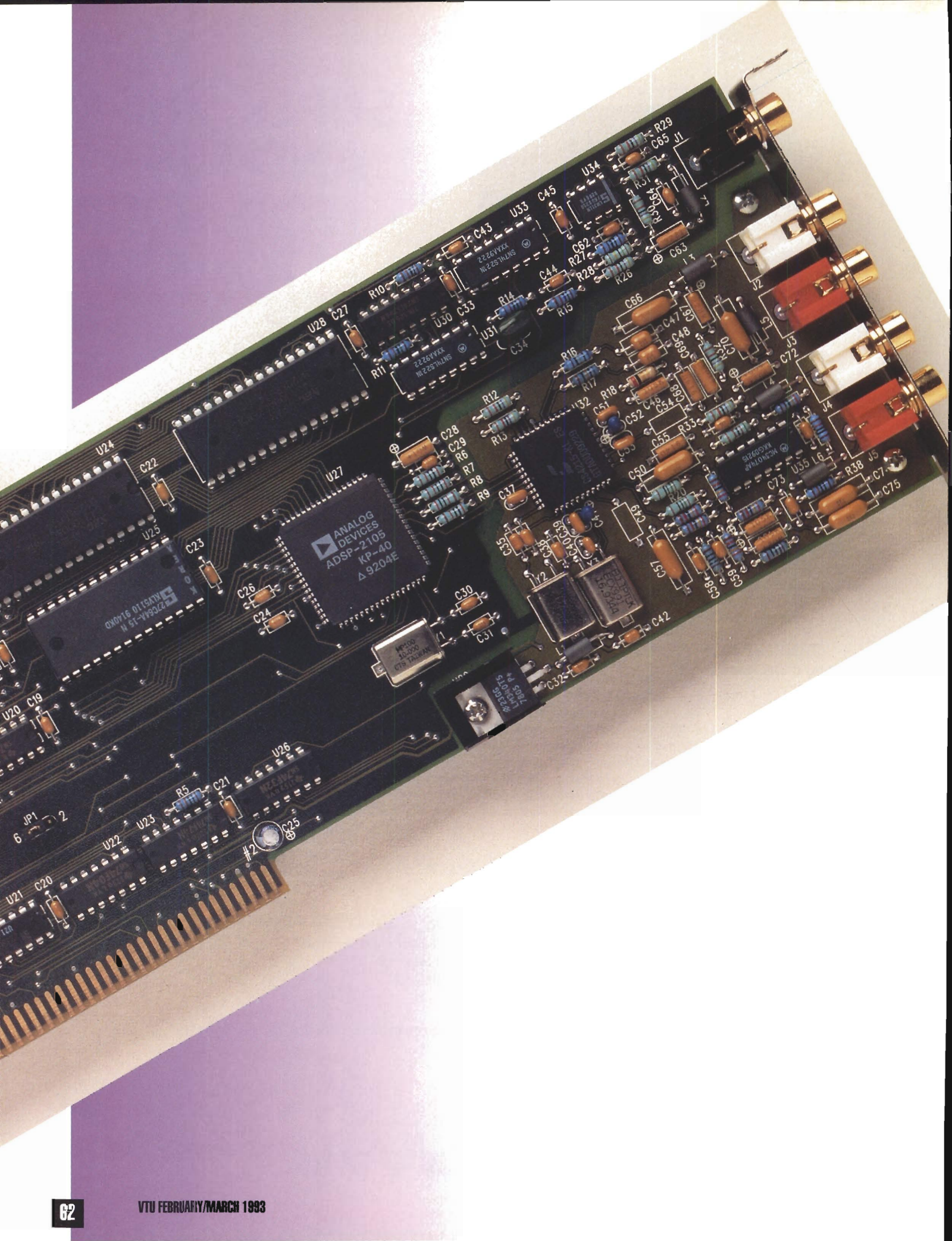
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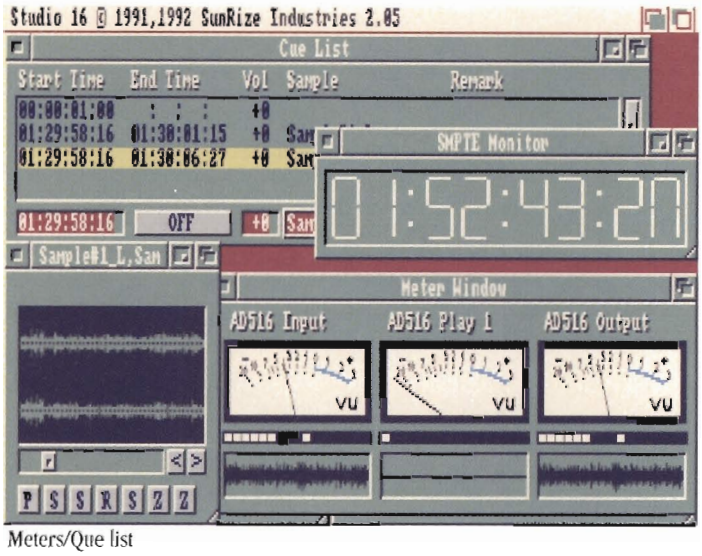
AD516 and Studio 16

by Jaxon Crow

If you're an Amiga/Toaster video producer (or at least you'd like to be one!) then you already know the dynamic visual potential of this multimedia marvel. Now, at last, your audio tracks can have the same degree of professional polish as your video graphics. In this article, we'll take a close look at SunRize Industries' new AD516, a professional quality 16-bit digital audio hard-disk recording system. AD516 was specifically designed to enhance and facilitate the production and synchronization of audio for video.



Meters/Que list

If you already have an understanding of the theory and practice of digitizing sound, please bear with us for a moment. For those readers unfamiliar with digital sound sampling, it is the process by which analog sound, whether narration, music, or sound effects, is converted to digital information. Digital samples are made by briefly recording the volume level of a sound wave at discrete intervals of time. The speed at which these recordings are taken, called the sampling rate, is expressed in cycles per second. The faster the sampling rate, the closer together the steps comprising the digital sample will be. CD digital audio uses a 44.1 Khz, or a sampling rate of 44,100 samples per second. On playback this digital data is re-converted to duplicate the original analog soundwave.

SunRize Industries also manufactures the AD1012, the forerunner of the AD516. The AD1012 was the first high-fidelity sound board and hard disk recording system for the Amiga. While the AD1012 records and plays 12-bit words and handles only a single audio channel, the AD516 is a true stereo 16-bit sound board.

The AD516 and the 16-Bit Advantage

All models of the Amiga, from the A1000 and A500 through the A4000, have internal 4-voice sound synthesis circuitry. These native sounds are produced using 8-bit digital words. The new AD516 uses 16-bit words in combination with a variable high-frequency recording and playback rate to produce sound of much higher quality than that normally possible with the Amiga. (By way of comparison, 8-bit digital words range in values from -127 to +127, while 16-bit words represent values ranging from -32768 to +32768.) An analogy can easily be made between Amiga paint and graphics formats and different audio sampling resolutions. In digital painting, the higher the number of bits used by the program, the greater the number of colors capable of being displayed simultaneously. Having more colors available in a given range means that differences between colors are smaller, thus image tonability is smoother. Using 24-bit color yields a possible range of around sixteen million colors, though the extremes (black, with all bits off, and white, with all bits on) remain the same. It is the number of in-between values which increase and allow a much wider palette of colors. Similarly, the AD516's 16-bit samples give a much wider range of values as compared to the 256 possible levels available with only eight bits. In digital sound, the greater number of bits allows the resulting sound wave to more closely reproduce the original (smooth) analog sound wave. While a 16-bit sample is not necessarily any louder than an 8-bit sample, it does contain much more detail, and therefore is truer to the original sound.

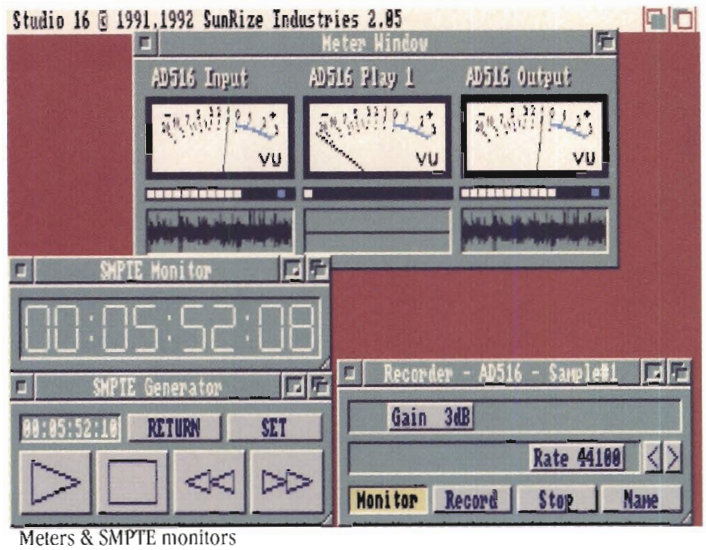
The AD516 can sample at rates of up to 48,000 per second (48 Khz), the rate used in professional Digital Audio Tape (DAT) recorder/players. (Anything over 44.1 Khz, the rate used by CD players, will not really produce an audible difference, as the human ear can only perceive frequencies up to approximately 20 Khz. The relationship between the sampling rate and the resulting sound's frequency range is called the Nyquist theorem. It states that a sound's highest frequency cannot exceed twice the sampling rate. In other words, using a sampling rate of 44.1 Khz yields a high-frequency fidelity of approximately 22,000 cycles per second.) And of course, since the AD516 records samples directly to hard disk, the maximum sample length is determined by the amount of free disk space available and the sampling rate chosen. If, for example, you use a sampling rate of 44.1 kilohertz, then each example requires just over 5.1 megabytes of disk space. So 30 minutes of sound would require over 150 megabytes of disk space. However, if a sampling rate of 22 Khz were used, then the same minute of audio would occupy only 2.5 megs. Obviously, some consideration needs to be made for the fidelity of the final waveform and the amount of disk space available on your hard disk partition. These space requirements must be doubled for stereo sampling.

Studio 16

SunRize Industries is also the maker of the Perfect Sound 3 audio digitizer and Audition 4 sampling software. Their years of experience in the design and

manufacture of sampling hardware and sound editing software are evident in Studio 16, the sampling, editing, and playback software used to control both the AD516 and AD1012. Studio 16 is comprised of a set of interactive applications and utility modules. Each module handles a particular set of functions and operations, from sound monitoring and recording, to graphic sample-editing, and assembling cue lists which can be triggered from (frame-accurate) SMPTE time code.

In many ways, the program works similarly to an eight-channel tape recorder. Samples can be recorded and edited either separately or in pairs, and, depending on your Amiga's processor speed, up to eight tracks can be played back simultaneously. Individual sound samples can be recorded from either the Recorder or the Transport module. In the Transport window, up to seven samples can be played back while recording a sample on the eighth track. This new track can either be recorded from the audio input (a totally new sound), or by "bouncing" or mixing down the other existing tracks to the last virtual track. Since you're dealing entirely with digital data, not analog audio signals, no tape noise is added, and the signal-to-noise ratio remains consistently high (averaging 87 dB). Using this ping-pong mixing technique, tracks can be repeatedly mixed, opening up tracks to be recorded again and again.



Meters & SMPTE monitors

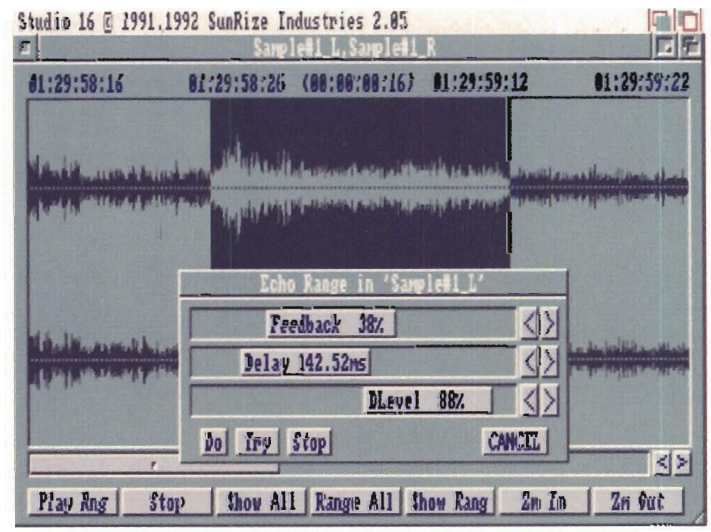
The Instance window contains a list of all of the modules that are currently loaded and active in the program. Modules can be added or deleted in the Instances list as they are needed. To initiate a module, double-click on its name in the Instance list, and the window opens for recording, editing or file manipulation. These module windows can be resized and moved on screen to suit your needs or tastes.

The Preferences window contains path assignments for the storage of sound and work files. Buffer sizes can be adjusted to best suit your Amiga system's hard drive size and processor speed. An interlace screen can be selected, allowing more information to be viewed on screen. The color palette can be chosen from a number of preset palettes, or customized to your own personal liking. The SMPTE rate (frames per second) is also selected in the Preferences window.

The Open List window holds a list of the names of the samples currently loaded, as well as their path/directory assignments. This list is updated every time a new sample is recorded. Selected samples can also be played from the Open List. Samples can be loaded into the Open List from any directory. Another truly outstanding feature of the Studio 16/AD516 package is its ability to play back sounds from multiple hard disks at the same time.

Editing Sound

You can access Studio 16's powerful sound-editing features through the Applications menu or from the Open List module. The Editor module presents a graphic display of the currently selected sample (or samples, in the case of stereo sounds.) An excellent zoom function is available for close inspection and manipulation of the sound wave. A range of a waveform can be marked simply by dragging the mouse, and then edited in either of two different modes, each with a slightly different set of tools. Edits can be either non-destructive, leaving the original sample data on disk intact, or destructive, making permanent changes to the data on disk. In non-destructive mode, a highlighted range can be cut, copied, pasted, erased, or kept, deleting the selected portion of the waveform. The AD516 will then play the sound, complete with the requested changes, without permanently altering the original data. In the destructive edit mode, all edits are permanent, and cannot be undone. (The safest way, of course, is to edit in the non-destructive mode. Then, when the edits are just right, they can be made permanent, discarding the unused portion of the sample. Of course, this requires more disk space.) In either mode, silence can be inserted into a sample, and a marked range can be flipped or edited freehand. Both modes also allow volumes to be ramped by setting starting and ending percentages, creating smooth level fades up or down in levels to be created. The Editor can also automatically generate a one-kilohertz sine wave of a specified length to be pasted into a sample. This is frequently used as a test signal to calibrate audio levels.



Editor screen/Echo control

Scripts and SMPTE

When all of the required sounds and music are compiled and edited, a Cue List is then constructed listing all of the samples, their relative volume levels, and the exact SMPTE time that they are to be triggered. The samples are played back directly from your hard disk, so extremely long samples can be played. Up to eight samples can be replayed at one time, depending on your Amiga's processor speed. The SMPTE stripe on the videotape can then be used to control automated playback of all of the specified samples from your hard disk, creating a seamless, perfectly synchronized audio track.

The AD516 has a built-in SMPTE generator for its own internal timing control. It also reads SMPTE linear time code from any external source to facilitate easy, frame-accurate synchronization of audio and video. The SMPTE Monitor window displays the current SMPTE time, whether it's being generated internally or coming from an external source. This window can be expanded in size to a very large readout, or miniaturized to accomodate more active windows at one time. SMPTE time is displayed in standard Hours:Minutes:Seconds:Frames (HH:MM:SS:FF) format. Used in conjunction with the Toaster's genlock function, a "window-burn" can be produced and layered on top of videotape. This is an indispensable aid in precise synchronizing audio cues to video.

Meters and Effects

Another commendable feature of Studio 16 is its software audio meters. Each Meters module provides up to five on-screen meters, which can be used to selectively monitor audio levels at the card's input, output, or on any of the eight virtual audio tracks. These meters can be configured in any combination of up to three different display modes. Simulated analog VU meters give you a continuous reading of levels as they vary. Alternative meter display modes are peak meters, giving you an accurate picture of the levels' peak voltage, or, as a graph showing a small representation of the sound wave. A second Meters window can be loaded in the Instance list, allowing all ten levels to be monitored at once. One of two Mixer windows can be used to control the audio levels. The Mixer window displays each track's status, and has a graphic display of the active waveform. The Tiny Mixer module displays up to ten sliders in a very small window.

The AD516 also features a DSP2105 digital audio processing chip, allowing real-time creation of special effects such as echo, flange, and delay. If you do not possess a dedicated audio processor, the AD516 can be used to produce echoes, delays, or flange effects. Delay times are variable from .02 milliseconds to just over one second, depending on the variable sample rate. (The higher the sampling rate, the better the

fidelity of the sound produced by the AD516. But the trade-off is a shorter available delay time for the higher sampling rate.) A digital filter is also provided that can be automatically set to eliminate any unnecessary high frequencies which add aliasing noise to the sample. Delay times below about 20 milliseconds create phase cancellation at certain frequencies. By adding modulation to the delay time, a sweeping (or flange) effect can be produced. Feedback and delay levels, and modulation speed and intensity are also variable.

This package represents a real breakthrough in the field of professional quality sound production for the Amiga. With SMPTE compatibility, it's an extremely valuable tool for the production of any type of sound for video. With the ability to record and playback from multiple hard disks, the length of samples is limited only by the sample rate and hard disk capacity. This makes the AD516/Studio 16 combination ideal for the editing and production of music, narration and sound effects for video.

The Blue Ribbon Connection

The AD516 card and Studio 16 can be totally integrated into and controlled from within Bars&Pipes Professional from Blue Ribbon Soundworks. This can be accomplished through the use of a set of Tools and Accessories for B&P Pro which are included on the Studio 16 program disk. Samples can be triggered from within the Bars&Pipes or SuperJam! environment, allowing 8-, 12-, and 16-bit samples to be played directly from your hard drive. Studio 16 (version 2.05) also supports the playback of virtual tracks from within Bars&Pipes Professional. This allows digitally recorded sound effects, music and narration to play in perfect synchronization with a MIDI sequence. In other words, you'd be able to sample voices, guitar, narration or special effects tracks to your hard drive for frame-accurate synchronized playback in conjunction with a MIDI song. The entire audio track could then be recorded to videotape without the need for an expensive, time code controlled multi-track tape system.

SunRize should also be applauded for their clear, concise manual. The manual presents the basics of digital audio, and gives a good understanding of the history and techniques of editing sound for video. Tutorial projects with step-by-step exercises are included on disk. If you're in the business of producing and/or editing sound for video, you should seriously consider the AD516/Studio 16 combination. It is a professional tool that produces extraordinary results. The sound quality, features, and ease of use of the AD516 are among the best available for any computer platform. The AD516's retail price is only $1495.00.

Growth Potential

SunRize Industries has also recently released two software "expansion modules" for Studio 16. The first is a software module called SMPTE Output, that allows Studio 16 to act as the master in generating SMPTE linear time code through the Amiga's audio output. This lets you stripe tapes with the Amiga. SMPTE Output also allows specification of multiple set/reset points to quickly jump to a new SMPTE time, and includes a set of buttons for rewind, play, fast forward, and pause. While Studio 16 can multi-task without problems with the Video Toaster, the sound stops playing when performing processor-intensive digital video effects. However, the AD1012 and AD516 Toaster Handlers can replace the original driver to allow one or two tracks to be played by the AD516 even during digital video effects. The list price for either module is $249.00.

Also, SunRize Industries has announced the upcoming release of the DD524 Digital Audio Input/Output Board. The DD524 will allow you to back up your hard disk to Digital Audio Tape. (A single DAT tape can hold over a gigabyte of information!) Sound can also be transferred directly between CD, DAT, or PCM, and Studio 16 without requiring re-digitization. This makes Studio 16 an ideal platform for making CD Masters. If you record sound in the field, you can transfer it directly to Studio 16 for editing and synchronization to video. The price and release date for the DD524 are yet to be announced.

AD516, AD1012, and Studio 16 are from SunRize Industries, 2939 S. Winchester Blvd., Suite 204, Campbell, CA 95008, (408) 374-4962.

SuperJam! and Bars and Pipes Professional are distributed by The Blue Ribbon Soundworks, Ltd., 1293 Briardale Lane NE, Atlanta, GA 30306, (404) 377-1514.

Jaxon Crow has recently released his first tutorial videotape on producing Sound for Video projects entitled Amiga Music For Video, Volume One. Jaxon can be reached for questions or consultation at: Neon Tetra Productions, P.O. Box 876, Hot Springs National Park, AR 71902, (501) 321-1198.

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Blue Ribbon Soundworks: music tools for video

By Bob Anderson

You've created a video production. It's finished except for the musical score. If you're not a musician, you've got several options: Pay a licensing fee for someone else's music; buy canned copyright-free music and hope they have what you need; or hire a composer and some musicians, and hope they can approximate what you hear in your head. Wouldn't it be great if you could sit down with musicians who weren't on the clock, explain to them what you hear, and then experiment with ideas until you got exactly what you want?

...Continued on Page 68

...Continued from Page 67

SuperJam

Well, that is exactly what *SuperJam! 1.1* from The Blue Ribbon SoundWorks is all about. I recently had a chance to sit down with Todor Fay from Blue Ribbon to discuss what's new. First, let's take a brief look at the product. SuperJam! 1.1 employs a graphical interface to simplify the use of a complex professional MIDI sequencer (MIDI stands for Musical Instrument Digital Interface). This sequencer can use your Amiga computer's internal sound functions, and can output to any MIDI device, although it works best with a multi-timbral sound module (capable of producing several different instrument sounds simultaneously), such as Blue Ribbon SoundWorks' One-Stop Music Shop, discussed below. The program uses General MIDI voice mapping, making using it a plug-and-go situation with most sound modules. SuperJam! was designed with the non-musician in mind, and consists of a six-piece band of talented musicians who are adept at many different musical styles. The interface includes a piano-type keyboard which lets you enter chord changes with the mouse. You don't have to know music theory because the program only plays chords that work well together. There are controls to enter intros, breaks, and endings. Simply enter a tempo and a musical style, click the Play button, and you're making music. All the controls are interactive, so if you think they are playing a little slow, turn up the tempo until it sounds right. During the demo, Todor started the program playing and then clicked on random keys on the graphic keyboard. The results were remarkable.

The Blue Ribbon SoundWorks did an excellent job making SuperJam! sound like a live band. To give you an idea of the program's hidden complexity, there are six instruments to work with. Every measure, each instrument randomly selects a sequence from sixteen preprogrammed patterns. These sequences each have slight variations in timing and note volumes. As a result, when you start playing a pattern, it creates a random live "human" sound rather than a dry "beatbox" sound. The preprogrammed sequences are well written, giving the program the power to create great music.

Video Toaster owners will be glad to see that SuperJam! locks to SMPTE time code, making it an excellent tool for video production. For those with more musical talent, the program lets you create your own styles, as well as customize individual patterns. I found it to be a great way to come up with musical ideas. Songs created in SuperJam! can easily be exported to other sequencers.

The program is completely configurable, making it easy to deal with its complexity. For the complete novice, there is even a feature called the Ease-O-Matic MusicMaker, which limits some of the program's functions, but reduces the interface to five keys, including one that solos along with the music in key. This makes creating music child's play.

Also new in version 1.1 is SuperJam's way cool graphic mixer. Icons appear on the mixer interface representing the six musical parts. Moving one left and right pans the part in the stereo field. Moving them up and down increases and decreases its volume.

Another great improvement with SuperJam 1.1 is the addition of four selectable "Grooves" within each musical style. You can start the program playing, and by stepping through the grooves, gradually intensify the feel of the music. Each new groove adds new instruments, and increases the complexity of the arrangement. This is very helpful in making your score match the on-screen action, as well as making the music more human-sounding.

The Blue Ribbon SoundWorks has also released three disks, each with ten new musical styles created with the video professional in mind. Their new film styles include Adventure, which sounds like an Indiana Jones soundtrack, Hijinks, which calls to mind images of a slapstick botched bank robbery attempt, and Horrific, which starts with a feeling that something isn't quite right, and crescendos with the classic violin-squeal/slasher-film sound effect. Also included are some excellent authentic sounding ethnic styles, ranging from India to China to Appalachia.

So, if you need music for your next video production, remember that you now have the option of writing your own, even if you don't think you have the talent. After a few hours of experimenting with SuperJam!, you may be surprised to find you've created a professional-sounding soundtrack.

Bars & Pipes Professional

The Blue Ribbon SoundWorks is also set to release version 2.0 of their popular *Bars&Pipes Professional* MIDI sequencing program. This program was designed with musicians in mind, but its interface is very easy to understand.

The exciting news is the addition of a new fea-

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ture called *Media Madness*. This tool allows Bars&Pipes to control the Video Toaster, as well as many video decks, laser disk players, and even the SunRize AD516 sound board (see the review of the AD516 in this issue). It can play Amiga animations and display IFF images. It also includes an ARexx port to send commands that you program. Of course, this sequencer can lock to SMPTE time code, making this a great tool for composers working with video.

Media Madness includes a Toaster tool for Bars&Pipes which opens with a graphic of the Switcher screen. Effects can be called up and incorporated into a music sequence. Different effects can be mapped to keys on a MIDI keyboard, and played back in real time. This is a big step in interactive music/video media.

If you use the SunRize AD516 board for sound effects, Bars&Pipes Professional 2.0 can be used to trigger the effects at any given SMPTE frame. It also allows for MIDI panning of these sounds.

The look and feel of this program is slick and professional. This is a very powerful sequencer, with a very intuitive graphic interface. As with SuperJam!, Bars&Pipes can be addressed on as simple or complex a level as you like. I am not big on reading manuals, and I found the interface easy to maneuver. I was able to use the program within a few minutes. When I did have to refer to the manual, I found it to be comprehensive, yet easy to use.

Some people seem to be turned off by Blue Ribbon's graphics-intensive interfaces. I have always judged software in terms of ease of use, and find Bars&Pipes one of the most user-friendly music sequencers.

One-Stop Music Shop

The Blue Ribbon SoundWorks' newest product is called One-Stop Music Shop. It is a 32-voice polyphonic, multi-timbral (able to produce 32 different notes, each with a different sound; drums, bass, piano, sax all at once) sound card for the Amiga computer. The card, based on the E-Mu Proteus sound module, works with any MIDI controller, and interfaces flawlessly with SuperJam! and Bars&Pipes. The Proteus module is a professional MIDI sound source that can be found in most studios. I find its quality is head and shoulders above units commonly referred to as "computer sound modules." This is a great-sounding unit. Its 128 preprogrammed patches feature very complex wave forms that make for very realistic instrument reproduction. With One-Stop Music Shop, creating your own sounds is easy.

One of One-Stop Music Shop's best features is Blue Ribbon's graphical sound editing software. A disadvantage of the rack mount version was that you only had a small LCD interface to work in. With the graphic interface, all sound editing controls are laid out intelligently on your computer screen with Blue Ribbon's usual easy-to-use graphics.

The One-Stop Music Shop complies with general MIDI voice mapping. Manufacturers of MIDI equipment agreed to this convention, which establishes a consistent implementation of patch information across MIDI units. This means that in most situations, any default data being sent to this module will sound right (i.e. a piano part from a sequencer will trigger a piano sound, and a bass part will trigger a bass sound, etc.). This sound card works great with SuperJam!.

The One-Stop Music Shop has its own built-in MIDI interface with MIDI In and Out. This is a valuable feature, because most Amiga MIDI interfaces use the serial port. With the built-in interface, your serial port is free to do things like control video decks.

With a suggested retail price of $650.00, One-Stop Music Shop is a great bargain. In fact, the unit is less expensive than its rack-mount counterpart. With the addition of the graphic interface, this is an outstanding value.

An important thing to remember is that Blue Ribbon SoundWorks strives to make all of their products simple to use. This simplicity is a great tribute to their programming skills. Although seemingly simple, each program has several layers of complexity. The software can be as sophisticated and powerful, or as simple as you want it to be. Blue Ribbon has provided means to fully customize the programs to suit your needs. Whether you are an experienced composer or a novice video producer, I think you'll find these products will fill your music needs.

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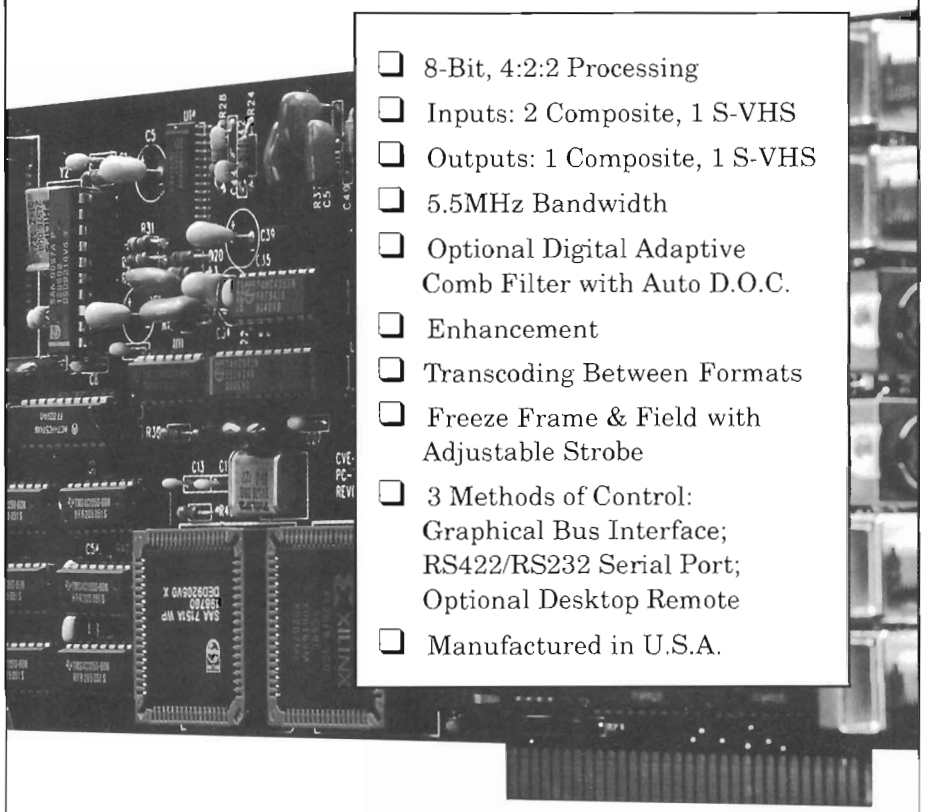

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Testing... one, two, three!

I remember a time when getting good wireless microphone performance meant spending $1,000 or more. Investing any less than that meant getting a low-end 49Hz FM mic, which was too noisy and unreliable.

The Big Three VHF Units

Today, the gap has been nicely bridged by VHF units from Nady, Asden, and Sampson. In this article, I will be referring to my experiences over the years in the field with five wireless systems offered by these companies.

The Nady 151 L

The first of these that we purchased about four years ago, the Nady 151 L lavalier, was one of the earlier low-cost VHFs on the scene. I knew right away that it would forever alter the way we recorded audio for video. Now we could actually hear the wedding vows clearly, even with the camera 100 feet away from the bride and groom. In industrial settings, product managers could walk around, Lee Iacocca-style, spouting the strengths of their company, while I was across the way getting close-up, clear sound. A witness at a deposition could jump up and grab an x-ray, smack it in the display screen and start talking, without missing a beat due to tangled wires.

The Azden WMS Pro

The Nady performed very well and I was pleased, but I had nothing with which to compare it. The next purchase was the Azden WMS Pro, which proved to be more versatile and convenient to use. The WMS Pro receiver is very compact and mountable to the camera accessory shoe, with two frequencies to switch between. Best of all, it came with both a lavalier and hand-held microphone. The only problem was that it didn't transmit as far as the Nady.

Once, during a high school stage performance, I sent the output of a large

Achieving Maximum Wireless Mic Performance

by Brent Conrad

audio mixing board through the Azden transmitter to a camcorder across the auditorium. The sound came out decently and covered me in a couple of spots during the editing process.

The Nady 151 Hand-Held

Now let's talk about the Nady 151 Hand-Held. It works great when doing random interviews with guests at a wedding reception—just hand them the mic and shoot. I used to use the Azden hand-held the same way, but it involved holding the mic and transmitter connected by a wire. The Nady was fine for hand-held work but because of its unidirectional design, its field is limited, as well as its frequency response. The spectrum's upper range is very limited, while the low-end is exaggerated, giving it a mellow, boomy sound. If you lay a hand-held Nady beside a lavalier Nady in a roomful of people, you will pick up a lot more conversation from the lavalier.

The Sampson MR 1

It's funny how your perception changes whenever something a little different comes along, Such was the case with the Sampson MR 1. When comparing the Sampson and the Nady side by side, the first thing you notice is the difference in frequency response and signal-to-noise ratio. The Sampson is much clearer and brighter sounding, allowing more of the upper end of the spectrum (where "S" sounds reside) to come through, resulting in more easily understood speech.

The Sampson MR1-TX3

Our most recent wireless acquisition was the Sampson MR1 TX3. This is the next step up from the MR1-ST2 combination. It has the same receiver as the entry-level Sampson, the mic and transmitter being where the difference lies. The TX3 transmitter sports a detachable mic thanks to a mini P6 connector. The TX3 also has its own separate screw-on antenna wire. Other features include an external gain control for adjusting mic sensitivity, which comes in handy for picking up sound from a larger area around the mic. If room noise is a problem, you can turn it down. There is also a switch on the TX3 transmitter which allows it to accept a direct input from electric guitars and other instruments.

Getting The Most From Your Wireless Mic

The most obvious way to maximize the performance of any wireless unit is to use good alkaline batteries. The Azden and Nady can go longer than the Sampson on a set of batteries, but for best results, start with a new set before every wedding ceremony. The worst thing that can happen is for the batteries to start to go during the vows—the sound gets progressively noisier and finally goes to snow. A simple battery tester from Radio Shack can save a lot of worry over how much power a battery has left. I do not recommend using rechargeable Nicads—they typically run out of power about halfway through a ceremony.

Batteries Don't Always Size up

One peculiar difference between two major battery brands exists. Duracell 9-volt batteries don't fit well into some of the wireless units we tested—in several instances, the battery contacts come up short, causing intermittent loss of power. They were too wide for the Nady hand-held, making the battery cover impossible to close. In contrast, Eveready's 9-volts fit every time.

Microphone Placement Strategies

A lot of wedding videographers have begun using two wireless mics during the ceremony. With just one mic it's always a compromise, no matter where you put it. If you put it on the groom, you can end up ten to twenty feet away from your main sound source (the minister) for a good part of the time. Place it on the minister and you've got to really jockey the audio record level during editing to be able to hear the vows. This problem is compounded if the minister does the vow prompting loudly and the bride follows each phrase with a whisper that only her future husband can hear. Camcorders with auto level control adjust the minister's volume and barely recover before the bride finishes her part. The other difficult situation is when the lector (usually a family member or close friend) goes up to the pulpit to read the Bible. Again, you're caught out of mic range from either the minister or groom.

One option is to unplug the wireless and go with the camera mic. This only works if you are right in front of the lector or near a PA speaker, if indeed the pulpit is mic'ed and the house system is working. The best solution to this dilemma is using at least two wireless mics. Find out prior to the shoot if there is going to be a Bible reading by a lector. If not, then it's an easy call—one mic on the minister and one on the groom. If there will be a lector and the minister is to give the sermon from the pulpit, put a wireless on the pulpit as well.

Lavalier mics can be clipped onto the wire leading to the pulpit mic. In some cases a hand-held with a tabletop stand will work as well. If there is to be a lector, the minister likes to preach from behind the altar, and the couple is quiet about their vows, you're looking at the need for three mics.

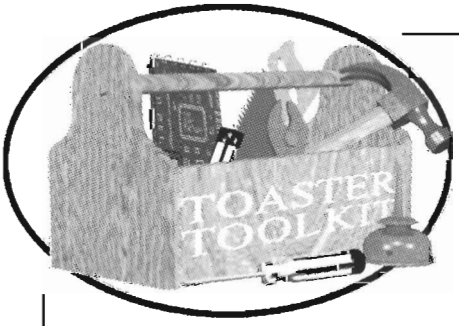
Mixing Multiple Wireless Microphones

The $70 Video Camera Microphone Mixer from Vanguard is a camera-mounted microphone mixer capable of handling three inputs. There is a catch, however. Inputs 1 and 2 accept mic inputs with no problem, but input 3 is a line input that requires a more powerful signal. You can put a wireless mic into that but the signal has to come from the headphone output instead of the mic output of the wireless receiver. The third pot then must be set in the middle, as it is a fader rather than a level pot. The headphone volume output on receiver three must then be adjusted so it matches the other two inputs. As you can tell, using three inputs is more challenging than two. The mic mixer is nice for two-person interviews. It is imperative that each wireless' output level matches. The easiest way to set the wireless output level is to plug the receiver mic output into anything with a mic input and an audio VU level meter. Then talk into the mic in a fairly loud voice and set the output to peak at 0 dB. Do this with all of your wireless mics, and levels will be easier to match up later when mixing.

Don't Forget The Squelch

Another adjustment available to enhance wireless performance is the squelch control. Azden's squelch is not adjustable, and on the Nady this feature is labeled Mute. Squelch should be increased in areas where there's more RF (radio frequency) interference in the air. The way to check for this is to turn on just the wireless receiver. If the green light comes on, indicating a radio frequency reception, and your mic transmitter is turned off, then unwanted RF is competing for air space. Use a small screwdriver to increase

Brand	Model	Approx. Range	Price	Sound & Pick-Up (through concrete wall w ith squelch off)
Azden	WMS Pro	75 feet	129.00	•Ok for speech, lacks upper frequency response, mic pick-up range is fair.
Nady	151 Hand-Held	60 feet	139.00	•Boomy, not much upper-middle or high frequencies, unidirectional pick-up pattern, not very sensitive.
Nady	151 lavalier	375 feet	149.00	•Good low, mid, and some upper response. A fairly sensitive mic.
Sampson	MR1 ST2 *w/ECM-144 mic*	285 feet	379.00	•Has the clearest speech pick-up. Boosted upper mid-range and high frequency. Response picks up a wide range of sounds far away from the mic.
Sampson	MR1 TX3 *w/ECM-44 mic*	150 feet	550.00	•The best sounding for music recording. Most natural sounding. Not as much brilliance as the other Sampson mic, but better bass and balance.



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the squelch on a Sampson (or mute on a Nady) until the green light is replaced by the red, showing no RF reception. Be warned that increasing squelch decreases the effective range. Squelch should be decreased when not needed for this reason.

What's The Frequency

Nady is currently shipping two frequencies. Channel A is 171.9 Mhz. Channel L is 170.245 Mhz. Other channels are available by special order directly from Nady. Azden's two switchable frequencies are 169.445 Mhz and 170.245 Mhz. Unlike the Nady's, these Azden frequencies are positioned so close together that two Azden transmitters cannot be used in the same location. Likewise, Nady Channel L will jam up both of the Azden frequencies. For two wireless transmitters to get along with each other, they must be separated by about 2 Mhz. Local television stations broadcasting on the same frequency can really cause problems. The chart in Figure 1 shows which Sampson channels conflict with certain TV channels. The Nady and Azden mics are safe from TV interference.

Remember that two transmitters operating on the same frequency spells trouble. You can use one wireless mic with two separate receivers on the same channel, but not the opposite; it doesn't work with two transmitters and one receiver.

Another Step Up: True Diversity And UHF

Single-channel VHF units are the most popular types among video producers. They are good, versatile mics, but are still plagued by occasional noise and interference. The next level of wireless performance is obtained by stepping up to full diversity. Nady and Sampson both offer these. Prices start just above the single-channel VHF mics. Full or true diversity uses two separate VHF signals transmitted simultaneously to achieve dropout-free performance. The receiver continuously samples and selects the best of the two signals. Overall sound quality and range is the same as their single-channel siblings. The downside of full diversity is that the receivers are not portable. They are AC-only tabletop units with two metal telescopic antennas sticking out.

UHF (Ultra High Frequency) wireless mics, used in network-level television production, cost the $1,500 and up. These mics transmit on the "blue-sky," noise-free bandwidths above 900 Mhz. There's a lot less traffic up there, so RF interference and noise are kept to an absolute minimum. They are also designed to use tabletop receivers and AC power.

New Wireless Offerings

New from Nady are the 351 and 551 series wireless mics. They have the same mics, range, and transmission as the 151 series. One benefit is the smaller cigarette-package size. The 351 has a plastic case and lists for $300. The 551 has a heavier metal case and lists for $500.

Azden has released the WHX-Pro hand-held system. It can be added to any existing VMS-Pro system, since it is switchable between the same two frequencies as before. This mic is much like the Nady hand-held in that is operated without an antenna.

Azden has also released the Cam-3 on-camera microphone mixer. It operates just like the Cam Mixer that I spoke of earlier with two mic inputs and one line input. Unlike the Vanguard Cam Mixer, the Azden does not use batteries and does not include the mixer-to-camera connector cable. Cost is about $45.00.

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This article was reprinted from Video Age, the "members-only" publication of the Association of Professional Videographers. The organization was founded by Brent and Roseanne Conrad. Yearly membership dues are $100. To join, contact the APV at (814) 695-4325.

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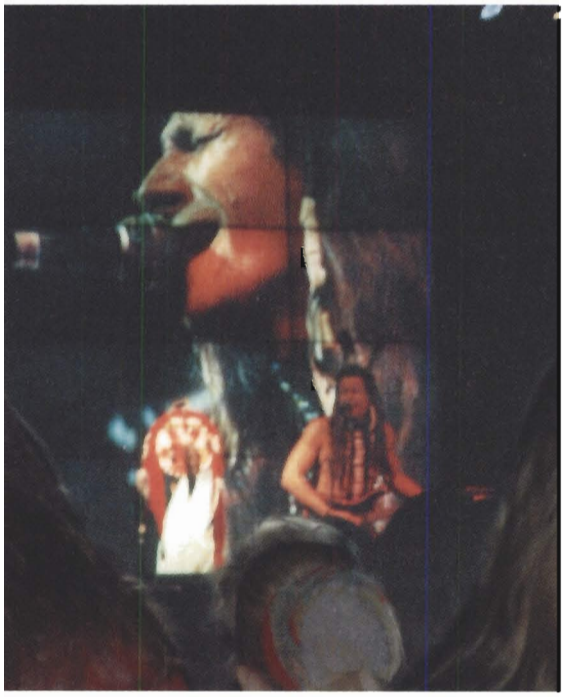
Toast on the Road: *Dances with Toast*

by Joe Clasen
and Susan Ishida

"In fourteen hundred and ninety-two, Columbus sailed the ocean blue." For better or for worse, a lot has happened since then. So what better way to mark the 500th anniversary of Columbus' discovery than to bring together the oldest of America's cultures and the newest of America's technologies? This was the catalyst for "In Celebration of the Discovery of Pnaci." (Pnaci means "Descendants of The Old Ones": a term used by many Native Americans to describe the people of the Indian Nations.) The objective of this event was to combine traditional and contemporary Native American art, dance and music with a high tech spin, to show that the cultures have not only endured, but evolved. This dizzying balancing act would take place, appropriately enough, at a club named Vertigo.



We had recently shown the Toaster setup to an old college buddy, Craig Stone, who now teaches both Indian Studies and Fine Arts classes at California State University in Long Beach. Besides teaching, Craig is also extremely active in the local Native American community and is a respected artist. He had been approached by a promoter who wanted to hold an event to commemorate the Columbus Quincentennial with a celebration of the rich cultures of the Native American people. The program would include the work of artists, craftsmen, traditional dancers and several "drums." (Drum, in this case, refers to a circle of people who drum and sing as a group.) For contrast, the evening's headliner would be Winterhawk, a Native American rock band whose sound might be described as traditional Indian song, if it happens to be performed by Led Zeppelin with a few guys from Guns N' Roses sitting in.

Craig and the producers of the show assembled an impressive group of artists. Painting, sculpture, traditional crafts and contemporary works would be exhibited in existing gallery areas of the nightclub. Additionally, the art would appear in a Framestore slide show which would run on a Pioneer Cube System video wall. Some of the artists provided slides, but the majority of the works would have to be captured on videotape, frozen, and saved as Framestores. Camcorder in hand, we hit the road in search of the perfect Framestore.

The Search Is On

The first stop was Craig's house/studio. The pieces he needed videotaped ranged from the size of a large door, to the size of a small snapshot. Since much of his work consisted of large installation pieces set up briefly in galleries, we also had to rely on existing slides, converting them later into "toastable" Framestores. For this, I use an all-in-one slide projector to throw the slide's image onto the small rear projection screen built into the projector. Because of the luminous quality of the screen, all those magic formulas you use to take screen shots of your monitor apply here too. In my case, I move the camera back 6-7 feet and use the manual iris. As we videotaped the art, we recorded verbal comments as well. We then had a videotape of the artworks with an audio recording of the names of the artists, the names of the pieces, and other useful information.

The next step was to freeze frames of the artwork, save them as Framestores and tidy them up in ToasterPaint. To give all the frames a uniform look, we simply painted all background areas black. Be forewarned: When working with a video wall, you are dealing with no ordinary overscan mode. You must make sure your images look clean right to the very edge of the maximum overscan area. For this very purpose, I keep an old 1084 monitor tweaked so that all the overscan area (and a little extra for good measure) is visible. "Correctly" calibrated monitors will not necessarily show you the whole picture.

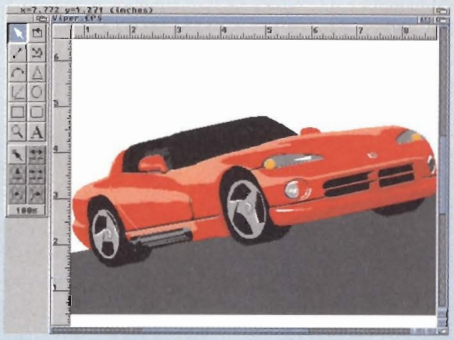
With the first batch of Framestores in the Toaster, we were on the road again. On the way to Los Angeles to check out Vertigo, we stopped to visit Darrin Henry, a young Native American artist who was going to hang a few of his paintings in one of the gallery areas. We decided to take the paintings outside to videotape them in natural light, always my preference. The paintings were quite large, but with the help of several newly enlisted Toaster roadies, we got all the pieces moved outdoors. As one person hid behind a canvas to steady it, we videotaped a few seconds of the art and included any verbal information we might need later. As the sun set over Wilmington, California, we finished the last shot, packed up and hit the road again. Our next stop: Vertigo.

Scoping Things Out

After arriving at Vertigo and getting past the doorman, we took a tour of the club to prepare for the event. On these occasions I usually let the camera run as we explore, looking for adequate power, places to tie into the existing sound system, loading areas, lighting instruments and possible camera positions. Although I'm sure we looked like lunatics prowling around, videotaping electrical outlets and commenting on blank walls, these tapes provide an easy and detailed record for us to review during production meetings. For this event, we also needed the tape to help determine the best placement of the art, taking into consideration how to most effectively display the works as well as protect them from wayward martinis and partygoers.

The next day, Winterhawk was scheduled to perform at a club in Orange County, about an hour south of LA. We packed up our gig bags and drove out to meet them, hoping to tape some live footage of the band. No such luck. The band had canceled, but Nik, their lead singer/guitarist, had stopped by with some items to be committed to tape. In back of the club we found an old concrete wall with a great organic texture and decent natural light. We used the wall as a backdrop for his "power objects" which included a medicine pouch and a drum. The objects, Framestored and Toasted, would eventually be used on the video wall during the band's performance. The concrete wall, as it turned out, has become one of my favorite textures.

5 New Programs?



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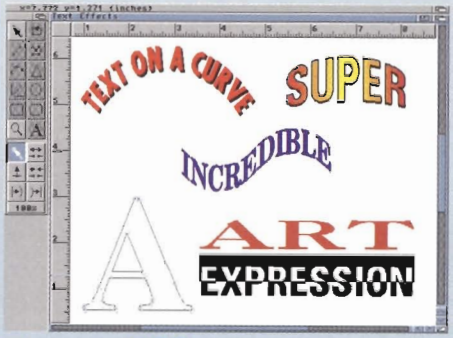

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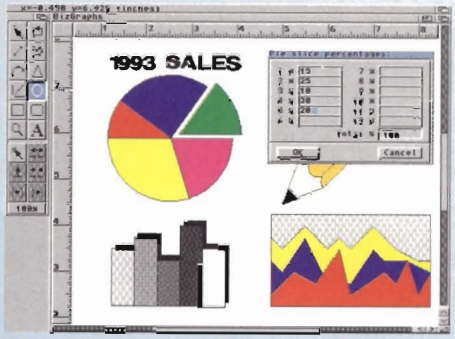

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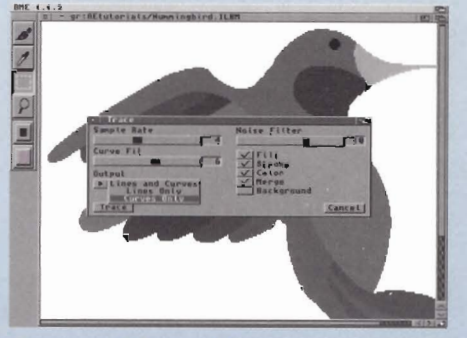

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A little consolation prize, I guess, for not getting the live footage we'd come for.

Putting It Together

During the final days before the concert, the last pieces of art arrived on slides. Again, using the projector, we obtained the final Framestores. I then started putting together the videotaped slide show. Craig had given me an audio tape of an Indian band called Xit (pronounced "exit"). In case of trouble during the

show (always expect the unexpected during a live show) I would have a backup tape to play. To make the video, I laid down the music first and then edited the images. Being a musician, I always find it easier to start with the soundtrack and let the music suggest transitions. Using some of the fun Toaster wipes, I was able to create the look of rolling up an Indian blanket or slowly pushing images from left to right as though panning down the wall of a gallery. Playing with the

music and art, the editing session turned out to be a good rehearsal for the gig. With the slide show in the can, I began work on the main art pad Framestore. The main art pad is a still graphic image which is used repeatedly throughout the show. Early in the evening as the audience enters it is projected onto the video wall. During the course of the show it is projected between acts and at the end of the show it's used as a background for the credits.

Actor Kris Kristofferson, who as it turns out is a fine photographer, had taken a striking portrait of Nik Winterhawk in traditional Indian dress, with a guitar slung across his back as though it were a hunting bow. The photo was a sepia tint, giving it a nicely aged look. In ToasterPaint, I cut out the image of Nik and placed him on an earthy texture. It was in fact, literally Earth in a photo taken from space. I colorized the new background with sepia tones to pull the two images together and added a deep purple highlight to the guitar to make it stand out. Then I drew a box to the left of Nik and put in the title and date of the show. One of my favorite techniques is to use many different layers of textures and varied subtle levels of transparency. This worked perfectly here to give the picture a really organic quality. You can see the results in "Toast On The Road: Club Lingerie" in the August/September issue of *Video Toaster User*. With the main art pad created, the videotape finished and the Framestores on my SyQuest, we were ready for show time.

Setting Up

Or so I thought. When we arrived at Vertigo on the day of the show, I realized how much more work had to be done. A video company we often work with was already setting up on a balcony overlooking the stage and dance floor. Three cameras were spread around the house. I set up my Toaster and miscellaneous toys between the switcher and the sound man. Further down the line were the guys controlling the video wall looming on-stage. A crew of weary looking technicians was performing the laborious task of tweaking the behemoth into perfect registration. If you can envision setting up sixteen video projectors, getting them all in perfect registration and then getting them all in registration with each other, you can imagine the fun involved in setting up a video wall.

Another participant, James Luna, a Native American who is respected as a video artist, was getting a couple of 3/4" machines set up to play some of his work. I had my standard Toaster setup with VCR and laser disk player providing input which would ultimately be fed to the switcher. To help set the mood, I'd brought along a laser disk of Francis Ford Coppola's "Koyaanisqatsi" (Hopi meaning: "life out of balance" and a natural choice to play at Vertigo).

Once connected to the switcher, I grabbed my camcorder and roamed around shooting some final pieces of art which hadn't been available earlier. I added them to my growing collection of Framestores while the band did its sound check. As the final connections were being checked and the audience began to enter, a spread was laid out of traditional Indian foods including hominy soup, cactus and a mountain of frybread. People continued to enter, sampled the food and wandered upstairs to check out the art. Tunes from various Native American recording artists filled the air and a festive atmosphere began to take hold.

Show Time!

The first group, a traditional drum consisting of about ten singers from several different tribes (that's a little unusual, but fitting on this occasion) began to play. Soon they were joined by dancers in fancy native dress. Traditionally, the dancers make their own dancing garments, including impressive headdresses and bustles made of materials such as porcupine quills and a variety of feathers, all having some symbolic significance. Experimenting with the Trails on Black crouton, we got some amazing effects. The dancers took the form of living fireworks as the Toaster sent trails of color flying from and around them.

As the different groups approached the stage and were introduced, I was able to build quick CG pages and get the names up on the video wall keyed over their own images via live camera feed. We also keyed some of the live performers over pretaped material for variety. ChromaFX even made an appearance, used over dancers to produce some stunningly nontraditional effects. In time, all the dancers and a large portion of the audience joined hands for a circle dance which was also projected on the video wall. It was almost midnight before the dancing ended and the main event began.

In Native American dress, Winterhawk took the stage and began their set with a traditional Indian prayer song. Behind them, I projected the Framestores

of Nik's power pieces. Then the electric guitars were unleashed and we were suddenly all on new ground. As the band rocked on, we threw a wide assortment of imagery onto the wall. Often, the main switcher would send me one of the camera sends to toast. When I thought I had something particularly good, I would tell him via headset to switch me in, projecting whatever I had onto the wall. One particularly effective sequence was a song called "Creation's Crying." We played some

vintage black and white war footage and footage of the "Dustbowl" during the Great Depression. I set the Toaster to cycle red over this, and as the song climaxed, we added live video of the band superimposed over the toasted images. The result was a ghostly image of the band playing in the midst of a city being bombed as the whole picture gradually radiated red. This was the sequence we projected onto the wall as a backdrop for the band's finale. The show was a hit and once again the Video Toaster really came through. We hit the road again, this time for home.

Maybe Columbus was a villain and maybe Columbus was a hero. Maybe things were better then and maybe things are better now. In any event, what better place to ponder the idea of balance than at a club called Vertigo? And what better way to celebrate the old and the new than with a Toast?

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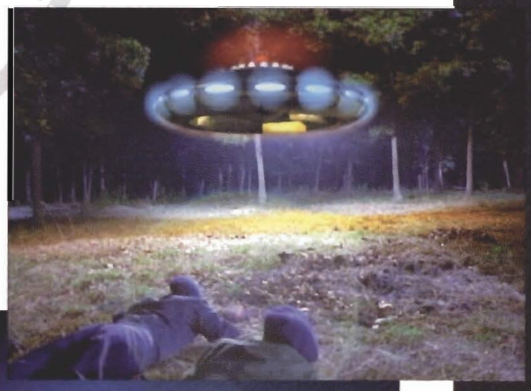

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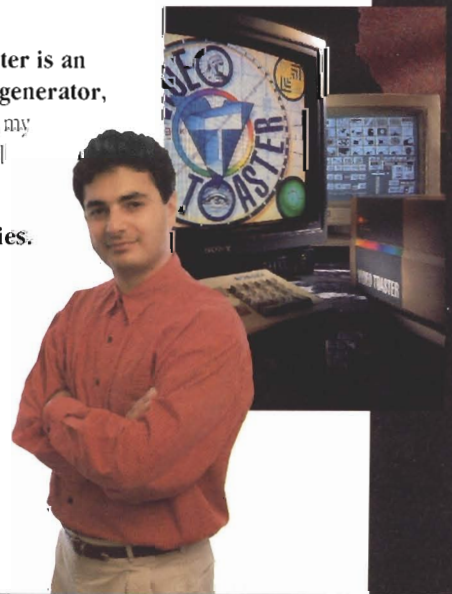

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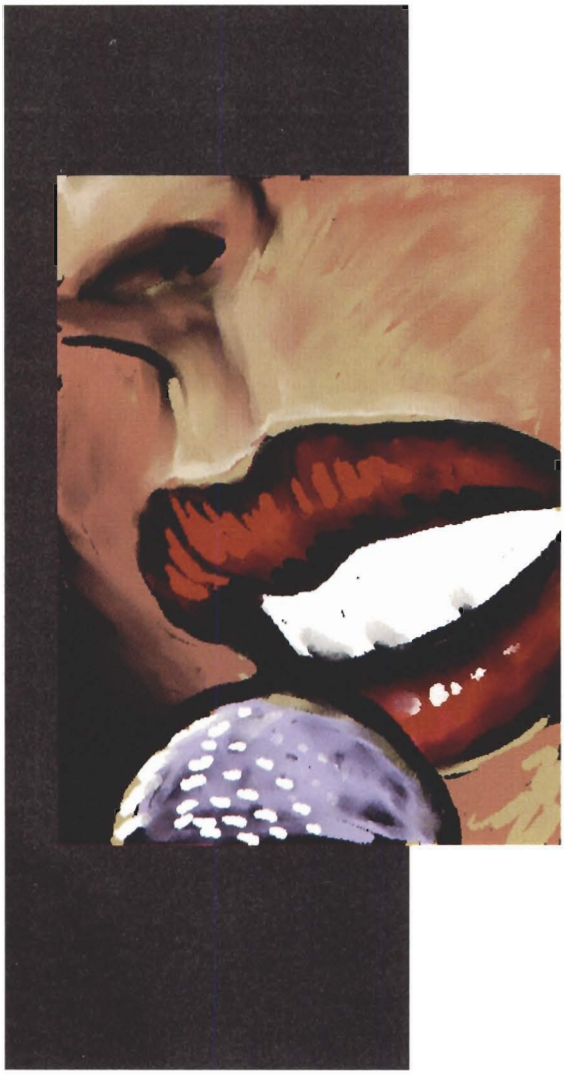

Read My Lip-Sync

Ways of Dealing with the Toaster's Two-Frame Delay

by Paul Wagner

The review of Breadboard (October/November VTU) describes the use of a 400-nanosecond delay device to interface the Toaster with other switchers. In such applications, the Toaster's 400-ns delay causes color shift and a slight horizontal picture shift if not corrected.

This article discusses another kind of delay inherent in most digital video effect devices. This is the two-frame (67 milliseconds) delay caused by the Toaster's frame buffers. Unlike the 400-ns delay, it is of concern regardless of whether or not the Toaster is being used in conjunction with other switchers. The two-frame delay is touched on briefly in the Toaster manual, under "The Digital Source," but a number of additional ramifications remain, and are discussed here.

Every time you bring in video with one of those smashing digital video effects the Toaster is famous for, the Switcher automatically punches DV1 and DV2 on the Program bus, and they remain on after the effect is done. This means that the program video is now going through the frame buffers and is being delayed by two frames. The audio and time code data are not delayed, of course, so things start to get a little out of sync. Depending on what you are doing with the video output, this can cause a couple of annoying problems.

The first problem is apparent if you are using audio from an on-camera narrator's voice. After bringing in video with a digital effect, audio synchronization will be off by two frames, which is enough to be noticeable in closeups. There are two ways to work around this first problem, where lip-sync is your only concern.

Lip-Sync Fix #1

Notice that after the DV1 and DV2 buttons are depressed, you can "unpress" them by selecting any of the Source buttons (Inputs 1 - 4) on the Toaster Program bus.

If you are performing the effect from the Toaster screen, you can punch the appropriate source button any time after the effect is triggered, and the DV buttons will be canceled automatically when the effect is complete. At that instant, two frames will be lost, so there will be a noticeable "jump" if there is motion in the picture. You can hit the source button any time after the effect is complete if there is less motion later.

Note: The F1 through F7 keys are "hot" keys for the Program source buttons. Use F1 through F4 instead of trying to click the source screen buttons with the mouse. If you are editing with AmiLink, the Toaster will not accept the source button punch until the transition is complete. Poise your finger over the appropriate function key (F1-F4) and hit it the instant the effect is done performing; or later, if that would look better.

The above method is usually the best way around the problem, but if there is a lot of motion in the picture at the end of the transition, the "jump" may be objectionable, and my second fix will work better.

Lip-Sync Fix #2

When editing, you can relay the audio two frames late, instead of eliminating the video delay as described above.

In your videotape editor screen, call up the edit that laid the video with bad lip-sync. Turn off the Video track button and turn on the Audio track if it is not on. Trim two frames from the appropriate Source In point (enter minus 2). Trim the Source Out point to keep the duration the same, if necessary. (If you have AmiLink, it will automatically keep the source duration the same as the record duration.) Redo the edit, and the audio should now

...Continued on Page 80

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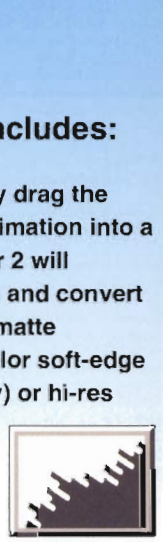

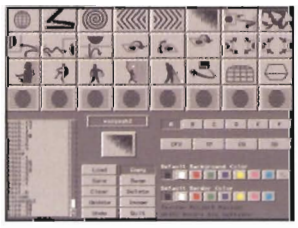

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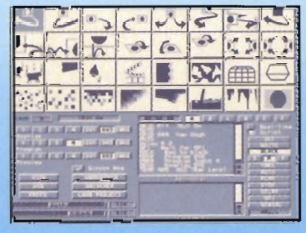

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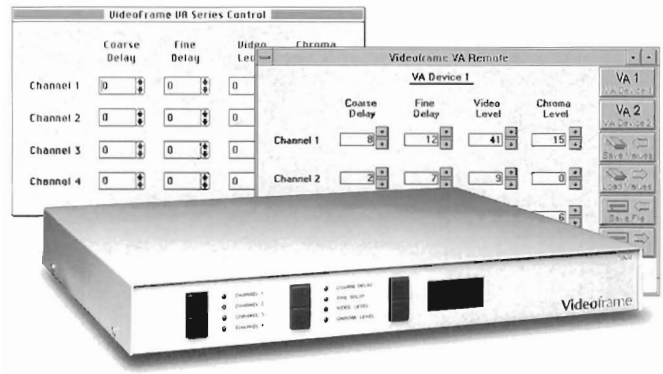

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...Continued from Page 78

match perfectly.

The second problem is only apparent if you are editing with time code. As you have probably guessed, while the frame buffers are delaying the video, time code is still getting to the editor on time, causing an editing inaccuracy of two frames. You can't see this on the source time code reader with the VTR in Pause because the video catches up when the tape stops. But when performing an edit, if the source "Out" window indicates frame #00:10, the last frame you will actually be recording is frame #00:08. This is not a big deal if you are doing simple cut edits from scene to scene, but when doing an A/B-roll edit or a special effect that calls for extending source footage from one edit into another, a "match-frame" edit must be performed, and this is where you run into trouble.

For instance, if you try to perform an edit where source frame #00:11 should be the first frame of an edit following an edit that ended with frame #00:10, the match will be off by two frames. Source frame #00:11 will follow #00:08 on the edited master. If there is motion in the picture, there will be a noticeable "jump" in the picture at the edit point. If you used Lip-sync Fix #1 to correct the timing, everything should be back in sync, and the match edit will perform correctly. You will already have made the jump at a time of your choosing. If you used Lip-sync Fix #2, or if you weren't concerned with lip-sync and didn't use either fix, you will probably have to correct the match edit with one of the following fixes:

First, try it as is. If there's not much motion, it may look okay, and you're done. If the jump is objectionable, try one of these:

Jump Fix #1

In the match-frame edit, trim the "In" point of the source that must match the previous edit by two frames (minus 2). Redo the edit and the jump should be gone.

Jump Fix #2

During pre-roll of the match-frame edit, switch to the Switcher screen, click on the Freeze button if it is depressed, and select DV1 on the Program bus. Both DV1 and DV2 should depress together, which will delay Program video again, thus eliminating the jump at the match edit. Now the video will match at the edit point, but synchronization will still be off before and after the edit point. If this is a problem, you will also need to delay the audio, as described in Lip-sync Fix #2, above.

When you use an effect that pushes Program video off the screen (such as A-12), things happen a little differently. Two frames are repeated when the effect is triggered. Usually this is not noticeable and does not cause a lip-sync problem, but it can be eliminated, if desired. Just hit the Freeze button and select DV1 on the Preview bus before the effect is triggered.

By the way, among available devices for digital video effects, this kind of problem is not unique to the Video Toaster. Even much more expensive digital effects generators have a delay of one or two frames that must be dealt with in a similar manner.

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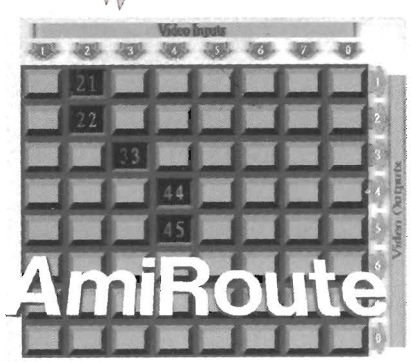

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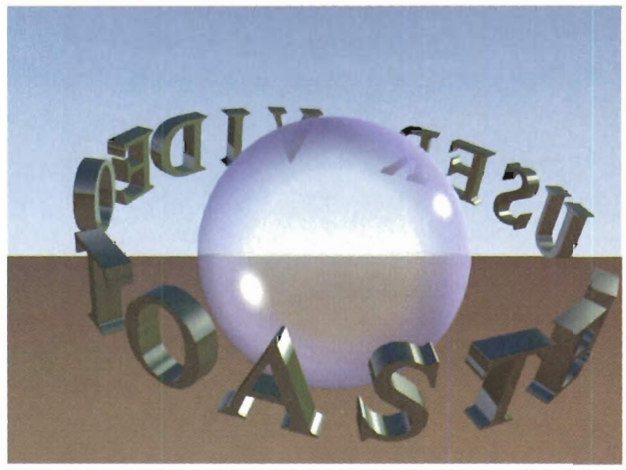
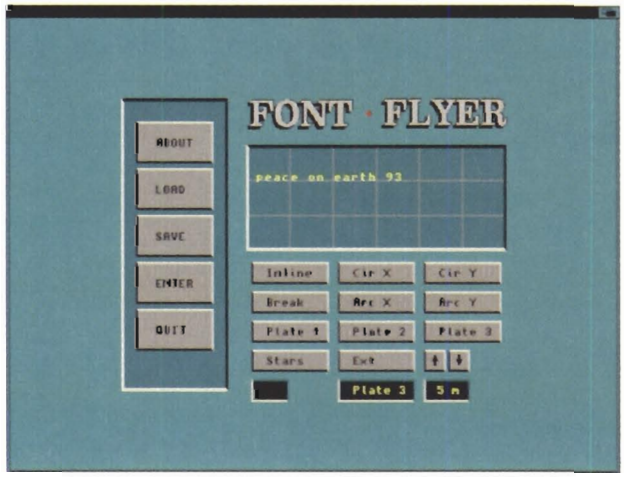
Font Flyer Review

A new layout utility for LightWave logomakers

by David Duberman

Have you ever been asked by clients to place their company's name or slogan around a globe and have it rotate, as in the classic Universal Pictures logo sequence? If so, you know what a pain it is to sit there for hours, loading the phrase letter by letter, rotating and positioning each character just so, and still the circle's just a bit off. Even setting up text in an evenly spaced straight line isn't particularly easy to do. Now there's an ingenious utility program that does all that work for you in not much more time than it takes to enter the logo text from the keyboard.





Font Flyer from MD Grafix comes on a single disk and includes three handsome 3D fonts and a brief manual. The program and fonts can be installed anywhere on your system, although I recommend copying the program into the same drawer as LightWave, and the 3DFonts drawer into your Toaster 3D drawer, simply for convenience. While MD Grafix's font character files simply use the character name (e.g. a,b,c) as the file name, the program lets you supply an "extension" before the name, so if for instance you wanted to use Toaster 2.0's 3D Chancery font, you'd enter "Chancery." as the extension (actually, it's a prefix). If your 3D font files don't have the character name as the last character in the file name, you'll have to rename the files to use them with Font Flyer, but it is worth the effort. However, since Font Flyer expects fairly large objects (see the next paragraph) and arranges them accordingly, you may have to perform a prior mass resizing of your font. Another consideration is that Font Flyer uses a "null" object (a single vertex) named "^" as a placeholder where spaces exist in your text, so you should create an appropriately-named object in your font directory. You also need to create an asterisk if one doesn't exist and you wish to use the Star option.

The fonts included with Font Flyer are named Clarendon, Dom, and Times. While Dom's and Times' characters are large, about 11 meters high, Clarendon's are huge at 18 meters. The included fonts contain the upper-case alphabet only, plus numbers and commonly-used punctuation. The characters are well-formed, but the curves don't use as many points as Unili's Broadcast 3D Fonts, thus aren't as smooth. If you create your own fonts with a program like Pixel 3D Professional and need to use lower case characters, just substitute the appropriate file in the font directory. Actually, there's no reason you couldn't use any objects you like, creating, for example, a Ferris wheel of teapots.

Using Font Flyer couldn't be more straightforward. First, you tell it where to get the font characters, using point-and-click directories. Be sure to click on the file requester's Volumes button first, then select the directory path, so LightWave can find the files. Next, enter a line of text into a requester, whereupon it appears in a gridded box. Then select one of the nine preset layout option buttons, arrayed in a square grid. These are: Inline, the straight-line layout; Circle X and Circle Y, which place characters head-to-tail in a circle around the X or Y axis; Break, which creates a new line at each space and left-justifies the text; Arc X and Arc Y; and Plates 1, 2 and 3, which use various circular arrangements with the characters laid flat.

The Stars option, in which each space is replaced by a star character (does anybody remember Hyman Kaplan?), can be used with any of these. The final setting is a scrolling numeric field with a choice of 5m, 10m, 20m, or 40m. This lets you tell the program how tall your font is, adjusting spacing and overall size accordingly. Unfortunately, most ready-made fonts are only one meter in height. The phrase "Video Toaster" laid out in Arc Y at the smallest setting (5m) using the supplied Dom font measured about 40 meters in radius when loaded into LightWave.

There's no preview facility, so at this point you have little choice but to save the scene file, then load it into LightWave and check it out. Scene files created by Font Flyer have the camera tracked to an additional null object

which is positioned at the beginning of the text and loads in at the center of LightWave's world. This null object is also the parent object of all other objects, so you can move, rotate, and resize the logo as a group. The scene files also include backlighting in the form of a point light source set opposite the camera, which creates a nice highlight.

While overall a worthwhile effort, Font Flyer suffers somewhat from "wet feet" syndrome, exhibiting certain design flaws that will no doubt be cured with time. For instance, if you don't supply a complete path name including volume name for the font directory, LightWave probably won't be able to find the objects when it loads the scene file. Also, if you change the Save directory, the program doesn't remember the new location but returns to the program's directory whenever you invoke Save. The manual is sketchy, and should at least include visual examples of the layouts and included fonts.

Nonetheless, the program works as advertised, and more than provides value for money. I recommend it highly to all LightWave users. If you do a lot of logo work, Font Flyer could turn out to be your star assistant. It's priced very reasonably—look for it at your local Amiga retailer.

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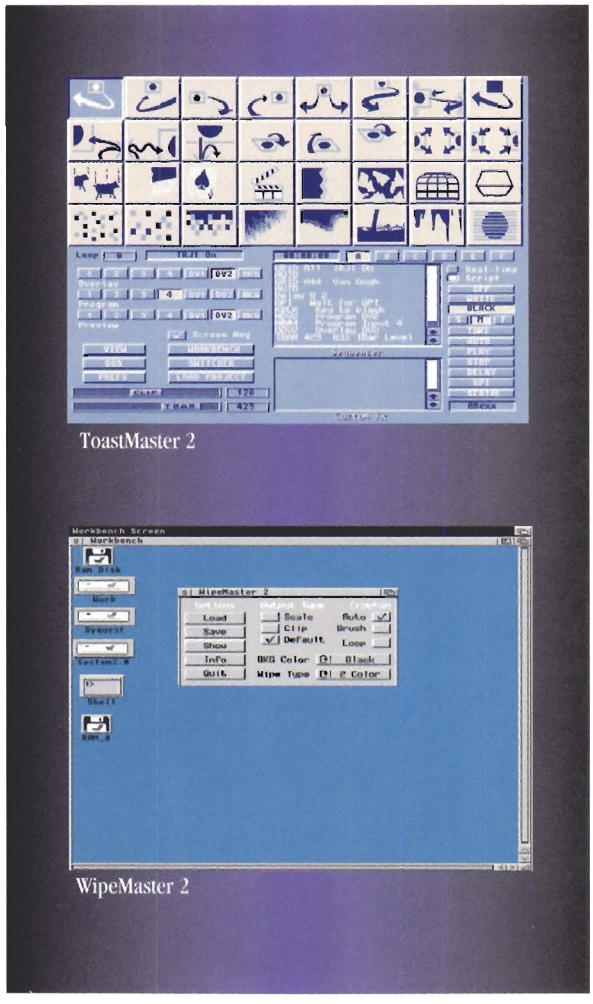
ToasterVision:
The best integrated software tools for your Video Toaster

by Tony Gomez

Byrd's Eye Software, the company that released the ToastMaster and WipeMaster software tools for sequencing Toaster effects and creating wipes, has just released a new integrated package of tools for the Video Toaster. This new package, developed by Ken Byrd, is called *ToasterVision,* and consists of five modular programs that offer superior techniques for controlling and enhancing the use of your Video Toaster.



ToastMaster 2

WipeMaster 2

ToasterVision's Modules

The five software modules are WipeMaster 2, Toaster Project Manager, ToastMaster 2, Framestore Manager, and Framestore Catalog. WipeMaster 2 and ToastMaster 2 are actually entirely new programs that provide significant performance improvements over the original WipeMaster and ToastMaster releases. The primary differences between ToastMaster 2 and the original ToastMaster are the use of actual Toaster Crouton images and additional features. WipeMaster 2 is an entirely new program as well, and we'll give a mini-tutorial on its use later.

The Toaster Project Manager, FrameStore Manager, and FrameStore Catalog are also new and unique. The Toaster Project Manager is a vital module which allows custom project creation. Its benefits will be demonstrated when we create our own custom effects and save them as custom projects for later use by the Video Toaster.

The FrameStore Manager is a set of utilities for compressing or decompressing Toaster framestores, displaying the framestores as standard gray-scale IFFs (without need of the Video Toaster), and saving the framestores as IFF images. The compression ratio percentage varies, depending on the actual complexity of framestores used, but no data is lost in the process. I found in general that complex images compressed to 60-80% of their original size. More importantly, the compression process is very fast, typically requiring about three seconds, whereas a competing product takes about 20 seconds! Two significant benefits of compressed framestores are less hard drive space required and faster loading time.

The FrameStore Catalog is a visual database of all your Video Toaster framestores. Its interface resembles a VCR control panel for easy maneuvering through the images.

Filling The Effects Vacuum

Until now, the number of wipe transitions available on the Video Toaster's switcher has been limited. In Toaster 2.0, these wipes are assembled in six program banks. Despite this goodly number of effects, regular Toaster users have been begging for more. A casual look at local cable TV spots often reveals the same recognizable Toaster transitions being used repeatedly. The need for new additional Toaster effects has been evident for some time. Now, with the arrival of ToasterVision, users can create their own transitions, or import exciting new ones created in ToasterVision by other videographic artists. Soon, wipes and other video transition packages will become as popular as Toaster's font packages from outside suppliers. Although there are five modules in all, this article will concentrate on ToasterVision's "crown jewels"—WipeMaster 2 and the Toaster Project Manager—with a series of mini-tours.

Wipemaster 2: A Mini-Tour

WipeMaster 2's opening interface screen has five main areas: Options, Output Type, Crouton, Bkg Color, and Wipe Type. Most selections can be made either by clicking on the screen or from pull-down menus. Options offers Load, Save, Show, Info, and Quit. The program can load Deluxe Paint-type animations as well as existing Switcher effects. Yes, even the Toaster's Switcher effects can be loaded in and modified!

Choosing Show plays the anim or Toaster effect for viewing. Info gives specifics about the anim: file type, file name, frame count, the pixel height and width in which it was saved, and the number of colors used in the palette. The Save option brings up the Save Format window, from which you can chose Animation, Toaster Effect, or Distributable. Animation saves the file in the standard Anim format, allowing for further reworking in DPaint, if desired. Toaster Effect saves the file as a Video Toaster effect for direct use within the Toaster switcher. Distributable saves the file in Byrd's Eye's own proprietary compressed form so that it can be distributed to other users without the legal problems previously associated with distributing NewTek-coded Switcher transitions.

The Output Type options reveal WipeMaster 2's superior working methods. You don't need to work with an arcane template into which your

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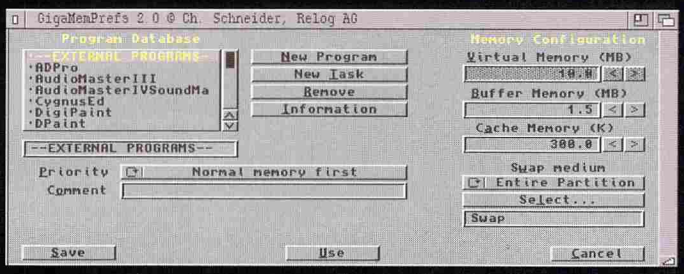

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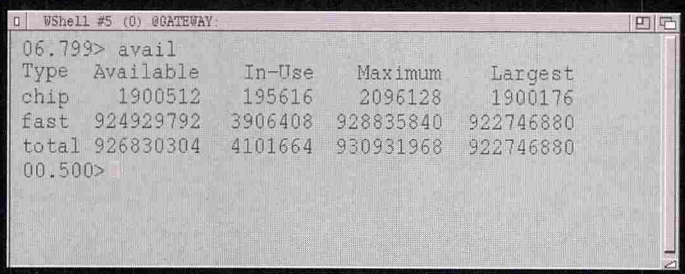

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animation must be sized, as is the case with other programs. With WipeMaster 2, you use your existing, full-sized animation as it was created. WipeMaster 2's Scale, Clip, and Default output options offer unprecedented control over the animations intended for custom Toaster wipes. Other advanced output options are available from the pull-down menu, which we'll get into later.

Scale, the first output option, allows you the freedom to enter previously existing animations of any resolution size, and re-scale them to the proper size for a Video Toaster effect. For example, an existing animation in standard hi-res with no overscan (640 x 400) would be unusable as an animation format for the Video Toaster. However, with the Scale option, it can be converted into an acceptable format. Moreover, it does this in real time. By the way, this unique and powerful conversion utility isn't just limited to Video Toaster usage. It can replace the laborious anim re-scaling methods previously utilized through the combined efforts of Deluxe Paint and Art Department Professional, where anims were saved out as individual frames and re-scaled one at a time.

Clip, the second output option, is also extremely useful. It is used to cut a rectangular area from an existing DPaint animation to fit the resolution requirements for Video Toaster's transition effects. In a way, DPaint's limitation in resizing animations can also be corrected with WipeMaster 2's Clip option. Clip and Scale are mutually exclusive; you select one or the other.

Advanced Output Options

Additional output options allow you to take existing or new Toaster effects and flip, alter, and re-save them as totally new effects. These advanced output options include Flip with Horizontal, Vertical, or Offset; Mirror Horizontal or Vertical; and Wavy Horizontal or Vertical. For example, suppose instead of the conventional left-to-right "Arrow" wipe, you wanted the reverse: a right-to-left "Arrow" wipe. No problem. Load the Arrow effect from the Toaster Effects drawer, then select Show to verify you've captured it in ToasterVision's buffer. Next, from Info note that it's an eight-color 384 x 241 61-frame transition. Select Flip Horizontal from the Output Options menu. WipeMaster 2 will then perform an automatic recalculation of the "Arrow" effect, reversing it horizontally on the fly! When finished, select Show to verify the change. Now, before saving it as a new Video Toaster effect, ensure that the Default Output Type (optimized for Video Toaster) is selected; Crouton is set to Auto; Bkg Color (your choice); and Wipe Type is selected to eight-color. Select Save Toaster Wipe, which brings up a requester into which you can enter a new effect name, such as ReverseArrow, etc. Lastly, verify the Anim frame number from which the Auto-Crouton will automatically extract the Crouton image (the image used on the effect's button in the Switcher interface). It's normally set halfway through the animation, in this case frame 30. Select OK and the new ReverseArrow wipe is automatically saved to the Toaster Effects drawer along with its Crouton image. (To enter this new effect as part of the Toaster switcher, it will have to be loaded back as a Project. This is done with the help of ToasterVision's Project Manager module.) Also you can create other new effects by experimenting with the Mirror and Wavy output options for an unending variation of new effects from existing transitions. It's obvious that hundreds of new Video Toaster effects can be created in this way.

"Carousel" is a three-color matte transition by Uncle Ernie Videographics, available in ToasterVision's Distributable format for use with Video Toaster.

Default, the last WipeMaster 2 option type, loads an animation or a Video Toaster effect without modifying its original size. This allows you to use your own DPaint animations or existing Video Toaster effects. Both can be either in 736 x 241 (Medium-Res, non-interlace) or 368 x 241 (Lo-Res, non-interlace), used in over 90% of the Toaster's existing effects.

The Crouton selection buttons allow for the automatic creation of crouton images. Auto normally uses the animation's middle frame. There is a slider which allows selecting the image from another frame if the one chosen by default is not to your liking. Another Crouton option is the Brush selection, which allows you to use a specially created DPaint brush as your source for the Crouton image.

Toaster Effect Types

ToasterVision allows for the creating and importing of the Video Toaster's several transition types. These effects fall into three basic categories: matte wipes, soft-edged wipes, and hard-edged wipes. During the transition from the Program video source to the Preview video source, matte wipes use animated design shapes that are hard-edged and appear in a pre-selected background color unrelated to either the Program or Preview images.

Soft-edged wipes do not employ "silhouetted" shapes as do the matte wipes. Instead, they transition between the Program and Preview video source with shapes and images edged with varying levels of transparency, depending on the number of colors used in creating the wipe effect. Hard-edged wipes, for transitions which use only the two video sources, are created with a limited two-color palette, and use neither background color silhouettes nor soft-edge transparencies.

WipeMaster 2's Wipe Type cycle gadget selects which of the following type of effects you wish to save and use. Two-color is a hard-edged wipe. Three-color wipes are matte-style, while four-, eight-, and sixteen-color are soft-edged wipes. Model patterns itself after an existing Toaster effect. We'll explain the various wipe types further by loading in some existing effects and examining them. All wipe types are available in both low and high resolution.

The Bkg Color cycle gadget allows you to cycle through and select from the eight pre-defined background colors plus snow texture, used by matte-style Toaster effects.

Two-Color Effects

These are hard-edged effects, originally created in DPaint with a two-color palette, and usually in Lo-Res maximum overscan, non-interlace (368 x 241). To examine one from the Video Toaster 2.0 Switcher interface, select the Drip Effect (A47). From the WipeMaster 2 interface, select Load. Then from the requester, select the Toaster/Effects drawer, and pick the Drip effect. Next, click on Info to examine the file and you'll see it's a Toaster Wipe, with the name Drip. You'll also find it is 107 frames in length, with a

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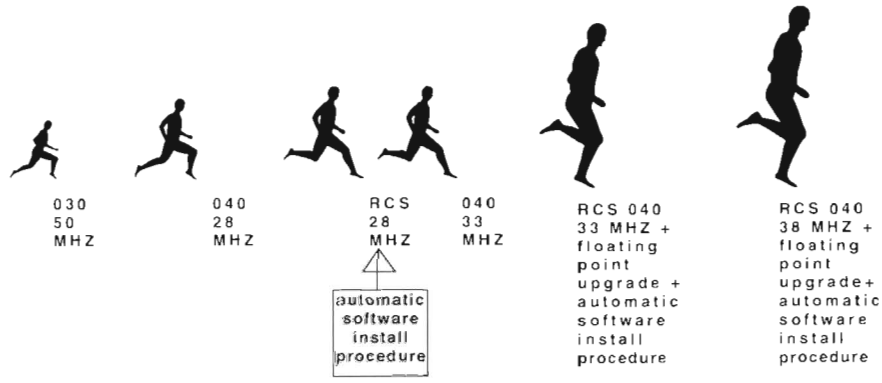

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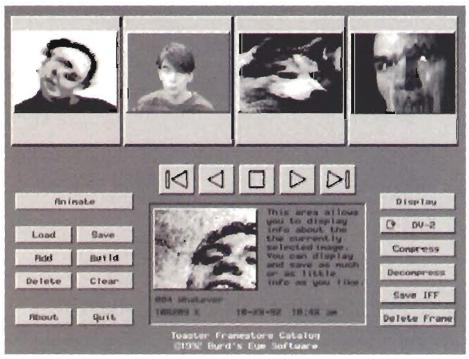
resolution of 384 x 241, and has two colors. Note: although this animation, and others, were originally created in Deluxe Paint with a resolution of 368 x 241, the Video Toaster automatically adds 16 pixels to the width, making it 384 x 241, in order to be usable as a Toaster effect.

Now, from the Switcher interface, you should have two video sources selected on Program and



Framestore Catalog

Preview respectively. (My images were the default VT Logo and color bars, respectively.) Pull the T-bar down halfway, and notice the effect on the RGB screen. The initial RGB image is a full screen olive green color. As the T-bar is pulled down, a drip-shaped image in blue slowly replaces the original green one. The effect as seen in the Toaster Program output is the VT Logo being gradually replaced by the image of the color bars with the drip effect. Technically, the VT logo (Program bus) is represented by the original olive green color, and the color bars (Preview bus) is represented by the new blue drip-shaped background. These colors were optimized by NewTek to give the best performance.

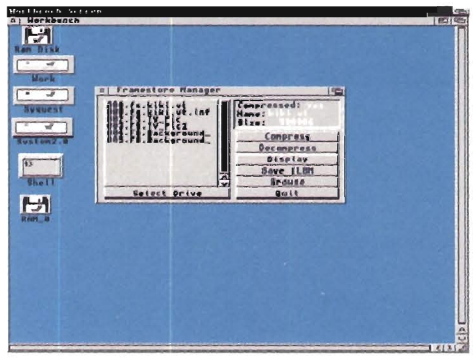
Three-Color Effects

These "Matte-type" effects include the Toaster's KikiFX, ActionFX, etc., and perform a transition from one video source to another while using a hard-edged silhouette in a selected background color. Deluxe Paint requires the loading of a four-color palette, however, only three of these color registers are used in the three-color effect. Color 0 is not used; color 1 is replaced by the Program image; color 2 is replaced by the Preview image; and color 3 is the background color used on the moving silhouette shapes.

Four-Color Effects

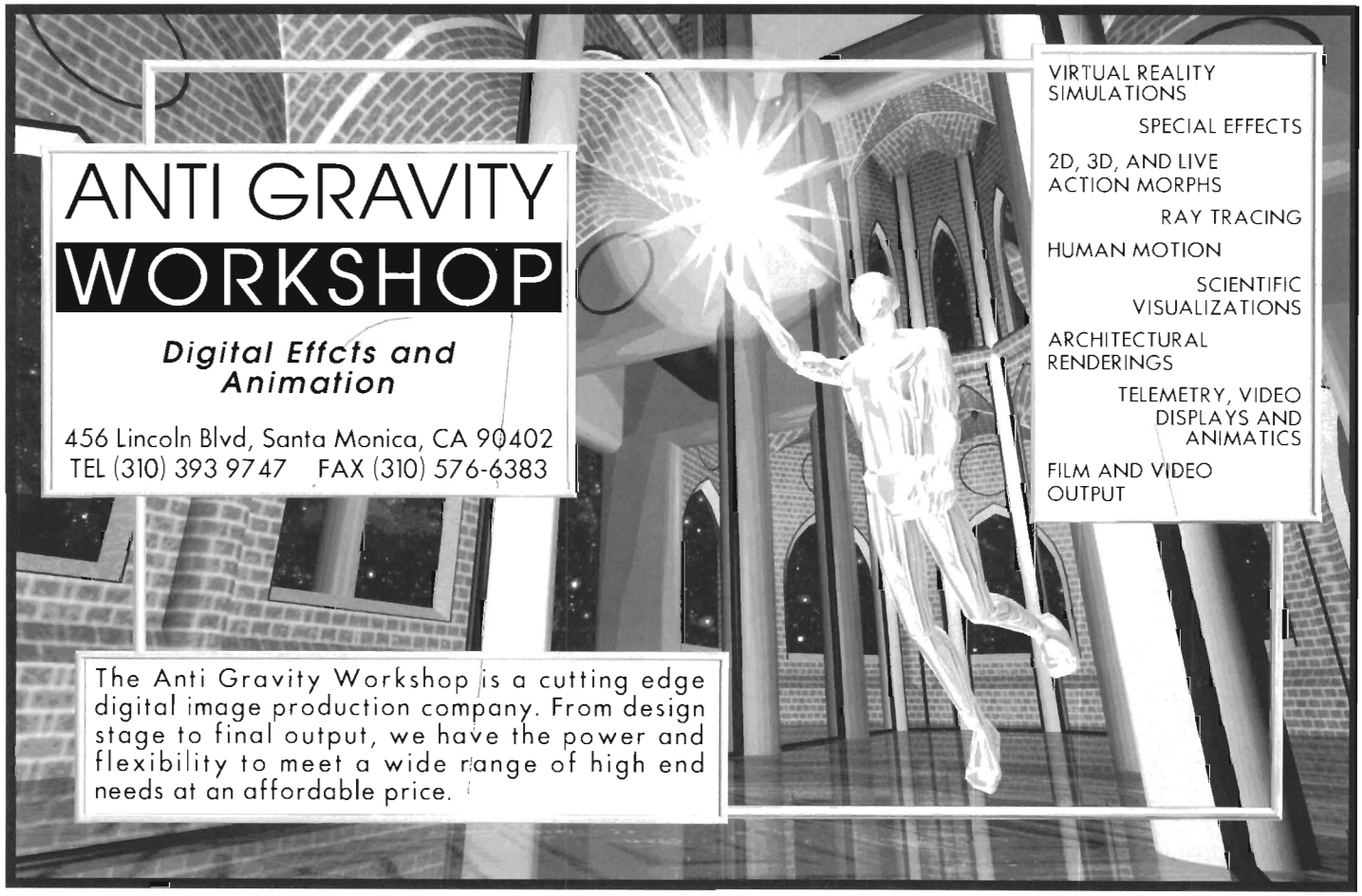
These "soft-edge" effects include many of Video Toaster's organic-style transitions. To understand the use of the color palette in creating a four-color soft-edge type of effect, let's examine one in Deluxe Paint. The four colors in NewTek's "Wiper" effect are: color 0 (olive green), color 1 (dark purple), color 2 (light green), and color 3 (light blue). Note: in designing your own wipes in DPaint, you don't have to use NewTek's palette selections during the creation process, but you will want to use them when saving your designs as Toaster wipes. NewTek's palettes were created to optimize results for the soft-edge transparency steps. These special four-, eight-, and sixteen-color palettes are described in the manual's Tutorial section.

Their ability to create a "soft-edge" transparency effect on the wipe animation is due to the following: color 0 is assigned 100% of the Program source. Color 1 gets 25% Preview and 75% Program. Color 2 gets 75% Preview and 25% Program. Color 3 is 100% Preview. Let's now take a minute to examine the Wiper animation in DPaint.



Framestore Manager

From WipeMaster 2, select Load, and from the requester go to the Toaster/Effects drawer and select the "Wiper" effect. When loaded, select Info. Note that it's a four-color effect in 384 x 241 resolution. Save the file as a DPaint animation, by selecting Save, then Animation, and give it a safe destination and name like Ram:wiper.anim. That way, it won't overwrite the original wiper effect. Now, run Deluxe Paint and load wiper.anim. (Don't worry when you see your



original 384 x 241 wiper animation automatically loaded back in as a quarter-size image. This happens because Deluxe Paint doesn't have custom-size screens for anims (such as 384x241), so it uses the next largest screen size to accommodate an animation, in this case 640 x 400. At this point, if desired, one could Clip the image to the original 368x241 size, re-load it into DPaint so that it fills up the full screen, and begin to refine or alter the animation to your liking.

Eight-Color Effects

These are a higher level of soft-edge effects, with even finer transparency levels than the four color effect. Transparency increments between the eight colors are approximately 14.5%. The Van Gogh (A44) and Spray Paint (A45) wipes are eight-color effects with exquisite soft-edge transitions.

16-Color Effects

These are also soft-edge effects with even more levels of transparency. Two samples of these are the Toaster's horizontal or vertical motion soft-edge effects, such as SOFT L-R (D21).

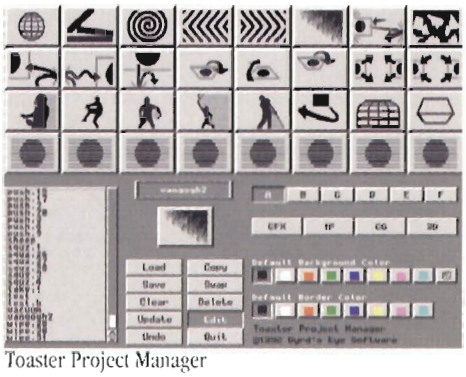
Model

Sometimes using Flip or a comparable function on an existing effect doesn't work right. The current version of Model allows you to correct this by choosing an existing effect as a model or template for creating a new effect, which will have no problems. In the conversion process, the new effect will inherit all the attributes of the original effect. A future version will add the ability to create custom 3D warp effects!

If you've been following this mini-tour of WipeMaster 2 on your Toaster, you know that it has the power to create dazzling new custom Video Toaster effects. But once created, they have to be made accessible to the Switcher interface. This is done through the second module of ToasterVision's crown jewels, the Toaster Project Manager.

Toaster Project Manager: A Mini-Tour.

TPM's user interface couldn't be friendlier.



Toaster Project Manager

When started, the familiar VT Logo appears. After a moment, the TPM interface is presented. The top half of the screen has six available slices (A-F), each with 32 blank Croutons which can be programmed to house new transition effects. The lower left side of the TPM screen contains the Toaster Effects requester. This shows the file names of all available wipes in the Toaster effects drawer. A scroll gadget permits the easy perusal of these effects. Choosing any transition from the list highlights the selection and transfers its Crouton image into a window at the right along with its name. Then the Crouton image can be clicked upon and dragged up to any blank crouton space available. TPM's Copy, Swap, and Delete commands allow further control over the custom project.

Still more control is gained through the Edit button. Selecting Edit and then clicking on any given Crouton brings up the Effect Settings window. From this window, each effect's default speed can be altered. Each button (Slow, Medium, or Fast) has an associated gadget which, when dragged along its path, causes a numbered value to change from 1 to 255. The numbers are relative to frames per second, i.e. 30 equals 1 second. Thus an effect with a Slow setting of 60, a Medium setting of 30, and a Fast setting of 15 would take two seconds, one second, or a half-second respectively.

The default background and border colors are also available as selectable items by clicking on the appropriate color buttons and making the selection. Wipe animations with borders are created as three-color matte transitions in the same manner as other effects utilizing the selection of background colors.

A "Fix" For Video Toaster/Deluxe Paint Sync Problems

If you design animations with Deluxe Paint in the maximum overscan mode, and are multi-tasking with the Video Toaster, the severe overscan condition will cause the Video Toaster to "lose sync." Traditionally, the way around this was to

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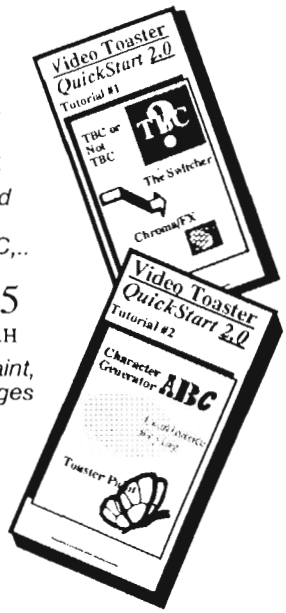

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create your animations "off-line" with the Video Toaster inactive, or on another computer. A Byrd's Eye "fix" is to toggle back to the Video Toaster with Control-Control-Alt-Alt, which re-syncs the Toaster, then return to Deluxe Paint with the same key sequence. Now—this is important—drag the Deluxe Paint screen down from the top about 1/4" with the left mouse button, and continue working with Deluxe Paint as before. This physical offset of the Deluxe Paint screen should prevent further syncing problems when using the Video Toaster at the same time.

Distributable Custom Toaster Wipes: Creation And Use

As mentioned previously, Byrd's Eye Software has devised an ingenious method of distributing custom Video Toaster wipes to avoid potential legal issues related to the release of proprietary NewTek software technology. Thus custom wipes from third party software companies can at last be legally sold to customers who wish to install them on their Video Toaster systems.

The creation of a distributable wipe is easy with WipeMaster 2. After you have created your custom wipe, select Save, and choose Distributable as your save format. This creates a proprietary compressed-format file with its own icon. These files and their associated icons can be easily transferred to floppy disks for distribution. The end user merely double-clicks on the desired icons, initiating an automatic process that installs the chosen effects into the Video Toaster's effects directory. Then the Toaster Project Manager is called up to install the chosen effects into a new project.

A Few Words On Other Modules

As mentioned, the Frame Store Manager and Frame Store Catalog work beautifully together. FSM compresses and decompresses framestores at incredible speeds and creates gray-scale IFF pictures for further storing and handling within FSC, the mass storage pictoral database.

Frame Store Catalog can load a whole catalog of up to 100 framestores at a time, limited only by available memory. The VCR-like controls provide for quick visual scanning of the catalog pics, allowing four images to be displayed at one time. The central Pause button stops the scrolling wherever you want, while the outside buttons jump to the first and last pics in the current catalog. The lower half of FSC's interface contains a variety of image manipulation devices. There's no limit to the number of catalogs you may construct. Individual IFF pictures are activated by loading them into the lower center panel. Among other things they can be added or deleted to a catalog, annotated for future referencing or placed into a buffer for full viewing and applied use.

Final Words

The ToasterVision ($224.95 list) integrated software package of tools provides you with unprecedented power and control of your Video Toaster. This new package of modular programs from Byrd's Eye Software makes the competition pale in comparison. You deserve the best, and in my opinion, this is it! If you already own a Bird's Eye or competing product, contact Byrd's Eye for a special upgrade offer.

Byrd's Eye Software
9001 Northgate Blvd., #135
Austin, TX 78758
(512) 835-4811

A series of distributable custom designed wipes for ToasterVision is available from Uncle Ernie Videographics. These wipe sets are released in project banks of 32 effects each. They include design themes such as weddings, Bar Mitzvahs, music, and children. List price is $79 + $5 S/H per 32 wipe set. For more information contact: Uncle Ernie VideoGraphics, 125 Aristotle St., Simi Valley, CA 93065.

Also available is a two-hour tutorial videotape, "ToasterVision: The Video Guide" ($49.95 + $5 Priority Mail Shipping/Handling). The videotape is a tutorial guide to the five modules of ToasterVision with Ken Byrd, the developer of ToasterVision. The tape is available in VHS from Toaster Crustaceans, 1730 Arcane St., Simi Valley, CA 93065.

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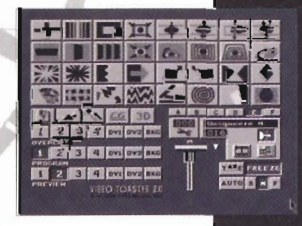

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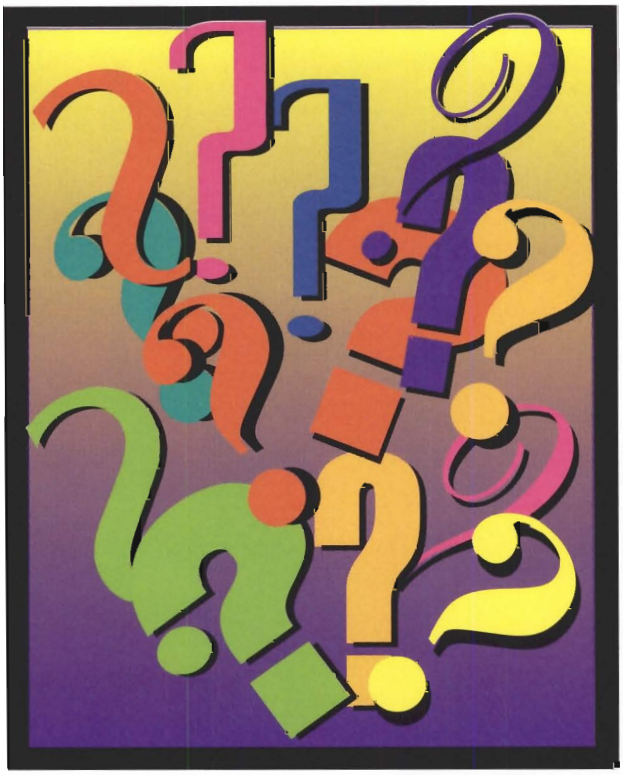
Review: Y/C Plus

At last, Y/C In and Out!

By Lance Hutchinson and Tom Egan

The newest Video Toaster peripheral is the Y/C Plus board from Smith Audio Visual, Inc. Y/C Plus gives the Video Toaster four Y/C inputs and two Y/C outputs. This allows direct connection between the Toaster and S-Video, Hi-8, MII and Betacam VCRs with Y/C 3.58 (Megahertz; subcarrier frequency) inputs and outputs. Composite preview is still available from the Video Toaster board.



Y/C Plus input and output uses video processing technology from Faroudja Laboratories for state-of-the-art encoding and decoding. This same technology is licensed by most major manufacturers of broadcast quality video equipment.

Installing Y/C Plus

Installing Y/C Plus requires only 15 minutes. The board installs in a standard Amiga 2000 Zorro II expansion slot. Most third party Toaster expansion boards go in the Amiga's PC expansion slots, which Y/C Plus leaves available for other devices. Once the board is seated in its slot, it connects internally with two ribbon cables to expansion ports on the Video Toaster card. All of the connectors are on the top of both cards and are easily identified.

Next, the Video Toaster's inputs must be configured; composite or Y/C can be specified for each of the four inputs. Four jumpers on Y/C Plus determine which inputs will be composite and which will be Y/C. This maintains compatibility with composite video and allows you to change over to complete Y/C as your equipment changes. Changing the input type must be done with the Amiga's cover slid back at least three to four inches. The jumpers are at the top of the card's back side, making reconfiguration easy and convenient. When configured for Y/C input, the Toaster's composite inputs become looping composite outputs, which is great for adding monitors to the system.

We encountered no problems with the computer power supply when using Y/C Plus, but Smith Audio Visual does recommend upgrading the 200 watt power supply found in the 2000-series Amigas to at least 230 watts if the system has many boards.

How Does Y/C Plus Work With Other Products?

Y/C Plus is only the second peripheral board to work with the Video Toaster by direct connection with ribbon cables. The first, Breadboard from PreVue Technologies (formerly Cardinal Video Products), provides active video delay lines and key output and key fill signals from the Toaster for use upstream from a switcher. Breadboard attaches to the Toaster at the same JP-2 connector used by Y/C Plus, which leads to this question: Can the two boards be used together?

Breadboard and Y/C Plus can be used simultaneously by adding another header plug to the ribbon cable connected to the Toaster's JP-2 connector. The Breadboard will not provide delays to match Y/C Plus' output. It will provide delays for all composite Toaster inputs and still provide key output and key fill signals in composite, as well as gain controls for the Toaster's composite output.

Where would you use Y/C Plus and Breadboard at the same time? A good example would be a cable TV studio or small-market television station using Y/C decks for production. The Toaster/Breadboard combination can be used upstream of composite studio switchers for CG and effects, with the output being recorded in composite on the Y/C decks. For higher quality post-production work, Y/C Plus' Y/C output can be routed directly to the recorder, bypassing the downstream composite switcher. A simple change of the video input button on the front of the Y/C deck takes the composite switcher in and out of the video signal path.

How Does Y/C Plus Output Look ?

We ran numerous tests on the Y/C Plus board using both composite and Y/C outputs to the Video Toaster from a Panasonic AG 7750 S-VHS deck. Toaster output was recorded on both the Y/C and composite inputs of a JVC BRS822U and a JVC BRS605U. We recorded numerous test signals from the DPS Personal TBC as well as Toaster framestores and character generation. An S-VHS demo tape from JVC was used as a first-generation source. All sources were taken through the Toaster another two generations and evaluated in third generation in all combinations of Y/C and composite input and Y/C and composite output.

Y/C Plus is most impressive in its ability to reduce dot crawl and cross-color NTSC artifacts around the edges of highly saturated color transitions. The unit eliminates nearly all horizontal dot crawl and significantly reduces vertical dot crawl on any input, whether from composite or Y/C sources. Reduced dot crawl is evident in any generation when comparing the Y/C output to the composite output. This is most evident on Toaster graphics output from either the character generator or the frame buffer. Obviously Y/C Plus works best as a Y/C output device. Put another way, if your deck has high quality encoding to NTSC, we could see no obvious advantage to Y/C input over NTSC input to the Toaster. Better quality pictures

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were obtained on the Y/C output of the board regardless of the input.

Y/C Plus also claims to reduce Moiré patterns, which are seen as subtle color and wavy lines moving through areas of high detail. The Toaster produces very little Moiré interference, and we could see no reduction of Moiré patterns between any combination of either Y/C and composite inputs or outputs of the Toaster when using multiburst and multisweep test signals recorded to tape. We attribute this to the Video Toaster being very good in its own right, rather than Y/C Plus doing a poor job.

Anyone doing graphics work of any type with the Video Toaster needs this board to go to any professional luma/chroma tape format. Simply put, all Toaster graphics look significantly better when recorded in Y/C through Y/C Plus.

Improvements in Y/C-to-Y/C editing are much more subtle because Y/C Plus only addresses some problems of "color under" video tape machines, such as S-VHS, Hi-8 and 3/4" decks. Because of the reduced color information inherent in these tape formats, lack of color resolution and color smear are still evident in the tapes in either Y/C or composite editing. The Toaster is still a composite device, and all Y/C signals into the Toaster are decoded to composite by Y/C Plus before entering the Toaster. This board will not create a complete Y/C path through the Toaster even though it has Y/C ins and outs. With its Faroudja processing techniques, it does an excellent job of encoding the Y/C signal to NTSC for input and decoding the NTSC signal back to Y/C for output. The cost of a professional A/B roll S-VHS edit system can be between $15,000 and $30,000. At $949, Y/C Plus is well worth its price for the improvement to the editing system, due mainly to its Y/C output.

One last caveat. If you are using board-based TBCs and are not using the Y/C inputs, significant signal degradation will occur before the signal ever reaches the Video Toaster and Y/C Plus. All desktop TBCs perform their internal processing using Y/C signals. If the NTSC inputs are used, the signal must first be decoded to Y/C and, in these less expensive TBCs, this can lead to loss of detail in the video signal and the addition of many serious artifacts. Picture quality will be improved by adding a Y/C cable between the source VCR and its TBC. The Personal TBC III from Digital Processing Systems works significantly better with Y/C input than with composite. The DPS 230 TBC, an external stand alone unit, is a less expensive TBC with Y/C input and output. In split-screen tests, with both TBCs receiving Y/C inputs and the Personal TBC III attached to the Toaster in composite and the DPS 230 attached to Y/C Plus in Y/C, we could see no difference between composite and Y/C inputs to the Toaster through Y/C Plus. Both signals showed a large improvement in dot crawl when recorded in Y/C as opposed to composite.

Y/C Plus Video Specifications:

Video In:	(4) Y/C or composite Inputs (seletable)
Video Out:	(2) Y/C outputs
Luminance:	1 Volt p-p, 75 ohms, unbalanced negative sync
Chrominance:	286 mV p-p, 75 ohms balanced
Horizontal Resolution:	Greater than 450 Lines
Signal to Noise:	Greater than 60 dB
Differential Phase:	Less than 1.0 degree
Differential Gain:	Less than 1.0 %
Response:	-3 dB at 5.5 Mhz
K Factor:	Less than .7%
Total Delay:	1760 nanoseconds
Y/C Combiner Delay:	12 nanoseconds

(provided by Smith Audio Visual)

Final Notes

Y/C Plus is only the first of a number of planned products from Smith Audio Visual, Inc. They are almost ready to release a one- input, five-output Y/C distribution amplifier ($299) and a one-input five-output composite distribution amplifier ($149) for use with Y/C Plus. They are also working on a Y-688 (3/4" Y/C or dub format) input/output board for the Video Toaster with an estimated cost of $599, as well as a component Y, R-Y, B-Y input/output adapter for the Video Toaster with an estimated price tag of $6500.

The Y/C Plus board is an excellent add-on for the Video Toaster and, for some professional applications, such as single-frame rendering of Toaster graphics, is absolutely required. For more information about Y/C Plus, contact:

Smith Audio Visual, Inc.
1410 South Kansas Avenue
Topeka, KS 66612
Phone (913) 235-3481
Fax (913) 235-3485

Tom Egan and Lance Hutchinson are Video Toaster specialists at Alpha Video, a leading desktop video dealer. They can be reached for comment at Alpha Video, 7836 2nd Avenue South, Minneapolis, MN 55420. Phone (612)-881-2055, FAX (612)-881-4835.

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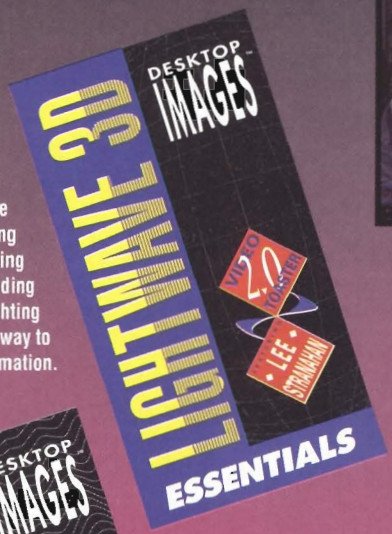

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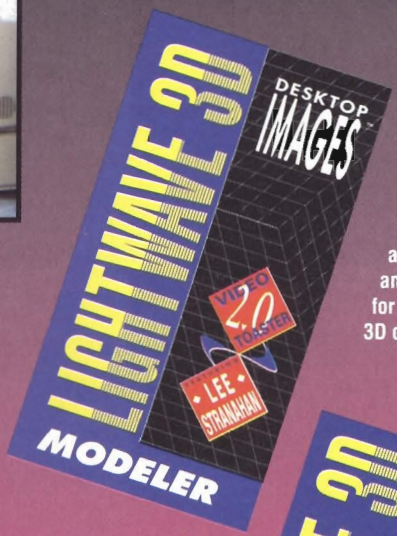

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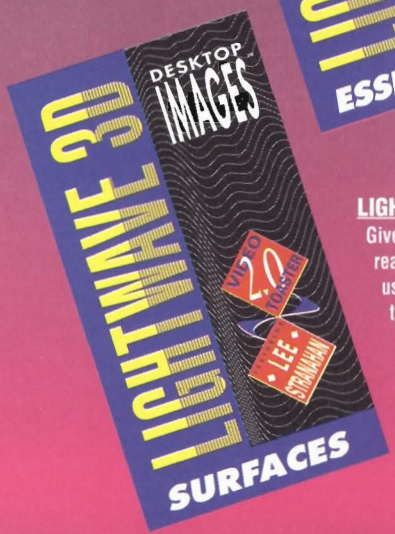

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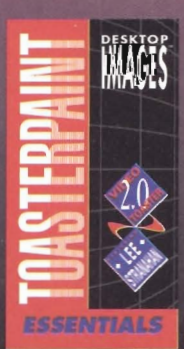

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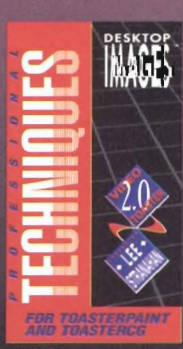

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Editing LightWave Scene Files

Achieve maximum control over your animations

By Tim Doherty

Despite its exceptionally friendly design, there are still a few things that are cumbersome to do in LightWave. For example, suppose you create a flying logo comprised of a dozen motion keys over 200 frames. Later, as you are studying your wireframe playback, you decide that the logo moves too quickly in the beginning of the animation. In order to slow it down, you need to insert a few more frames between key frame zero and the next key frame. Let's say the second key occurs at frame 30. You can easily slow the movement by going to frame 30, clicking on the Create Key button, manually entering a new frame number—say, frame 40—and then deleting the old key. The logo will then take an extra 10 frames to move into place from its old location.

The problem is that by increasing the number of frames between the first two keys, you have inadvertently decreased the number of keys between the second and third keys. Thus, if the third key is at frame 50, the object now moves to that position in 10 frames instead of 20. In order to slow down the object in the beginning but keep its speed the same throughout the rest of the animation, you need to change the value of all 12 keys, increasing them by 10 frames each. Although this is not terribly difficult to do, it can be time-consuming. As your animations become longer or more complex, so does the task of making such changes. For instance, if multiple morphs were assigned to the object as it moved, all of the morph envelopes would need to be altered.

I ran into precisely such a problem recently. My animation was 185 frames long, and consisted of five objects, all with their own motion paths. One of the objects had eight motion key frames and 11 morph targets assigned to it. After outputting a wireframe test for my producer, he decided that the animation played too slowly, and asked me to make it run about 30 percent faster. Needless to say, this was not a simple matter. Since even the individual morph envelopes had multiple key frames, I was looking at reassigning lots of keys.

Fortunately, there is an easier way to create such sweeping changes, though it requires stepping out of the snug surroundings of the Layout screen. LightWave's scenes are saved as ASCII text files. Once you understand their format, any word processor or text editor can be used to manipulate them. This can prove to be a tremendous time saver, especially for complicated scenes like the one I mentioned above.

The Scene File

To illustrate the ease with which a scene file can be altered using an editor, I created a simple 30-frame animation of a rotating box traveling across the screen from left to right. As it moved, the box changed into a pyramid, and then the pyramid changed color and texture. This required three objects: a box; a pyramid, modeled from the same object as the box; and a second pyramid, resized smaller than the first by a factor .995, and given different surface attributes. The larger pyramid was assigned as the morph target for the box. The smaller pyramid was parented to the box. Both the box and the smaller pyramid had dissolve envelopes so that, after morphing, the box (now shaped like a pyramid) would dissolve from 0 to 100 percent, while at the same time the smaller pyramid would dissolve from 100 to 0 percent, thereby giving the illusion that the surface of the pyramid was changing.

Let's take a look at this scene file in Table 1. Notice how the different parts of the scene are clearly labeled. We'll go through most of the file line by line, but as you can see, the text is largely self-explanatory. It is advisable to print out a copy of your file before modifying it, particularly with a complex animation. Complicated scenes can be long—well over ten pages—so making your changes on paper, and then entering them in your word processor, is generally an easier direction to take. I should mention that I added the line numbers in the left hand column for reference. Actual scene files do not have numbered lines.

The first line of the file simply identifies this as a LightWave scene file. Lines 3 through 5 correspond to the Scene menu's Frame setting. If you wish to make global changes to your animation's speed, you'll need to change the value for LastFrame in line 4. After FrameStep comes the GridSize from the Layout screen. Line 7 identifies the first loaded object. Note that the directory path is included in the name. I've found a few occasions where it is convenient to use the a word processor's search and replace function to globally change all directory paths in a scene file. For instance, there are times when I have had to move LightWave animation setups from one computer to another for rendering. This required copying all of the object, motion path, image, and scene files from my system onto a disk or cartridge, then back onto the new system. Since LightWave resided on a different partition or volume name than it did in my computer, I easily reassigned all of the directory paths by editing the scene file. Otherwise, I would have had to load the scene and manually specify a new path for each file when LightWave was unable to locate it.

Motion Data

An object's motion information always immediately follows its "LoadObject" command. Line 8 identifies the information below as motion

...Continued on Page 98

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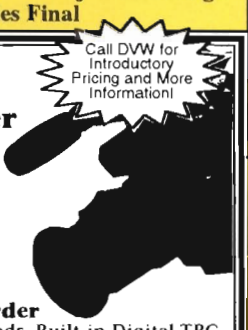

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...Continued from Page 96

data. The next line specifies the number of information channels or tweenable values. Line 10 states that the object has three motion key frames. For every key, there are two lines of information: The first line gives the object's X,Y,Z location, H,P,B rotation, and X,Y,Z size (these are the nine channels); the second line identifies the key frame number, whether the movement is linear or not (0=nonlinear, 1=linear), and the spline settings (Tension, Continuity, and Bias). Thus, in plain English, lines 11 and 12 would read: "At key frame 0, the CubePlain object is located at X: -4.54; Y: 0.00; Z: 0.00. It has a heading of 45 degrees; a pitch of 0 degrees; a bank of 0 degrees, and a scale of X: 1.0; Y: 1.0; Z: 1.0. This is a non-linear keyframe (0), with no spline tension (0.0, 0.0, 0.0)." Lines 13 and 14 give information for the second key at frame 15, and lines 15 and 16 give information for the third key at frame 30. The last line of the object's motion data describes its end behavior. An Endbehavior value of 1 corresponds to Stop. 0 means Reset, while 2 equals Replay.

Morph Data

Lines 18 through 29 show the object's morph envelope. As with the motion data, the first line indicates a morph, the second indicates a single channel, and the third line is the number of keys (in this case, three), and each key has two associated lines of information: the morph percentage, below which is the key frame, the linear/non-linear value, and the spline settings. In studying lines 21 through 26, we can see that the object has a non-linear key at frame 0, with no morphing; a linear key at frame 5, again with 0% morphing; and a non-linear key at frame 15, where it is 100% morphed. Endbehavior is set to 1 (Stop). Line 28 identifies the morph target. Notice that the scene file does not refer to the target by name, but rather by number based upon the order in which the objects are loaded. Since this morph target is 3, we can count to the third Loadobject line if we need to determine what the object is (in this case its PyramidPlain on line 62). The final line in the morphing data is for surface morphing. Since this feature was not implemented in LightWave 2.0, this line will always have a value of 0. (But wait for the next version!)

Dissolve Data

The CubePlain object's dissolve envelope is listed next. The format is the same as the morph envelope: Lines 30 and 31 identify the dissolve; Line 32 is the number of keys; Line 33 is the dissolve amount by percent; line 34 shows the frame number of the key, the linear setting, and the three spline tensions. The next two lines hold the information for the second key, and lines 37 and 38 show the last key. The dissolve data finishes with the EndBehavior line.

Other Data

So far, we've studied the script formats for loading, moving, morphing, and dissolving CubePlain. We're almost finished with the data for this object. There are only two other pieces of information reported by the scene: PolygonEdges and ShadowOptions, found on lines 40 and 41, respectively. Both are set to LightWave's default values. PolygonEdges are off (0). ShadowOptions 7 corresponds to the shadow configuration shown in Table 2. This table is included just for the sake of clarity; normally, you need not bother to alter ShadowOptions with a text editor.

As you can see, the scene file format is fairly straightforward. After an object is loaded ("LoadObject"), the file lists the object's motion, key frame by key frame. Metamorphs and dissolves, if any, are then scripted. ObjPolygonEdges and ShadowOptions conclude the object's data. Note that only relevant information is included. Thus, in Table 1, there is no listing for Polygon Size because a size value was never set in the Main screen. (PolygonSize envelopes follow the same format as the dissolve envelope.) If we had no dissolves in the animation, there would be no dissolve envelopes in the script. By the same token, if we set a dissolve value without an envelope, then the associated reference in the script would be just one line, such as "ObjDissolve 0.5".

Try reading through the rest of the file. You should be able to understand the information. Notice that the PyramidFancy object has a parent assigned to it (ParentObject 1, meaning the first object loaded). Light, camera, and other rendering and scene values come after the object data. Light and camera motions follow exactly the same format as the object motion. All other settings, such as Zoomfactor, Resolution, and Zenithcolor, are clearly labeled and should be self-explanatory. It serves no real purpose to discuss them, since such values are more easily changed from within LightWave. To make corrections to the animation's speed, you really only need to understand the for-

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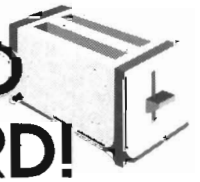

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Table 1. Example Scene File

Line #	Command
1	LWSC
2	1
3	FirstFrame 1
4	LastFrame 30
5	FrameStep 1
6	GridSize 1.000000
7	LoadObject Objects/Script/CubePlain
8	ObjectMotion (unnamed)
9	9
10	3
11	-4.540000 0.0 0.0 44.500000 0.0 0.0 1.0 1.0 1.0
12	0 0 0.0 0.0 0.0
13	-0.250000 0.0 0.0 -47.500000 0.0 0.0 1.0 1.0 1.0
14	15 0 0.0 0.0 0.0
15	4.140000 0.0 0.0 -138.000000 0.0 0.0 1.0 1.0 1.0
16	30 0 0.0 0.0 0.0
17	EndBehavior 1
18	Metamorph (envelope)
19	1
20	3
21	0.0
22	0 0 0.0 0.0 0.0
23	0.0
24	5 1 0.0 0.0 0.0
25	1.0
26	15 0 0.0 0.0 0.0
27	EndBehavior 1
28	MorphTarget 3
29	MorphSurfaces 0
30	ObjDissolve (envelope)
31	1
32	3
33	0.0
34	0 0 0.0 0.0 0.0
35	0.0
36	15 1 0.0 0.0 0.0
37	1.0
38	25 0 0.0 0.0 0.0
39	EndBehavior 1
40	ObjPolygonEdges 0
41	ShadowOptions 7
42	LoadObject Objects/Script/PyramidFancy
43	ObjectMotion (unnamed)
44	9
45	1
46	0.0 0.0 0.0 0.0 0.0 0.0 0.995 0.995 0.995
47	0 0 0.0 0.0 0.0
48	EndBehavior 1
49	ParentObject 1
50	ObjDissolve (envelope)
51	1
52	3
53	1.0
54	0 0 0.0 0.0 0.0
55	1.0
56	15 1 0.0 0.0 0.0
57	0.0
58	25 1 0.0 0.0 0.0
59	EndBehavior 1
60	ObjPolygonEdges 0
61	ShadowOptions 7
62	LoadObject Objects/Script/PyramidPlain
63	ObjectMotion (unnamed)
64	9
65	1
66	-6.260000 0.0 0.0 0.0 0.0 0.0 1.0 1.0 1.0
67	0 0 0.0 0.0 0.0
68	EndBehavior 1
69	ObjPolygonEdges 0
70	ShadowOptions 7
71	AmbientColor 255 255 255
72	AmbIntensity 0.250000
73	AddLight
74	LightMotion (unnamed)
75	9
76	1
77	0.0 0.0 0.0 59.999996 29.999998 0.0 1.0 1.0 1.0
78	0 0 0.0 0.0 0.0
79	EndBehavior 1
80	LightColor 255 255 255
81	LgtIntensity 1.000000
82	ShadowCasting 1
83	LightType 0
84	CameraMotion (unnamed)
85	9
86	1
87	0.0 0.0 -4.840000 0.0 0.0 0.0 1.0 1.0 1.0
88	0 0 0.0 0.0 0.0
89	EndBehavior 1
90	ZoomFactor 2.400000
91	MotionBlur 0
92	RenderMode 2
93	RayTraceEffects 0
94	Resolution 1
95	Overscan 1
96	Letterbox 0
97	ZenithOnly 1
98	ZenithColor 0 0 0
99	SkyColor 120 180 240
100	GroundColor 50 40 30
101	NadirColor 100 80 60
102	FogEffect 0

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mat for motions and envelopes, along with the Last Frame setting.

Making Changes

Let's now say that we want to slow down the entire animation so that it plays twice as slowly. First, we must change the LastFrame count to 60. Then we need to change the key frame values for each motion and envelope. The keys for the first object change from 0, 15 and 30 (lines 12, 14 and 16) to 0, 30 and 60. Its morph envelope keys change from 0, 5 and 15 to 0, 10, and 30. The dissolve settings increase from 0, 15, and 25 to 0, 30, and 50. Similar changes would be made to the other objects. If we wanted to slow down the speed only at the beginning of the animation, maintaining the same speed at the end, we could change the motion keys to 0, 20, and 35; the morph keys to 0, 10, and 20; and the dissolve keys to 0, 20, and 30.

Table 2. Shadow Options

Value	Self	Cast	Receive
0	Off	Off	Off
1	On	Off	Off
2	Off	On	Off
3	On	On	Off
4	Off	Off	On
5	On	Off	On
6	Off	On	On
7	On	On	On

When making any changes to the text file, always save your edits under a new file name in case you make a mistake. LightWave will probably crash if you do something wrong (such as omitting a figure), so it is nice to be able to refer back to the original. Also, make sure that you save the new scene as an ASCII file only, without special formats imposed by your word processor. For example, if you are using ProWrite, use the "Text Only" save option.

By editing your scene files in this way, you can make specific or global changes to your animations far more easily than by reassigning values from within LightWave. As mentioned earlier, you can also quickly rename directories or volumes, which is convenient for moving animations from one computer to another. In addition, it is possible to combine two or more separate scenes into one. Indeed, once you are familiar with the scene file's simple format, and become accustomed to altering scripts with a text editor or word processor, you'll find greater flexibility in making any changes that you have in mind in LightWave's scenes.

Tim Doherty is a professional LightWave animator. Contact him at :

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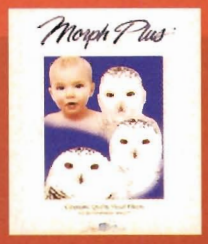

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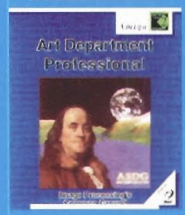

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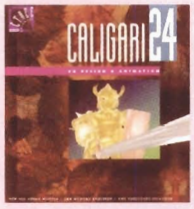

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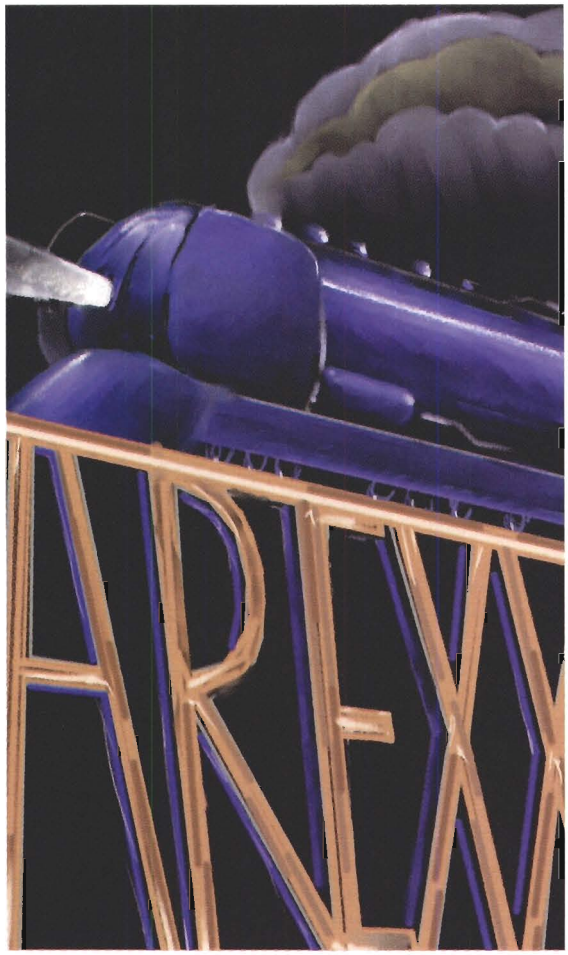
Toaster ARexx Part II

by Steve Gillmor

In my last article (Toaster ARexx in the October/November 1992 issue of *Video Toaster User*), we examined the Toaster's supplied example scripts for controlling the Switcher and ToasterPaint via ARexx. We also sketched out an Art Department ARexx script to automate the preparation of 24-bit files created in the Toaster for display in a HAM animation. In this article, we'll examine how a powerful group of Toaster utility programs use the same ARexx facilities to control the Toaster and related peripherals, with the ease of use of a point-and-click interface.



This time, we'll look at three major products: *TRexx Professional v2.0*, *Toaster Toolkit 2.0*, and *ToasterVision* (the renamed and updated ToastMaster/WipeMaster package). Two other products deserve mention: ScriptGen is a smaller tool that queries the user and then generates an ARexx script that runs a Toaster slide show; and Bars&Pipes Professional 2.0, the MIDI music sequencer and notation software, has released their new Media Madness tool, which adds Toaster and ARexx peripheral control to the parent program. More about that later, but first let's talk about the similarities between our three main utilities.

Features In Common

All three packages offer a variety of modules that support the Toaster. Each has a sequence editor, where you click on a version of the Toaster's effects bank icons to select various transitions. Other commands like loading framestores, choosing what input is displayed on what monitor, and so on, are added in the same way. As the icons are clicked, a script is assembled in a text window, made up (in these new updated versions) of descriptive statements detailing the actions being sequenced. You can also use an interactive mode where you can view each effect as you work, previewing the look and feel of each wipe or move. These sequences can be saved to disk and/or executed by clicking on a button.

Each package also contains a project editor, where you can reorganize and customize your Switcher setup by cutting and pasting effects. The packages offer various framestore compression utilities, and all now have added FX editors where you can define and create new or revised Toaster special wipes and transitions. There are differences in how these modules work, but they all offer increased power in organizing and automating the Toaster environment. What I'll do here is try to give you an overview of how each package interfaces with ARexx in extending your access to the underlying power of the Toaster and its host Amiga.

ToasterVision

Of the three packages, only ToasterVision's ToastMaster 2 sequence editor does not allow saving of scripts in ARexx format. The program is designed to make ARexx control of the Toaster Switcher as seamless as possible, and its strength lies in its sophisticated error-checking. ARexx can be an unforgiving environment, where a misspelled word can end script execution. ToastMaster 2 disregards any code it doesn't understand, continuing to execute its script without stopping. ToastMaster 2 has two modes, scripting and real-time, where you can interactively preview effects as you set speeds and other parameters. In scripting mode, the new ToasterMaster 2 enters short English descriptions of your commands as you click on buttons. You can enter ARexx commands not available from buttons by typing in the ARexx field at the lower right of the screen. You don't need to enter these commands in the actual Switcher ARexx syntax; type TAKE instead of Switcher(TAKE). Normally, a command with multiple arguments like loading a framestore would take this form: Switcher(FMLD,<framestore number>), where you only need FMLD 003 (or whatever number) with ToastMaster 2.

Of course, you can launch a full ARexx program or an in-line string script using the DOS requester. A new feature of the program allows you to select from a list of valid public message ports via the MISC/Send ARexx menu item. This makes it easy to send a valid ARexx message to another ARexx-compatible program by selecting its port name and typing in the command in the message field. Of course, you need to be careful, since not all message ports are ARexx ports. Also remember that the names of ARexx ports are case-sensitive, which makes this list requester so convenient.

ToastMaster's Custom FX panel offers a convenient way to compress a series of commands into a single file that can be accessed by a single name. In real-time mode, you can double-click on a name and the entire script will be executed. In scripting mode, double-clicking uncompresses the commands and loads them back into the script window. It's an easy and efficient way to save and organize your scripts, particularly various serial commands you might put together to run an external laser player or editing deck. A line of cryptic commands becomes "Play" or "Stop" in the Custom FX panel. The new release now lets you launch ToastMaster scripts from another ARexx compatible program like a CanDo control panel or AmiLink. Commands include Load, which

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OUR EXPERTS

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.

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.

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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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clears the current script and loads the named file, Play, Playcurrent (plays from the current location in the script), and Quit, which quits without a requester that would interrupt automated control.

Toaster Toolkit

Toaster Toolkit 2.0 now displays Toaster commands in English, rather than ARexx, but does allow a choice of saving scripts in ARexx or compressed Toaster Sequence Editor (TSE) formats. New in 2.0 is the ability to load ARexx scripts, including ones not generated by TSE. Statements that address other ARexx programs work without modification, and commands not understood by TSE are ignored and do not interfere with TSE script execution.

TSE does not require ARexx; it communicates directly with the Toaster's ARexx port and gains some speed advantage by eliminating ARexx processing of each command. The new version improves the ARexx/Serial menu requester by replacing the original one-line commands with user-definable devices/programs, each with a set of commands. You can now define a serial device like a TBC or a serial VTR, and enter the appropriate commands to run the peripheral. Several definitions are included for devices and ARexx-compatible programs. ARexx control of LightWave and the Toaster genlock is now included. Scripts saved in the TSE format can be played either within TSE or with the TSEPlayer program. Both TSE and TSEPlayer can be controlled externally by ARexx programs. You can Load a script file, which appends the new script to the currently-loaded one. Clear erases the current script from memory but not disk. Run executes the script, but doesn't return until the script finishes, where Start executes the script and returns immediately. Stop pauses the script, Continue unpauses it, and Quit exits the program. A new Wait command has been added to help synchronize TSE with external programs. Now you can have TSE stop processing and wait in your scripts for one of two ARexx messages: Cont will tell TSE to resume execution of your script, and Stop will cancel the current script. Now you can have TSE and the Toaster wait for another event like a musical cue or image processing to complete before triggering your next script events.

The Toolkit's MacroFX facility can be configured to run programs and call AmigaDOS, ARexx, or TSE scripts. The MacroFX feature lets you create Croutons that can be added to the Project Editor. Then, from within the Toaster Switcher interface, you can click on Croutons and run your prepared MacroFX. Since you can load a project file in a script, this gives you the ability to configure the Toaster Switcher interface for each of your productions under script control, all from the Switcher screen. You could launch Art Department or Deluxe Paint from a Crouton, process an image, then return to the Switcher and load some custom wipes you created in any of these three programs' wipe/effects editors.

TRexx Professional

TRexx Professional v2.0 has evolved from being a Toaster ARexx script writer to incorporating similar "Crouton" interfaces for a number of ARexx-compatible programs. The new version supports the Switcher, ToasterPaint, LightWave, Art Department Professional, Pixel 3D, the Personal TBC, DQ Taco, and so on. Indeed, the included TRexx Command Editor lets you create individual interfaces to automate the generation of ARexx commands for additional ARexx-compatible programs. You can use command types to open requesters to define 24-bit colors, load and save framestores, ask for numbers, strings, time delay values, everything you need to make it easy for the user to define values that are then written into ARexx scripts. As your ARexx-compatible library expands, you can integrate these new programs into your TRexx environment, and use the included drivers now to extend your ARexx control.

Let's say you want to use a counter in a loop to bump the filename up by 1 over 100 frames. You start by clicking on the appropriate Croutons to set up the Switcher, then click on the REXX button and add the count variable. You can add comments by clicking on the CMT button.

```
/* ———————————— */
/* FrameStore Sequence Saver */
/* Copyright © 1992 by Kurris */
/* and ASDG, Inc. */
/* This script will wait for a */
/* GPI trigger and then save a */
/* four field FrameStore. */
/* ———————————— */

Switcher(TOSW)
Switcher(SGPI,POS)

/* Initialize the counter (first */
/* frame will be 100). */
Count=100
/* We'll save ten frames */

DO 10
Switcher(M001)
Switcher(LVID)
Switcher(MDV1)
Switcher(WAIT,GPI)
Switcher(FVID)
Switcher(MDV1)
Switcher(PDV1)

/* Save the frame. */
/* This is done by clicking on the */
/* "Save Frame" button and then */
/* using the "REXX" button to */
/* edit the command. */
X=Switcher(FMSV, Count, Count)
/* Bump the counter by one. */
Count=Count+1

END
Switcher(TOWB)
```

Here's an example generated in TRexx Pro that uses the included EVE DCTV ANIM-compiler:

```
/* ———————————— */
/* LightWave 3D - EVE Example */
/* Copyright © 1992 by Kurris */
/* and ASDG, Inc. */
/* This script demonstrates */
/* loading a scene in LightWave, */
/* rendering it and converting */
/* the frames into a DCTV anim */
/* at the same time. */
/* ———————————— */

Switcher(TOSW)
Switcher(LDLW)
address ; run EVE ; address
address ; run 'Rx "Switcher(STLW)"' ;
address

/* First, get LightWave ready... */

address "LightWaveARexx.port" loadscene
'Images:Toaster/3D/Scenes/Example.scene'
address "LightWaveARexx.port" firstframe 1
address "LightWaveARexx.port" lastframe 30
address "LightWaveARexx.port" framestep 1
address "LightWaveARexx.port" resolution 2
address "LightWaveARexx.port" overscan 0
address "LightWaveARexx.port" raytraceef-
fects 3
address "LightWaveARexx.port" saveimages
'Images:Toaster/3D/Images/Examples'

/* Now, set up EVE... */

address "EVE.port" ipath
"Images:Toaster/3D/Images/Examples"
address "EVE.port" opath
"Images:Toaster/3D/Images"
address "EVE.port" apath
"Images:Toaster/3D/Images/Example.anim"
address "EVE.port" sframe 1
address "EVE.port" eframe 30
address "EVE.port" step 1
address "EVE.port" delete24 1
address "EVE.port" deletedctv 1
address "EVE.port" vover 1
address "EVE.port" hover 2
address "EVE.port" interlace 1
address "EVE.port" bitplanes 1
address "EVE.port" filter 0
address "EVE.port" start
```

```
/* Now that everything's ready, */
/* tell LightWave to start */
/* rendering. This HAS to be the */
/* last command, since LightWave */
/* doesn't return control to the */
/* script until after the scene */
/* has been completely rendered. */

address "LightWaveARexx.port" render

/* Once we've finished, tell EVE */
/* to go away. LightWave doesn't */
/* have a QUIT command... */

address "EVE.port" quit

/* End of the command list */
```

Conclusion

All these packages offer something for everyone, from the novice who doesn't want to know anything about ARexx except that it works, to the advanced user who appreciates the extensibility and automation of often-repeated tasks. With all three packages' expanded abilities to create and reorganize new effects, as well as included serial support for controlling external peripherals, Toaster owners can now integrate the full range of Amiga software and hardware with video and audio products for a complete studio solution. In a related development, Bars&Pipes Professional 2.0 has included the Media Madness module, allowing you to add Toaster and ARexx commands to the song's timeline. You can bring up a window in which you can assign Toaster effects to individual notes, so that transitions can occur either at specific measures or at a point in SMPTE time. Similarly, you can send out ARexx commands on another track to control other programs or peripherals. Bars&Pipes already supports the SunRize stereo audio board, and the new One-Stop Music Shop E-Mu Proteus SoundEngine card with its 32 channels of 16-bit linear CD-quality digital samples. In future ARexx articles, I will be exploring these and other ARexx-compatible integrated solutions, with more examples of how to extend your Toaster workspace to the outer reaches of the Amiga galaxy. If you have any questions or ideas on how to utilize ARexx with the Toaster, please write me care of Video Toaster User and I'll try to incorporate them in upcoming articles.

Products discussed:

SCRIPTGEN
Troy Soft
240 West Shores Road
Orange Park, FL 32073-8133

Bars&Pipes Professional 2.0
One-Stop Music Shop
The Blue Ribbon SoundWorks
1605 Chantilly Drive Suite 200
Atlanta, GA 30324
404-315-0212

ToasterVision
Byrd's Eye Software
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512-835-4811

The Toaster Toolkit 2.0
The Byte Factory
PO Box 891771
OKC, OK 73189-1771
405-631-BYTE

TRexx Professional V2.0
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Madison, WI 53713
608-273-6585

SunRize AD516 Studio 16 2.0
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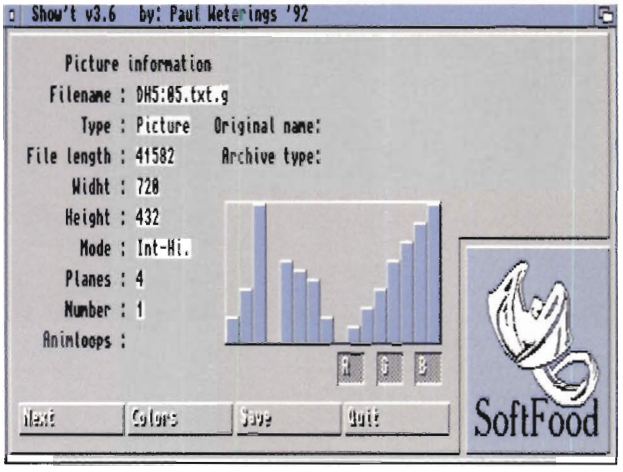
CyberSpace

An In-Depth Survey of Free Amiga Animation Software

by Geoffrey Williams

This issue, we'll look at ways to use your Toaster as a glorified encoder for the process of dumping animations to tape. The easiest way would seem to be to load them into Deluxe Paint and play them. Press the 5 key and the animation plays through once from the first frame and holds on the last frame. If you've turned off the pointer and the menu bar (using F10 and the Del key), this works perfectly. Unfortunately, in the video business, time is money, and it takes a long time to load most animations into Deluxe Paint. Also, what if you want to lay down a series of images and animations? If you loaded individual images into Deluxe Paint, each on its own animation frame, you could use the 2 key to go from image to image. You'd still be out of luck if you wanted to mix images and animations though.



Deluxe Paint does come with a player program that will sequence and play images and animations, and it is one of the most useless pieces of software I've ever had the displeasure to foul up my memory with. On a fast machine it took over 30 seconds to load a 300k animation, almost as slow as Deluxe Paint itself.

Fortunately, there are some very good solutions available among freely redistributable software, although each has its own caveats and limitations. I have yet to find the ultimate animation player, since each lacks at least one of the features I want. They either don't support color cycling, they can't be called from a script, or they have very limited control.

Show't

One of the main concerns you might have is in being able to start the animation exactly when you want. One of the best solutions is Paul Weterings' *Show't*. If you run it from the WorkBench, it brings up a requester that lets you select an animation or picture to show. It then lets you select the number of loops and the delay between frames. It will bring up and display the first frame of the animation, wait for a mouse click, play the animation, hold on the last frame, and wait for another mouse click to exit. This makes it one of the easiest-to-use players for recording to video.

It does have a problem with looping anims, though. There are two basic types of animations: those that loop (that can be played repeatedly, the default format used by Deluxe Paint) and those that don't. Looping anims have the first two frames appended to the end to make looping smoother, but some players (including Show't and even commercial programs such as AmigaVision) will stop on the looping frames rather than the actual last frame. You can save a non-looping anim from Deluxe Paint by subtracting 2 from the number of frames to save in the Anim Save requester, and if you do this, the animation will properly play a single loop in Show't.

After showing an animation, Show't displays a window that gives you information about the anim, and lets you display a histogram of its red, green and blue components. For still pictures, you also have the option of bringing up a palette requester, changing the colors, and saving the picture with the new palette (a quick and easy way to tone down those video-unsafe colors). Unique among all animation players is its ability to display Powerpacker animations, and to automatically de-archive animations, assuming you have the proper de-archiver (See Passport to Cyberspace in the October/November issue of *Video Toaster User*).

Color Cycling

Show't has a few limitations, the major one being that it does not support color cycling. Oddly enough, most anim players do not support this powerful feature.

This seems a good point to say a word or two about color cycling, which is often neglected in animation work. It is a great way to add extra movement in animations, and there is no penalty in playback speed. You can use color cycling to make text sheen, glow, shine, and to make ribbons of movement in a specific direction. In a recent project, the client wanted animated lines drawn from his country to the various countries they did business in. Adding color cycling to those lines in the direction they were being drawn added significant eye appeal, even as it held on the last frame, and required little extra effort to achieve.

For maximum control of most anim players, you need to use them from the CLI, as they have many command line options not accessible from the WorkBench interface. For example, all of the displayers covered this month (except Show't) can show several pictures in sequence from a single command, letting you use them as a simple slideshow program.

Alook

The best way to use an anim player in CLI mode is to set it to run various animations and pictures from hot keys, using any of the many public domain hot key programs that let you execute CLI commands (more on this in an upcoming issue). To do this, you must assign a command to the key just as if you had typed it into the CLI. For example, for F1 you could use Trevor Andrews' animation player and picture displayer *ALook*, and enter "Alook DH0:my.anim" as the command for the hot key, assuming that you put ALook in your C: directory (where CLI commands are normally kept). Press F1, and

My.anim plays. You can load up Deluxe Paint with a black screen so that the animations and images start from black and end on black.

Alook plays an anim once through by default, and has no problems with looping anims. Alook, like most anim players, lets you specify the resolution in which the animation should play, and set a delay between frames to change the speed. You can turn looping on, which causes the anim to loop until you hit the right mouse button. You can play a series of animations by putting them on the same command line, but there will be a delay between them as each one loads. Pictures can also be included, but you must press the Esc key or right mouse button to continue past a picture, which will hold until the anim plays. This makes it possible to use the first frame of the anim (saved as a separate picture) as the first picture to show. Click on the right mouse button and the animation loads and plays, seamlessly added to the first image. A simple command line from the CLI or a hot key, such as "Alook My.pic My.anim" is all you need.

ViewTek

This technique is not seamless with Thomas Krehbiel's *ViewTek*, the follow-up to his earlier program TIV 2.0, as there is a black screen that appears between images. It is the first display utility to support the new AGA chipset, though, which means it can play 800 x 600 256,000-color HAM-8 animations. It can also display JFIF JPEG images (the Amiga standard) and GIF format pictures as HAM-8 images. It can also display directly on GVP's IV24 display board.

You can set a specific number of loops for an animation. ViewTek also supports pausing of and single-frame stepping through an anim. The Cont option also fixes any problems you might have with looping anims and gets them to display properly.

Superview

Neither Alook nor ViewTek will let you show the first frame image, then the anim, and then hold on the last frame, and neither supports color cycling. David Grothe's venerable *Superview* does both. It lets you set the number of seconds an image should be displayed, and is the only one that I know of that can do this with animations, showing only the first two seconds of an anim if you want. Command line options let you set playing time in seconds and disable looping. It can also show just the first frame of an anim. A simple command line such as "Superview -s3 -n My.anim -v My.anim -s10 LastFrame.pic" will show the first frame for three seconds, play the animation, then show the last frame (saved as a separate picture) for ten seconds or until you press the Escape key. Superview also supports pause, single frame advance, and anim playback speed control. Color cycling is on by default, although it can be turned off.

One of the problems I've had with Superview, though, is that the option to disable looping doesn't work very well when showing a single looping animation. It stops on the looping frames instead of the actual end of the animation. It works fine when used with a picture following the animation, though, and can hold the last frame of a non-looping anim with no problem. You can start to see why you need a number of anim players at your disposal.

Superview is the only player covered here that does support color cycling, so I tend to use it more often then the others. It can read a script file of pictures and animations, each one with different display options. It uses double buffering, meaning that it loads one picture while displaying the next, making it very fast.

RTAP

Speaking of fast, if you want to play an animation instantly, your best choice is Sebastiano Vigna's RTAP. It plays animations directly from the hard drive, so there is no load time. While it does not show still pictures, has no sequencing capability, and does not multitask well (you can't use it in a script to play sound files simultaneously, for example), it is the fastest way to pump out an animation. If assigned to a hot key, when you press the key the animation plays instantly. There is no load time at all, even with giant animations. It does let you adjust playback speed and the number of times the anim loops. It seems to handle looping and non-looping anims equally well.

The ultimate anim player would be a combination of these programs. I like the way Show't works from the WorkBench, but I also want to be able to sequence pictures with color cycling the way I can in Superview. I'd also like to be able to set a timed delay on the first frame and last frame of an anim, something none of them can do (although Superview comes the closest). Also, to any programmers out there, please support color cycling.

While we're on the subject of animation, here are a few cute programs that do the animating for you. Starfields are one of the most popular animation effects. Wouldn't it be nice to have animated starfields that you could control? Doug Petercsak wrote *Warp Speed* to let you fly through a starfield with control over velocity. You can even come to a full stop, all controlled from the arrow keys. *Stars* is another utility that can show several different movements through a starfield, from sideways to spiraling inward to straight down and even loop the loops. There are dozens of ways to fly through—just plug in the proper parameters. Of course, if you want to key text over it, you'll have to lay the starfield to tape first, then key the text over the recorded tape.

I'm writing this shortly before Christmas, so it is appropriate that I close with a holiday-related animator. *Snowfall*, written by Lars L. Clausen, creates a magical effect with any IFF picture. As an example, let's say we have a picture of a house. Wherever there is color 0, Snowfall will generate falling snow. When the snow lands on anything other than color 0, it begins to pile up quite convincingly. Talk about the world's easiest and quickest snowfall animation. It is fun to watch.

For readers without modems or the time to hunt for this stuff, I'll send you a disk with the anim players ALook 3.1, RTAP 1.0, Show't 3.6b, Superview 3.1, ViewTek 1.0, and several others, along with the Warp Speed, Stars, Snowfall, and anything else of interest I can cram on the disk. Just send five bucks to VTU Anim Disk Offer, 1833 Verdugo Vista Drive, Glendale, CA 91208.

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- Hi-fi stereo audio plus linear track for normal recording. Also has "Audio Out" select switch for Hi-fi/Normal/Mix combinations
- High performance stereo zoom microphone features three different settings to handle just about any situation: Wide, Telephoto or automatic zoom.
- Built-in VITC (Vertical Interval Time Code) time code generator gives absolute address to each frame of video for frame accurate editing (with specific edit systems)
- ***Digital Effects:***
  Digital Mix – for soft fade-over between memorized still and moving images
  Digital Tracer – to add an after-image effect to moving subjects
  Digital Still – lets you freeze a particular scene for as long as you like, without interrupting sound recording
  Digital Zoom – Thanks to digital processing, you can enjoy shots with ultra-high magnifications of up to 100:1
  Digital Gain-Up – delivers clear, distinct images in low-light levels, even down to 1 lux!
  Digital Strobe & Digital Wipe – add professional effects to your shooting.
- Audio/Video Fade-In and Fade-Out for smooth, professional scene transitions
- Automatic Tracing White Balance – always maintains optimum white balance by continuously adjusting to changes in ambient light.
- Automatic Iris plus manual control for fine adjustment
- Built-in monitor speaker lets you monitor sound while shooting
- Variable high-speed shutter from 1/50 to 1/8000 second.
- Video Insert and Audio dubbing capability
- Versatile Editing Facilities – S-Video *out* terminal, synchro *edit* terminal, 5-pin *edit* terminal and direct connection capability to WV-CG5P character generator.

NEW! AG-5700

S-VHS Hi-Fi RS-232 Controllable VCR

Features:

- Built-in RS-232C interface for record, playback and editing control
- Laminated Amorphous video heads for improved picture quality
- Separate Hi-Fi (Ch 1/Ch 2) audio recording level controls
- Sensor recording – the AG-5700 starts recording when a video signal is detected, when the signal stops recording automatically ends.
- Quick play mechanism only one second from stop to play
- Automatic repeat, high speed VHS index search system
- Compact, lightweight and professional design cosmetics

AG-1960

S-VHS Hi-Fi Editing VCR

Features:

- S-VHS – over 400 horizontal lines & enhanced S/N noise ratio
- Jog & shuttle search – jog dial allows frame-precise searching. The shuttle ring varies playback in forward or reverse from very slow speed to high speed search
- Edit modes assemble edit insert edit and audio dubbing
- Has 5-pin remote edit terminal for interfacing with Panasonic AG-A96, Future Video ES-1000 Pro and AmiLink/CI edit controllers.
- The AG-1960 is the only editing VCR in its class that lets you access the frame-by-frame pulse on the control track for unsurpassed accuracy
- Time search, Blank search, Interval recording, Digital tracking
- Color level control – lets you fine tune the level of the video out color signal. Also compensate for color contrast in the playback image adding greatly to the degree of control available when using AG-1960 as source machine for editing or dubbing
- Hi-Fi stereo sound system – high speed limiter circuit, linear bandpass filter, and a structure that dampens vibration combining to deliver impeccable sound quality
- Smooth transport system makes the AG-1960 the perfect editing VCR
- Includes Panasonic one year warranty on parts & labor

TAO

EDITIZER 2.0

PC-Based Edit Controller

The TAO Editizer 2.0 is a hardware/software combination video edit edit controller that runs on Windows 3.1 and supports both Prosumer and Professional equipment. The Editizer comes complete with integrated Windows-based software for VCR control, A/B Roll Editing, tape logging, EDL management and EDL import/export. The Editizer supports virtually every protocol including Sony Control L, Panasonic 5-pin, RS-232 parallel and serial. It has 2-VCR control, an auxiliary serial port and multiple GPI triggers. It has switcher control for the GVG-100, WJMX-50. Toaster and will control most of the other devices in your suite.

Hardware Features:

- Three VCR control ports for true A/B roll. Each VCR port can support a different protocol. (For example, you can use Panasonic AG-1960 as "A" source, Sony EVS-3000 as "B" source and JVC BR-S822 as record VCR).
- Built-in SMPTE Longitudinal (Audio) Time Code generator with external and internal video sync.
- Three multi-speed SMPTE Longitudinal time code readers.
- Auxiliary serial port for full control of Newtek Video Toaster, Grass Valley 100, Panasonic WJ-MX50 and EchoLab DF-9 switchers.
- MPC Audio and MIDI support for embedding sounds and MIDI sequences in your EDL.
- DPS TBC II & III support – you can control two personal TBC cards from DPS and their Personal V-Scope from a serial port.

Software Features:

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

$1795.00

RGB COMPUTER & VIDEO

AmiLink/CI

The magic of professional editing has never been so affordable. AmiLink/CI combines the power of a personal computer with the features of an advanced editing suite in one user-friendly desktop system.

Features:

- Edit with your own style using a combination of the Amiga keyboard, mouse, trackball and joystick. Enjoy editing with the easy-to-use GUI (Graphical User Interface).
- Smoothly perform video and audio insert edits and the Preview and Review feature ensures they will be recorded perfectly.
- "Go To" feature lets you move quickly to any inpoint, outpoint, pre-roll point, or tape location you choose.
- Time-saving "Tag" feature lets you tag inpoints, outpoints or durations for source machine, record machine or both.
- Trim feature lets you edit quickly with pinpoint accuracy.
- CMX list import and export capability plus MS-DOS disk format option for true off-line editing.
- Trigger your effects from the Toaster using the programmable GPI.
- Full control of Toaster's digital effects. Automatically preloads CG pages for automatic assembly.
- Edit list management processing up to 999 events.
- AmiLink/CI runs on any Amiga with one MB RAM and is compatible with Panasonic 5-pin control (AG-1960) and Sony Control L.
- Available in Cuts-Only and A/B Roll configurations.

CALL

SONY

EVO-9700

DESK-TOP EDITING MACHINE

Editing recorded video segments together into a well-produced professional program has long been considered a creative option only for those with large budgets and extensive technical expertise. Now Sony breaks with this misconception by introducing a revolutionary editing machine, the EVO-9700. This innovative machine is designed to be simple to use. And it is packed with sophisticated capabilities to bring the creativity of the professional editing suite right to your office desk. The EVO-9700 is comprised of both a video Hi8 player and a recorder housed together in a one-piece compact body. Its desk-top design and ergonomic configuration offer advantage in space and operation.

Features:

- Compact dual deck design – total weight 26 lbs.
- Built-in 8mm Time Code Reader/Generator for absolute frame accuracy
- Two PCM + monaural AFM audio tracks
- Does all edit modes – Assemble, Video Insert, and Audio Dub all automatically.
- Up to 99 scenes can be stored in memory including 25 pages of title information
- Preview/Review Function – confirm the appearance of a program before and after an edit. You can monitor the results of a simulated or actual edit
- Built-in Digital Chrominance Noise Reducer – improves chrominance S/N ratio for superior dubbing quality
- Tape Jitter/Skew Corrector – field memory used in the noise reducing process also at same time eliminates jitter to give clear, stable pictures (Using EVO-9700 with Video Toaster requires no TBC.)
- Slow Motion/Freeze Edit – noiseless 1/5 times normal speed slow motion pictures and a clear freeze frame can be played back during editing
- JOG/SHUTTLE Dial – frame accurate picture search from -17 to +19 times normal speed
- One monitor editing capability – press the P in P button and pictures from both the player & recorder can be viewed simultaneously on a single monitor – no need to use two monitors
- Separate PCM and AFM audio level volume controls
- S-video in/out connectors
- Includes RM-E9700 Edit Controller and Title Keyboard (character generator).

EVW-300

3-CCD Hi-8 PROFESSIONAL CAMCORDER

The EVW-300 is a complete one piece camcorder which includes a variety of innovative and advanced operational features. So, whether your shoots require basic recording capabilities or premier performance, the EVW-300 offers a wide range of features and remarkable recording quality to best suit your needs.

Features:

- Equipped with three high density 1/2" IT Hyper HAD image sensors. Combining this advanced CCD technology with advanced optical technology an excellent sensitivity of F5.6 at 2,000 lux, high S/N of 60 dB, and over 700 lines of horizontal resolution is achieved.
- Provides high quality PCM digital stereo and single channel AFM Hi-Fi recording. Has XLR balanced audio connectors with LINE/MIC switching
- Quick start 1.5" viewfinder with 550 lines of resolution plus Zebra pattern video level indicator and color bar generator
- Quick-start recording – takes only 0.5 seconds to go from REC PAUSE to REC MODE for immediate recording in the field
- Built-in 8mm Time Code generator records absolute addresses. (Either non-drop frame or drop frame mode may be selected.) Furthermore the EVW-300 incorporates a variety of time code features such as Time Code PRESET/RESET, REC RUN/FREE RUN and User bits.
- A variety of automatic adjustment functions for different lighting conditions are incorporated into the EVW-300:
  ATW (Auto Trace White balance) – with conventional professional video cameras white balance has to be adjusted before shooting every time the light source is changed. With ATW, white balance is automatically corrected by control of the microprocessor in real time when ATW is turned on so optimum white balance is always ensured during recording, even for changes in color temperature. Conventional white balance adjustment is still provided with the Auto White Balance Function.
  AGC (Automatic Gain Control) – in addition to manual Gain up the EVW-300 has AGC which provides linear gain up in the range of 0 dB to 18 dB.
  Intelligent Auto Iris – for situations where the lighting between subject and background is different (subject is underexposed) the Intelligent Auto Iris automatically examines the scene and adjusts the lens iris for proper exposure.
- In addition to the automatic adjustments the EVW-300 features auto white balance, auto black balance and black set-up level. With this and three-position color temp conversion filters you can shoot in almost any lighting conditions.
- Selectable Gain-up from 1 dB to 18 dB in 1 dB steps for Mid & High positions.
- Clear Scan function – provides a variety of selection of shutter speeds ranging from 60-2,000 Hz allowing recording of almost any computer display without flicker.
- Compact, lightweight (12 lbs with NP-1B battery) ergonomic design provides well balanced and comfortable operation.

NEW! PROFESSIONAL SONY S-VHS SYSTEM

SVP-9000/SVO-9600

Introducing from Sony the new SVP-9000 S-VHS player and SVO-9600 recorder. They are designed as multi-purpose machines with the use of various optical interface boards. By selecting one or more of a particular board, they become dedicated machines for satellite recording, office viewing, video library, sports analysis and editing.

They both feature:

- Using the S-VHS format, they deliver superb picture playback and recording. With newly developed Digital Y/C separator maintained picture quality even in composite.
- Newly developed video cross talk canceller eliminates color blur providing more accurate color and sharper images.
- Four channel audio system – 2 two Hi-fi channels with a dynamic range of 90dB & two linear channels with Dolby Noise Reduction.
- Two direct-drive reel motors provide rapid response and smooth operations. Mode transitions such as STOP to REC, FAST FWD to PLAY, STOP to REWIND are virtually instantaneous.
- Search dial allows picture search from -10 to +10 times normal speed.
- Soft pause for gentle tape operation.
- Both feature SYNC IN for synchronizing with other video sources

Optional Interfaces:

- **SVBK-120** RS-232 interface board allows for machine control from a computer.
- **SVBK-140** RS-422 interface board allows either machine to be configured into any professional system.
- **SVBK-150** Digital Noise Reducer board reduces jitter, noise and Y/C delay and provides clear, crisp still frames.
- **SVBK-130** SMPTE Time Code interface board (can only be used with SVBK-140 board).

COLOR PRODUCTION MONITORS

PVM-8041Q (8")

- AC and DC operation (with NP-1A or 1B batteries)
- Underscan, Pulse Cross, Blue only mode
- Analog RGB inputs plus component input
- NTSC/PAL/SECAM/NTSC 4.43 multi-system playback
- External sync input, also sync on green
- S-video input minimizes cross color/dot interference
- Built-in speaker for sound monitoring

PVM-1340 (13")

- Dynamic Picture circuitry adjusts gain to achieve better contrast in the highlights and dark shadows
- Auto white balance uses beam feedback circuit to maintain stable and accurate white balance
- Line 4 (or B, VTR 8-pin) analog RGB and (S-Video) inputs
- Better than 450 lines horizontal resolution
- Switchable color temperature – 6500° K for broadcast standard, 9300° K for the more pleasing picture
- Blue only mode for precise color and hue adjustment
- Built-in speaker for audio monitoring (4 audio inputs)

PVM-1341 (13")

Similar to PVM-1340 with beam current feedback circuit, color temperature selection, blue only mode, comb filter, dark tint CRT. Same audio/video inputs PLUS:

Additional Features:

- Underscan – shrinks the scanned area of the picture tube approximately 5% enabling your to review the entire image area
- H/V delay or pulse cross – displays horizontal and vertical blanking interval information, sync timing and skew error.
- Choice of internal or external sync via front panel switch
- Accepts digital RGB with D-sub 9-pin input

PVM-1344 Q (13")

Has all the features of the PVM-1341 PLUS:

Additional Features:

- Super fine pitch delivers over 600 lines horizontal resolution via video inputs, better than 900 x 200 pixels via RGB inputs.
- SMPTE Type C color phosphors permitting the most critical evaluation of any color subject.
- Accepts PAL, SECAM, NTSC and NTSC 4.43 video signals – automatically adjusts for each color system.

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B&H PHOTO-VIDEO

Canon L1 Hi8

VL Mount System – The Right Lens for Every Scene

Now you can have the kind of creative versatility previously only enjoyed by the professional filmmaker. Interchangeable lenses let you pick the perfect lens for any situation – from wide angle to telephoto. With optional EOS adapter VL use Canon EF 35mm lenses (over 30 different lenses available) on the L1 while retaining autofocus and autoexposure Plus when used with the L1 the local length of EF lenses is multiplied by 5.4 times, so when a 300mm telephoto lens is used, it becomes on the L1 an incredible 1600mm super telephoto. A further advantage is that only the optically perfect central portion of the lens is used for absolutely stunning image quality.

Features:
- Hi-8 Hi-fi stereo, Piezo Auto Focus, Digital effects, audio/video fade in/fade out, hi-speed shutter self-timer, interval timer, tilting and date functions.
- Includes 8-120mm (15-1) zoom lens with 8-blade iris for unprecedented f-stop control. (Delivers beautiful soft focus effects when desired.)
- Optional 2x converter retains optimum image quality while conventional teleconverters cause optical glitches at certain points in the zoom range.

Cinema Products STEADICAM JR

Imagine, you can walk, you can run, you can climb stairs, you can move and shoot as smooth as ice and your camera never shakes!

Imagine that your camcorder seems to be floating, balanced at all times, isolated from your unwanted motions. Free to move with your camera, you shoot with uncanny smoothness while gently guiding and controlling the camera position in any direction – panning, tilting, booming.

At last, a Personal Steadicam for Camcorders.
- Supports any 8mm, Hi-8, VHS-C & S-VHS-C camcorder weighing up to 4 pounds.
- Make rock steady hand-held shots while you move and give your videos the professional touch.
- Capture moving images in their natural fluid state.
- Includes 3.5" LCD monitor specially treated to absolutely minimize reflections, freeing your eye from the viewfinder.
- Includes the "Obie" light. Soft 3200° output with built-in filter for color balance.
- Folds and stores in a layer less than two inches high beneath your camcorder, adds only 2 pounds to your camcorder.
- Includes VHS training cassette.

$599.00

B & H SPECIAL

Buy a Steadicam Jr. 599.00

Receive Steadicam Case Free . .....99.95(value)

Your Effective Cost 499.00

NEWTEK'S VIDEO TOASTER 2.0

Production Switcher

The Video Toaster Switcher is a broadcast quality production switcher which lets you perform cuts, fades, dissolves, key and color effects between any of 7 sources including 4 video inputs, two true-color high resolution frame buffers and a background matte generator. A separate overlay channel gives you the ability to key images or live video over the switcher during transitions. The switcher's graphic design makes it simple to learn and use while providing access to all the Toaster's breakthrough capabilities.

Luminance Keyer

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

Frame Grabber/Frame Store

The Toaster can grab and save a full frame (in 16.8 million colors) and has sophisticated motion removal algorithms to provide a rock-solid freeze frame. These frames may then be loaded into "ToasterPaint" or "LightWave 3D" for further manipulation. Up to 1000 frames may be saved on each frame store device (depending on available storage space). Stored frames can be loaded and displayed in the frame buffers in as short as 1/5 of a second from RAM or 3 seconds from hard drive. These frames can also be used as inputs to the switcher for transitions and digital effects.

ToasterPaint

Everything you need to create or alter true-color images tailor-made for your presentations is included in an uncluttered friendly interface. ToasterPaint makes importing and modifying files from the CG and frame grabber easy. ToasterPaint images can be used with any digital or switcher effect and the luminance keyer, for extremely flexible graphics presentations.

Character Generator

ToasterCG is the only desktop video system in the world that can create YIQ-encoded, 35ns (nanoseconds) high-resolution titles. ToasterCG makes adding text to your presentations simple.

Digital Video Effects

The Toaster has the processing power to manipulate live broadcast video in real time, and perform hundreds of network-quality digital video effects as easily as clicking the mouse and sliding the T-Bar.

Dual Frame Buffers/Genlock

These are 24 bit (16.8 million colors) frame buffers with composite output that meets the most stringent requirements for broadcast video. Because there are two frame buffers, one can be loading while the other is shown on screen for seamless live presentations. Toaster effects can be done between live video and either buffer, as well as between the buffers themselves.

ChromaFX ColorProcessor

ChromaFX is a sophisticated real-time color processor that gives you complete control of all aspects of the brightness, contrast and color of your video. It can alter video with color negatives, day for night, sepia tone, monochrome, solarization, posterization, color vignettes, and other totally unique effects such as Nuke, Chrome, Gold, Zebra, and more.

Lightwave 3D

The Ultimate 3D Rendering and Animation System for Broadcast Graphics

LightWave 3D offers all the high-end features you need to produce true network-quality graphics. Model, render, and animate videos in full broadcast resolution and 16.8 million colors. Everything from flying logos, scientific visualization and the most sophisticated effects seen on broadcast television are now on your desktop.

VIDEO TOASTER SYSTEMS

BASIC SYSTEM

Includes:
- Amiga 2000 Computer with ROM 2.0 operating system
- GVP SCSI + RAM controller card
- 7MB of RAM
- Quantum 105 MB hard drive
- Newtek Video Toaster Board with 2.0 software
- Amiga 1084s RGB monitor
- We set up and test system

ACCELERATED SYSTEM

Includes:
- Amiga 2000 Computer with ROM 2.0 operating system
- GVP 68030 40MHz Accelerator card w/68882 math co-processor
- GVP 030 HDD mounting kit - turns your 68030 into the ultimate hard card
- 8 MB 32-bit RAM
- Quantum 120 MB Hard Drive
- Newtek Video Toaster Board with 2.0 software
- Amiga 1084s RGB monitor
- We set up and test system

DREAM SYSTEM

Includes:
- Amiga 2000 Computer with ROM 2.0 operating system
- GVP 68040 33MHz Accelerator card w/68882 math co-processor
- GVP 030 HDD mounting kit - turns your 68030 into the ultimate hard card
- 8 MB 32-bit RAM
- Maxtor 213 MB Hard Drive
- Newtek Video Toaster Board with 2.0 software
- Amiga 1084s RGB monitor
- We set up and test system

TOASTER PERIPHERALS

HORITA

BSG-50 Blackburst & Sync Generator

The BSG-50 provides an economical means for generating the most common RS-170A video timing signals used to operate various video switchers, effects generators, VTRs, cameras, video edit controllers, and other professional video equipment.
- 6 BNC video/pulse outputs
- Outputs can easily be configured to meet specific user and equipment needs
- 4 black-burst, 4 sync, and 2 subcarriers available
- Each sync output individually settable for composite sync, composite blanking, H-drive or V-drive
- Separate buffer for each output provides maximum signal isolation
- 0dB, 1KHZ sinewave audio one output
- DC powerable for use in the field
- An unusually versatile black-burst, sync pulse and audio tone generator.

TIME BASE CORRECTORS

DIGITAL PROCESSING SYSTEMS INC.

DPS VT-2000 PERSONAL TBC

Features:
- The VT-2000 is a full-frame TBC/Synchronizer which enables virtually any VCR, camcorder or laser disc player to be interfaced with computer video systems.
- Compatible with the Amiga 2000 series (Newtek Toaster) and all IBM PC and other ISA bus computers.
- NTSC composite and S-video inputs, genlock capability and infinite window timing.
- Includes Proc Amp control **699.00**

NEW! DPS TBC III..... . . . .**799.00**

HOTRONIC AP41
STAND-ALONE TBC/FRAME SYNCHRONIZER

Features:
- Compatible with 8mm, Hi-8, VHS, S-VHS, U-matic and U-matic SP.
- Frame synchronization with full frame memory.
- Full proc amp control with no interruption presets.
- Pixel by Pixel Drop-Out compensator/ optional **999.95**

I.DEN TBCard/TR-7

- Broadcast quality infinite window time base correction and synchronization from any video source.
- TBCard plugs directly into Amiga (perfect for the Toaster) or IBM-PC.
- Offers full 5.5 MHz bandwidth (440 lines of resolution) to ensure highest quality professional results.
- Includes TR-7 remote control unit for full Proc Amp control, field or frame freeze, timing adjustments **699.00**

I.DEN IVT-7

DIGITAL TIME BASE CORRECTOR/ FRAME SYNCHRONIZER
- Will time base correct & transcode inputs from Hi-8, S-VHS, VHS-DUB, 3/4", 3/4" VCR-DUB and composite video.
- Ideal for use as a frame synchronizer, synchronizing outside satellite, microwave & camera feeds with studio signals.
- 3-5 dB chrominance & luminance noise reduction.
- Full Proc AMP controls, drop out compensator.
- Built-in RS-170 sync generator with genlock input and black burst output.
- Y/C delay adjustments, field and frame freeze.
- Wide 5.5 MHz frequency response offers 450 lines of resolution. Full 8-bit professing and a 58 dB S/N ratio. **1799.00**

DIGITAL CREATIONS

The Kitchen Sync

Dual Channel TBC
- Two complete infinite window time base correctors on one IBM AT/Amiga compatible card.
- Plugs into any IBM AT or any Amiga 2000 or 3000 PC slot.
- Works with any video sources including consumer VCR's and camcorders.
- Use more than one Kitchen Sync linked together to synchronize even more channels.
- S-VHS and Hi-8 compatible. Has S-video input with option for S-video out.
- Complete 100% accurate sync generator built-in. Totally regenerates all sync and blanking signals.
- Absolute 100% broadcast quality output.
- Built-in Proc Amp with Hue, Saturation, Contrast and Brightness adjustments.
- Advanced sync output – useful with any VCR capable of taking an Advanced Sync in.
- Completely digital design – no Pot adjustments necessary. The Kitchen Sync is completely microprocessor controlled and easy to adjust **1549.00**

Nucleus Electronics

The Personal SFC

Single Frame Controller

Features:
- +/-0 frame recording to frame accurate VCR's
- Full featured animation sequencing
- Record as you render or record from frames on disk
- Simplified tape pre-striping function
- Records framestores and IFF24 through Toaster
- Miniature B&W 30 frames per second animation preview
- VCR remote control including joystick shuttle
- Time-lapse and stop motion recording

DIGITAL PROCESSING SYSTEMS INC.

Personal V-Scope

The Personal V-Scope from the makers of the Personal TBC produces a digitally synthesized waveform monitor and vectorscope display that can be superimposed on any video signal. It also provides a buffered video output, a software-controlled superimposed video output and a full-time waveform/vectorscope video output with any video signal input.

Personal V-Scope Waveform Monitor:
- Displays video signal level.
- Full 6 MHz bandwidth • 0.5 dB
- Graticule calibrated in IRE m Volt Scales.
- Hardware rasterizer for real time display update.
- 2H and 1H display modes.
- Accuracy better than 1%.

Personal V-Scope Vectorscope:
- Displays color component signals.
- Graticule targets for Color Bar test signals.
- Linear quadrature decoder.
- Hardware rasterizer for real time display update.
- Accuracy better than 1%.

GVP

GREAT VALLEY PRODUCTS INC.

68030 POWER + 16MB RAM + SCSI CONTROLLER

GVP's 68030 CPU Power Solution is a must for power-hungry video, graphics, ray-tracing and animation applications. GVP's 68030 accelerator solution will turbocharge your A2000 by offering performance up to 25 times that of a standard Amiga 2000.
- The perfect upgrade for Newtek's Video Toaster.
- 40 MHz factory installed surface mounted 68030 CPU and 68882 math co-processor.
- Up to 16MB of 32-bit wide memory expansion.
- GVP's custom 32-bit wide 4MB SIMM memory modules offer flexible easy-to install expansion.
- Direct DMA access to the full 16MB range of RAM by the on-board SCSI (scuzzy logic) controller for the ultimate SCSI hard drive performance.

68040 POWER + 64MB RAM + SCSI CONTROLLER

Features:

68040 Based Processor:
- Provides incredible workstation performances of 26 MIPS(Million Instructions per Second).
- Two 4 Kilobyte caches (one for instruction and one for data).
- Icon based software switchable 68000 fallback mode.

32-Bit Wide Fast RAM:
- 16MB of high speed 60ns RAM provides access to more than enough RAM for almost any operation. (Expansion to 64MB will be possible as soon as the 16MB chips become available.)
- Directly addressable via DMA by the on board SCSI interface.
- Allows high-speed data transfer from SCSI devices connected to the 040 board.

High Performance SCSI Interface (SCSI II Compatible):
- Allows quick and easy access to SCSI drives and peripherals.
- Direct access to the on-board 32-bit wide RAM to improve data transfer performance even further.
- Utilizes GVP's VLSI Technology and custom DPRC chips.
- Connectors for both internal and external SCSI devices.

Serial Port:
- Uses DB9 connector on the back of the card.
- Separate 16 byte FIFO's for send and receive channels. (Provides hardware buffering for read and write operations, preventing data-loss - even at very high baud rates.)

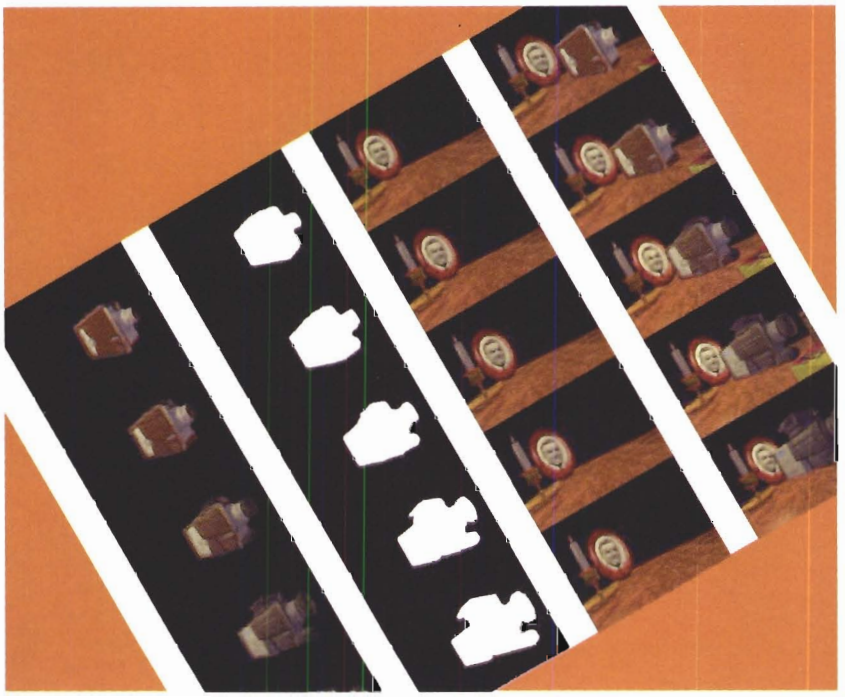
Parallel Port:
- Uses DB25 connector on the back of the board.
- Configurable as either Amiga or PC compatible.
- Amiga configuration provides the power output lines for use with video digitizers and sound samplers.

Motion Morphing with LightWave 3D

by Dale K. Myers

In 1954, my father became one of the few on his block to own an 8mm home movie camera. Considered state-of-the-art at the time, the Keystone camera used an 8mm magazine load—a metal cartridge, not unlike today's video cassette—which held a 16mm strip of film. One side of the film was exposed, the cartridge flipped and the other side used. After processing, the film strip was slit lengthwise to create one silent 50-foot reel of 8mm film.

Nearly forty years have passed since then. Now, today's "home movie" cameras can shoot two hours of stereo video on an 8mm cassette no bigger than that original three-minute silent reel. While technology has improved considerably, so too has the affordability of these little magic boxes. Not only are sophisticated video cameras within the reach of millions of "home movie" producers, but the ability to manipulate the professional images they generate is reaching a new era of respectability.



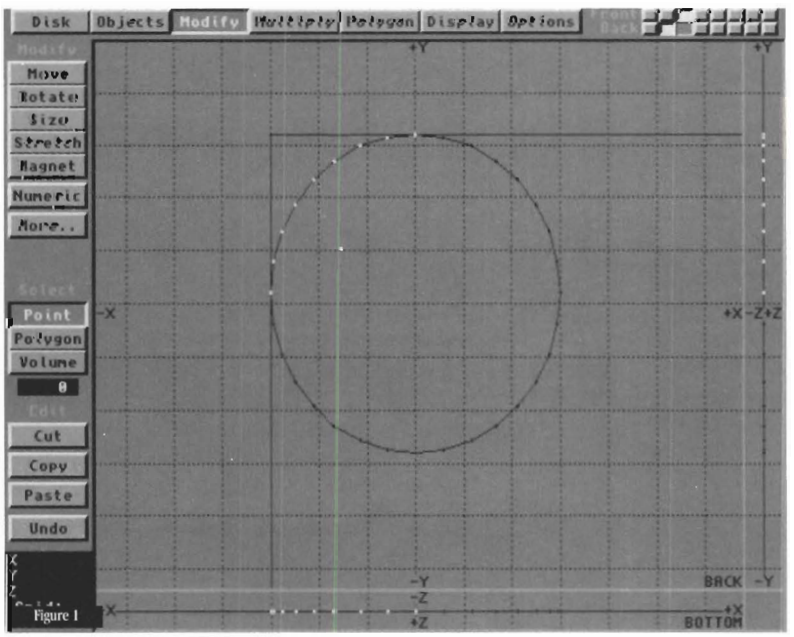


Figure 1

Desktop Magic

In the mid-70s, John Dysktra's Industrial Light and Magic (ILM) crew used every imaging trick known (and some they created) to pull off George Lucas' groundbreaking special effects film, *Star Wars*. For nearly two decades, ILM has consistently led the pack with innovative special effects like "morphing," first introduced in Ron Howard's *Willow*. Today, believe it or not, those same million-dollar effects—motion control, traveling mattes, optical compositing, and morphing—are all at your fingertips with NewTek's LightWave 3D and one of three professional morphing software packages.

I recently decided to pay homage to those 8mm days of yore with an animation sequence that would show how far we've come, not only in terms of equipment but also in professional capabilities. With some careful planning, you too can create a true masterpiece of special effects wizardry.

I began to imagine a desktop upon which we see an old 8mm home movie camera, filmboxes, and movie reel suddenly transform into their modern counterparts. The entire vision is seen under the watchful gaze of the owner, framed in a portrait, as he ages over the years like a modern-day Dorian Gray.

Building the Roadmap

The key to tackling any project of this magnitude is *planning*. Never jump into any animation project without knowing exactly where you're going. Unlike film production where you get a second take, animation is generated frame by frame. In the end, each frame must count. Don't waste precious time working down a blind alley. Draw a "roadmap" and follow it.

Animators wear many hats, including that of cinematographer. As an animator, your first mission is to insure that the sequence takes full advantage of composition, lighting and angles. You need to be well versed in cinematic technique to create inspiring animations. A prime source of inspiration for serious animators is *The Five C's of Cinematography* by Joseph V. Mascelli, A.S.C. Fully illustrated with motion picture stills, this book covers the essential techniques of motion picture cinematography.

Although first published in 1965, this book is still considered by many professional cinematographers to be the "bible."

Turning attention to the storyboard, the eyes of the man in the portrait command the most attention. I decided to begin the animation focused on the portrait, then track back past the 8mm camera, film boxes and film reel; each item morphing into its modern twin as it comes into view. Sometimes the morphing object is partially obscured by objects just coming into the frame. To create a cascading morph of overlapping objects, each object needs to be isolated from the background, morphed, and then composited back into the animation. With a clear roadmap in hand, we can begin the process of building the elements that make up the animation sequence. First up is the task of modeling objects for the scene.

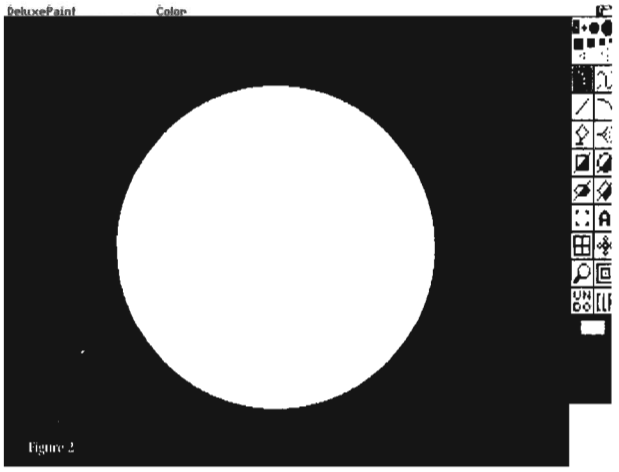


Figure 2

Beginning the Modeling Process

LightWave Modeler is arguably one of the best three-dimensional modelers available for the Amiga. Modeler's eight separate layers help speed the process of constructing complex models by giving the animator plenty of room to make smaller parts that fit together into a larger whole. Generally, the best advice for building models is to build in detail only to the level that will be visible in the final animation and *always* build to scale.

For any complex object, look at it carefully and break it down into the smallest components. The Keystone 8mm camera's hull, lens, viewfinder, and side buttons were all constructed in separate layers, then copied into a single layer for final assembly. Be sure to save each of the components that make up your more complex object separately. They're useful for image mapping, as you'll see in a moment.

Using Modeling Templates

To simplify object creation in Modeler, use templates. For example, the 8mm camera's hull needs a box shape with rounded corners. In layer 1 of Modeler, create a flat box. Shifting to layer 2, create a disk with 32 points. Press Alt-1 to bring up layer 1 behind the disk. Scale the disk down, positioning it so that a quarter of the disk would fit snugly into the corner of the box visible in layer 1. Repeat the process for all four corners. Next, copy the points of all four positioned quarter disks and past them into layer 3 (see Fig.1). There, connect the points into a single round-cornered polygon and extrud them into the 8mm camera's hull. This method of creating templates can be used for everything from making object parts matchup to cutting holes in flat surfaces.

Another trick I find useful is to name the extruded sides of objects differently from their flat faces even though the colors may be the same. For instance, a font might have faces named "font.FACES," while the extruded sides are named "font.SIDES." This can give you additional control over shading in the final animation. In the font example, I can make the sides of the

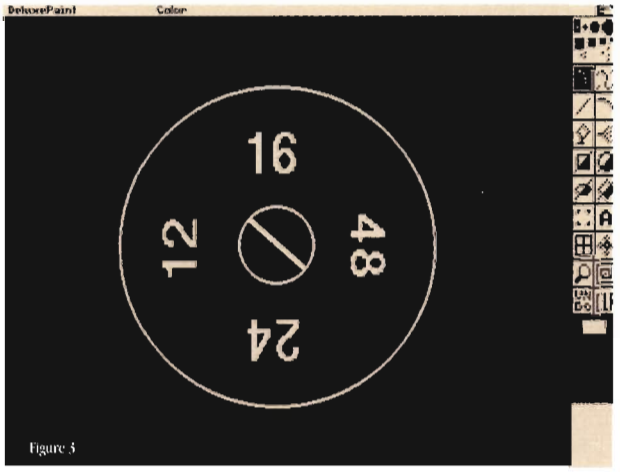


Figure 3

font appear to be in shadow, regardless of the lighting, by lowering the diffuse level of "font.SIDES."

Creating Perfect Detail Maps

Wherever possible, use detail maps instead of more polygons to give your models realism. All the detail maps used in this sequence were created with Deluxe Paint IV. Once again, using templates along

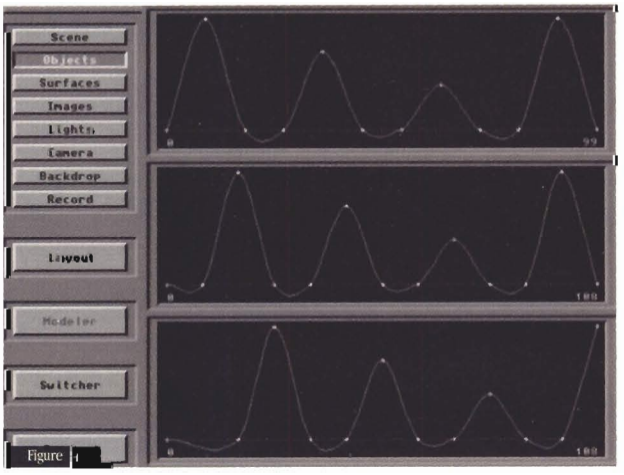


Figure 4

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with LightWave's "Automatic Sizing" feature can turn a texture map nightmare into a dream.

In this animation, the Keystone 8mm camera object needs a dial with the camera speeds marked on it. Load the speed dial object (this is why it is handy to save all object builds separately) into Layout and position it so that the surface to map faces the screen. Adjust the camera lens setting to 5.0 in order to flatten out the image as much as possible. Position the object to fill the screen, then exit Layout and bring up the

Figure 5

Surfaces menu. Here, change the color of the speed dial object to luminous white (255-255-255). Turning to the Backdrop control panel, select the Zenith Color Only button and set the Zenith Color to zero-black (0-0-0). Render the scene at Medium Resolution (752x480). Reduce the resulting image to two colors with *ASDG's ADPro* and load it into *Deluxe Paint IV* (see Fig.2). Using the two-color template, paint a four-color speed dial complete with numbers and centering screw. Reduce the final map to a two-color black-and-white image for use as a diffusion map (see Fig.3).

Now, the secret! Turning on the coordinates, pick up the map as a brush, keeping the brush boundary box as close to the edge of the map as possible, while making sure that the brush dimensions are divisible by

Figure 6

64 pixels (this allows the image to be texture mapped properly in LightWave). Finally, save the brush map to disk. When assigning the map to the surface of the speed dial, I simply click on Automatic Sizing for a perfect fit. This technique is also useful for creating the detail map for the film reel, which needs to match the holes cut in the reel's surface.

The remainder of the objects can be churned out using these methods: The candle holder is spun using the lathe tool; the filmboxes are slightly modified box primitives; and the camcorder is a modified version of the camcorder found in LightWave's Objects directory.

LightWave Object Morphing

To create a realistic flame for the candle, use LightWave's object morphing feature. First, stretch and taper a sphere in Modeler, then scal it to fit the candle. Name the flame object Flame.1 and save it to disk. Next, clone the flame twice, modify each slightly—one short and squatty, the other tall and slender—and save them to disk as Flame.2 and Flame.3. These three versions are then set up as a cascading morph in LightWave. Each object is first loaded via the Object menu. Next, scroll through the Current Object list until Flame.2 appears, and set Object Dissolve to 100%. Repeat this for Flame.3. This is done with the second and third flame objects because they are to be morph targets, used for reshaping the Flame.1 object, and are not to appear directly in the scene.

Next, scroll through the Current Object list until Flame.1 appears in the window. Dropping down to the Metamorph Target window, scroll through the list until Flame.2 appears. These steps instruct LightWave to morph the Flame.1 object into the Flame.2 object. You can control the speed and variation of this transition by using an envelope. To do that, select the Metamorph button, then click on Envelope. A new menu appears, which allows you to create a spline curve representation of how and when the morph will occur. Similar envelopes are set up for transitions for Flame.2 to Flame.3 and Flame.3 to Flame.1 (see Fig.4). In this way, the candle flame morphs in a cascading fashion from versions 1 through 3, and then repeat the cycle for the duration of the animation.

Finally, create texture maps for

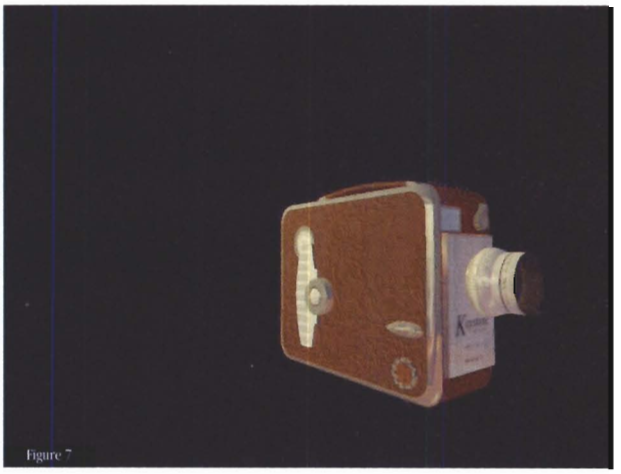
Figure 7

the film boxes and Hi-8 cassette albums. One way to get these is by grabbing closeup frames of their real-life counterparts using the Video Toaster's framegrabber feature.

Setting Up Scenes Using Motion Control

Once the objects are created, it's time to set up the two scenes we want to morph between.

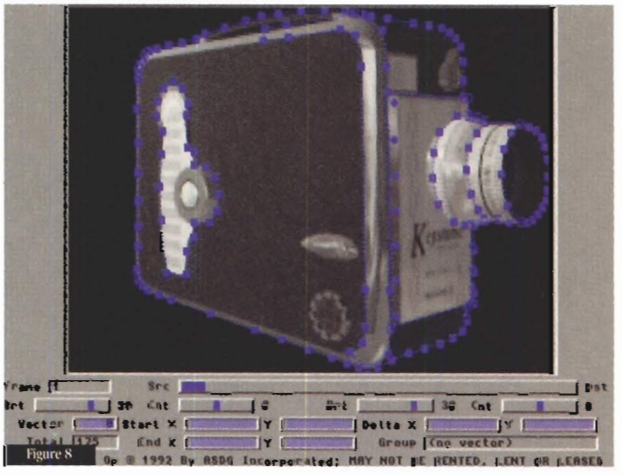
Figure 8

In order for our morph sequence to work properly, the camera motion in both scenes must be identical. In Hollywood terms, this is known as *motion control*. Industrial Light and Magic perfected this technique during filming of the movie blockbuster *Star Wars*. For the space battle sequences, ILM created a computer-controlled camera that could make multiple

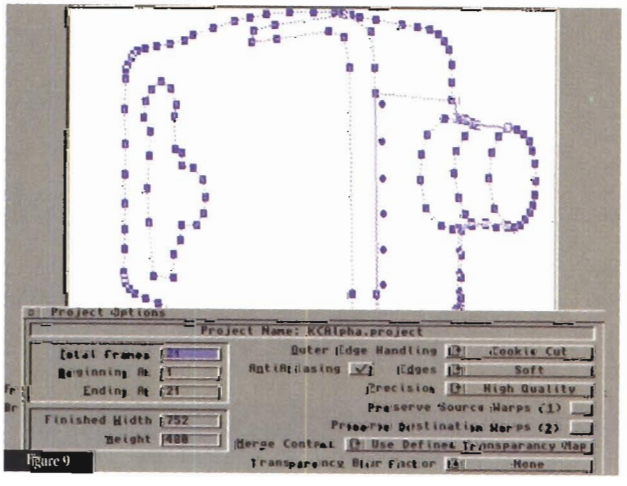

Figure 9

passes of various spaceship models in perfect synchronization. The various sequences were then composited into one seamless battle scene.

You can control the LightWave camera with this same level of sophistication by using the Camera Motion feature. To use the same camera motion in two different scenes, simply click on the Camera Motion button at the top of the Camera menu. A new menu appears along with a button labeled Save Motion. Selecting it saves the camera's motion file to disk. The file can be reloaded into another scene using the Load Motion button. Similar motion files for objects and lights are also available for complete control of all motion in your animation scene. For our purposes, we'll be doing the same thing in a different way. Since we need to maintain object, light *and* camera positions to align our second scene, we'll keep everything intact, add the new scene objects, then delete the old ones.

First, the 1950s scene. Each object is loaded and positioned on the table top. One yellowish point light with an intensity of 150% and a falloff value of 300% is used to act as the candle light. An envelope is created for the intensity of the light so that it flickers appropriately. The envelope wavers between 150-120% to match the morphing candleflame. The camera motion path is constructed and the scene saved as Keystone.scn.

In order for the finished morph to look as smooth as possible, each object needs to be positioned as close as possible to its original version. To align them correctly, each modern-day twin is loaded into the scene and placed in the same location occupied by its older version. Once content with the positions, the 1950-object versions are deleted from the scene.

Before saving this scene under a new name, we turn to the lighting. In the final animation, the lighting within the scene needs to change as the candle morphs into the desklamp. This effect is accomplished by adding two more lights to the scene. One is a white point light that represents the light coming from the bulb, and the second is a white spotlight pointed at the tabletop directly under the lamp to simulate the light that would be directed downward by the lamp shade. Both lights are assigned an envelope to control the moment they "turn on." The final modern-day scene is saved as Camcorder.scn.

Since the candle/lamp morph occurs early in the sequence, the lighting change needs to be reflected in both Camcorder.scn and Keystone.scn. For this reason, the two lights added to Camcorder.scn are also added to Keystone.scn. This can be painlessly accomplished by saving the two additional light motion files, adding two new lights to Keystone.scn and reloading the corresponding light motion files. We now have two identically lit scenes ready to render (see Figures 5 and 6). Time to turn our attention to the morph effects.

Secrets of Image Morphing

When it comes to image morphing, or special effects, one central rule applies regardless of the effect: *short is best*. The reason is simple: Special effects are designed to evoke an emotion or sensation in the audience. They should *enhance* the storytelling as opposed to becoming the story themselves. Imagine watching the tornado sequence in *The Wizard of Oz* and realizing that in reality the tornado is nothing more than a nylon sock filled with sand zipping back and forth over a miniature countryside. Detracts from the terror of it all, doesn't it? Despite your secret

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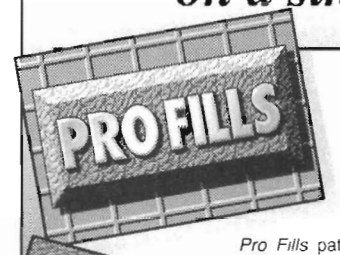

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desire for the audience to appreciate the hours you spent perfecting a one-second effect, if the audience notices it, you've failed. As the special effects magician, never let the audience see what's up your sleeve.

Image morphing is a superb example of when less is more. Most of the morphs you've seen on television occur over a span of 15 to 25 frames. Keeping morph sequences short enhances the effect while keeping the work load manageable and cost effective. For this sequence, I used 20-frame morphs occurring at half-second intervals for a total animation length of 240 frames.

You may have noticed that the best looking image morphs seem to occur over a common background. That's because morphing software stretches a two-dimensional image like a rubber sheet. Pull on one side of the image and the background stretches with it. To avoid this inherent limitation we can use LightWave to separate an object from its background, then seamlessly recomposite it after completing the morph.

Traveling Mattes

This process involves creating a traveling matte. A matte shows where a portion of the picture is to be "painted out"—usually accomplished with a white-on-black image, where white is the hole cutter and black is transparent. A "traveling matte" is a sequence of mattes that match a group of frames. Traveling mattes are used extensively to create cinematic special effects.

For our purpose, we'll need three groups of frames for each morph sequence: the object on a black field, its corresponding traveling matte, and the background.

Normally, you can create a traveling matte for your 3D animations using LightWave. Just like the image templates created earlier, objects are loaded into the layout, surfaces are adjusted to luminous white (255-255-255), and rendered over a zero-black field. Here however, the mattes are needed for objects that are changing shape.

Breaking LightWave's Morphing Barrier

In the past, LightWave animators have been morphing 3D objects with one major drawback—the objects being morphed must have the same number of points! As you might imagine, this can be a major dilemma when you're trying to morph a baseball into a diesel locomotive.

Enter the age of image morph software. Now, LightWave artists can morph any two 3D objects *regardless of points* because the rendered images are stretched and pulled, not the objects themselves.

GVP's *CineMorph*, Blackbelt System's *Imagemaster* and ASDG's *MorphPlus* are leading the pack with professional morphing features sure to make your productions a hit. Be forewarned, however. Creating motion morphs with the Toaster can be fun, but making it look good takes a little planning.

Creating Morph Elements

To begin creating an image morph, we need two animation sequences to work with. The first object to transform in our animation is the 8mm camera into the camcorder. Let's start by loading Keystone.scn into the Layout. All objects except the 8mm camera are deleted from the scene, the zenith color is adjusted to zero-black and the Zenith Color Only button activated. Finally, the 20-frame sequence where the morph will occur is rendered. The result is a sequence with the 8mm camera object isolated against a black field (see Figure 7). The process is repeated with Camcorder.scn, this time rendering the camcorder under the same conditions.

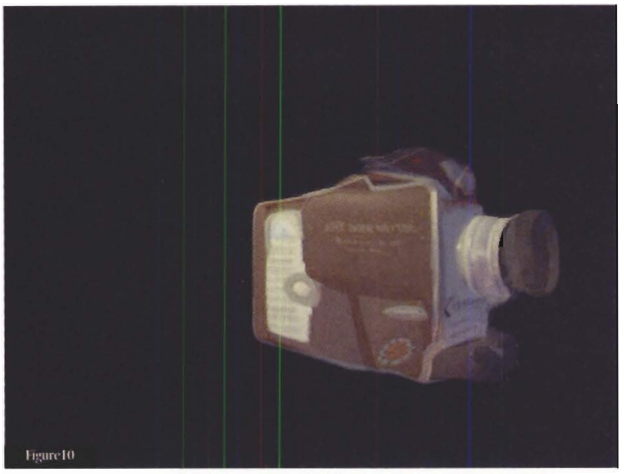
Figure10

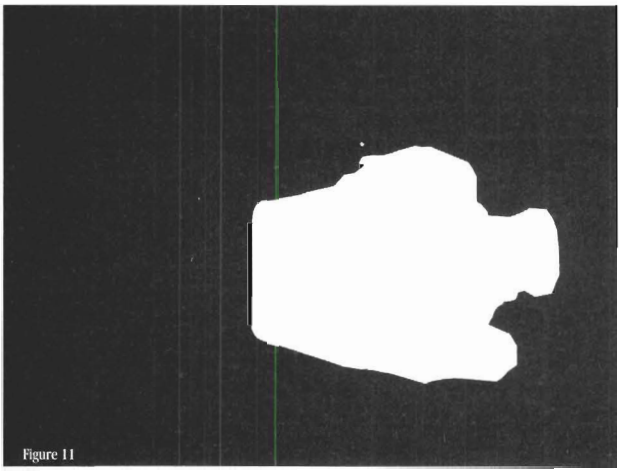
Figure 11

Figure 12

Tackling the Morph Process

Next, the two sequences are loaded into the morph software. I used ASDG's MorphPlus, which allows you to see both images in onion-skin fashion. A slider at the bottom of the viewing window lets you control the two images' relative visibility.

The idea behind morphing is to place "control points" on each image which can be pulled and stretched by the computer while executing a cross-fade. With MorphPlus, vector points are placed on the source and destination images. As you might expect, the more points you use, the more control you'll have. Although using more points does increase rendering time, MorphPlus zipped through the process. All the morphs done for this animation used fewer than 200 points and took two to four minutes per frame to render on a 68040-based system.

The key to setting up a morph is to *take your time*. Rushing through the placement of vectors only forces you to spend hours down the road looking for that one vector that's making that "funny ripple". Generally, you'll surround most objects with an outline of points—like connect the dots—and then highlight a few key areas within that range for even more control (see Figure 8).

When doing a morph between two still images, only two sets of vectors are needed—one for the source image, another for the destination image. On the other hand, a moving morph requires vectors for each frame. MorphPlus trims this task to a manageable level by providing a "tweening" function. After setting up vector points for the first and last set of images, the computer calculates the between positions of each vector. It sounds simple but actually the in-between vector positions are computer estimates, and still require some minor adjustments on every frame. Creating image morphs is not an exact process. Many morphs require additional finesse to clean up rough edges and smooth transitions. Don't worry, this is something every morph artist encounters. Final touchup work can be done in ToasterPaint using combinations of the Transparency and Rubthru tools.

Creating a Traveling Matte

With the morph completed, it's time to create a matching hole cutter or "traveling matte". With MorphPlus, it's possible to generate a matte sequence with the same vectors used to generate the corresponding morph. A new "project" is created with the software and two all-white (255-255-255) images are loaded in place of the image sequences. Then, the same vectors used to create the morph are loaded into each frame (see Figure 9). Selecting the Cookie Cut method and Soft Edges in Project Options, causes MorphPlus to create a series of soft-edged white-on-black mattes which perfectly match each frame of the corresponding morph (see Figures 10 and 11). The soft edges of the matte help "feather" the edge of the morphed image into the background for a seamless composite.

Finally, the background needs to be generated for the appropriate sequence of frames. For the 8mm camera/camcorder morph, Keystone.scn is loaded into the layout. This time, the camera object is deleted from the scene before rendering (see Figure 12).

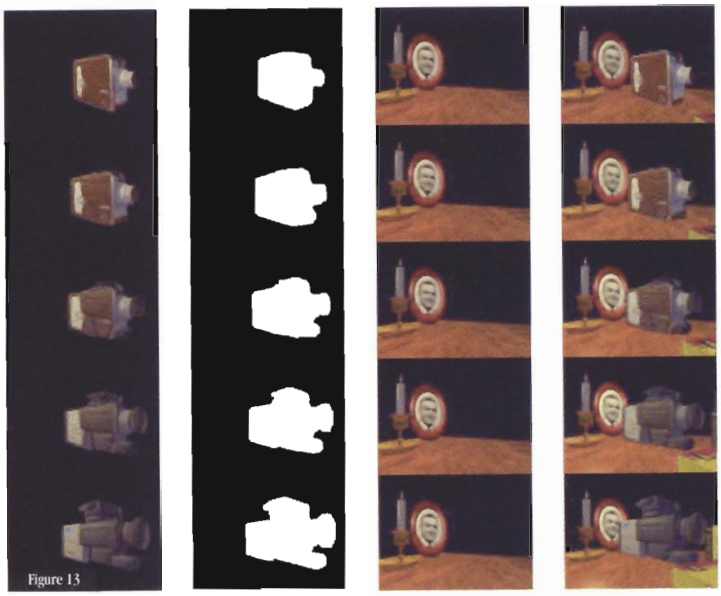

Figure 13

Optical Compositing

To composite the three "strips" together (see Figure 13), I used *FRED* which comes with ASDG's ADPro and MorphPlus. Within FRED is a menu item called Alpha_compositor. This allows you to quickly and automatically composite two image sequences (morph and background) using a third sequence (traveling matte) as an alpha channel hole cutter. The resulting composite is indistinguishable from a straight render of the same scene. The entire process is repeated for each of the morph sequences.

Besides compositing with FRED, additional compositing was done within LightWave. There are points in the animation when objects behind the morphing subject come from the Camcorder.scn while foreground objects are drawn from the Keystone.scn. For example, while the 8mm camera is morphing into the camcorder, the picture in the frame behind the 8mm camera is from the modern era, while the overlapping film boxes in the foreground are circa 1950. This required a little leapfrogging to get around. In this case, after the morph/matte/background is combined in FRED, the resulting 20-frame sequence is used as still another background sequence in LightWave over which the 1950s film boxes from the Keystone.scn were rendered.

Finishing Up

The final 240-frame sequence was converted to Abekas format WITH ASDGs ADPro and saved to an Exabyte tape drive. Later the sequence was transferred to an Abekas A-60 Digital Disk Recorder at a professional post-production studio and output to D-2 digital tape for mastering.

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Dale K. Myers is a freelance animator producing industrial and broadcast animations through his company, Microtech Graphics & Animation, Inc., based in Livonia, Michigan.

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Pseudo-Particle Animation

by Mark S. Drummond

Those who started rendering when the only products were VideoScape, Sculpt 3D and some public domain rendering packages can appreciate the origin of this LightWave tip. Way back in the Amiga's past, people used VideoScape to create 3D images and animations. Modelers were almost nonexistent; those available had limited capabilities. VideoScape used GEO (for geometry) files for its objects.

Text-based VideoScape object files describe an object's vertices, edges and surface colors. To create an object, you would enter each vertex's X, Y and Z coordinates. Then you would connect vertices to form faces by entering the number of vertices in a face and the order of the connection, followed by the face's color. This was tedious and time-consuming, to say the least. However, some good has come from this method.

LightWave Edge Outlines

When Allen Hastings wrote LightWave, he incorporated much of what he learned from VideoScape in his design. LightWave can read these GEO files, so you can create objects using a text editor like the pioneers did in those day of yore. VideoScape has the ability to read objects defined with edge outlines of a different color than the face.

Knowing this, I wanted to see how LightWave handles edge details on its objects. So, I created an object and loaded it into LightWave and lo and behold, there was the edge detail. After creating a sphere with LightWave modeler, I loaded it into Pixel 3D and saved it as a VideoScape GEO file. Loading this file into my favorite text editor, I created an edge detail for one of the polygons. When I loaded the sphere into LightWave I was pleasantly surprised to find a red outline around one of the faces, and with Smoothing turned on, the line looked very clean and nice. The lines created, however, are virtual lines. To clarify, they are one pixel in width no matter what distance the camera is from the object.

This method of creating edges can be modified to create a single illuminated pixel. To do this you need to understand what defines the object. The first entry into the file is the header, "3DG1", that identifies the file as a GEO file. On the next line you would enter the total count of the vertices. If you were creating a cube you would enter 8; then on each line below you would enter each vertex's X, Y, and Z coordinates.

Here is an example of our cube so far:

```
3DG1
8
1 1 1
1 1 -1
-1 1 -1
-1 1 1
1 -1 1
1 -1 -1
-1 -1 -1
-1 -1 1
```

Our first vertex is at location X:1, Y:1, Z:1, the next at X:1, Y:1, Z:-1 and so on. The X coordinate is in the horizontal, the Y in the vertical and the Z is in the distance. Our first four vertices are at Y:1 then our last four are at Y:-1. This gives us the 3D cube. Now that we have the positions of the vertices defined, we need to inform LightWave how the polygons are constructed. This is done by entering:

1. The count of the vertices that make up a polygon.

2. The number of each vertex in a clockwise order.

3. The color of the polygon.

Continuing our example, enter the following polygon data below the vertex data, save it, and load this file into LightWave:

```
3 3 1 2 15
3 3 1 0 15
3 4 3 7 15
3 4 3 0 15
3 5 0 4 15
3 5 0 1 15
3 6 1 5 15
3 6 1 2 15
3 7 2 6 15
3 7 2 3 15
```

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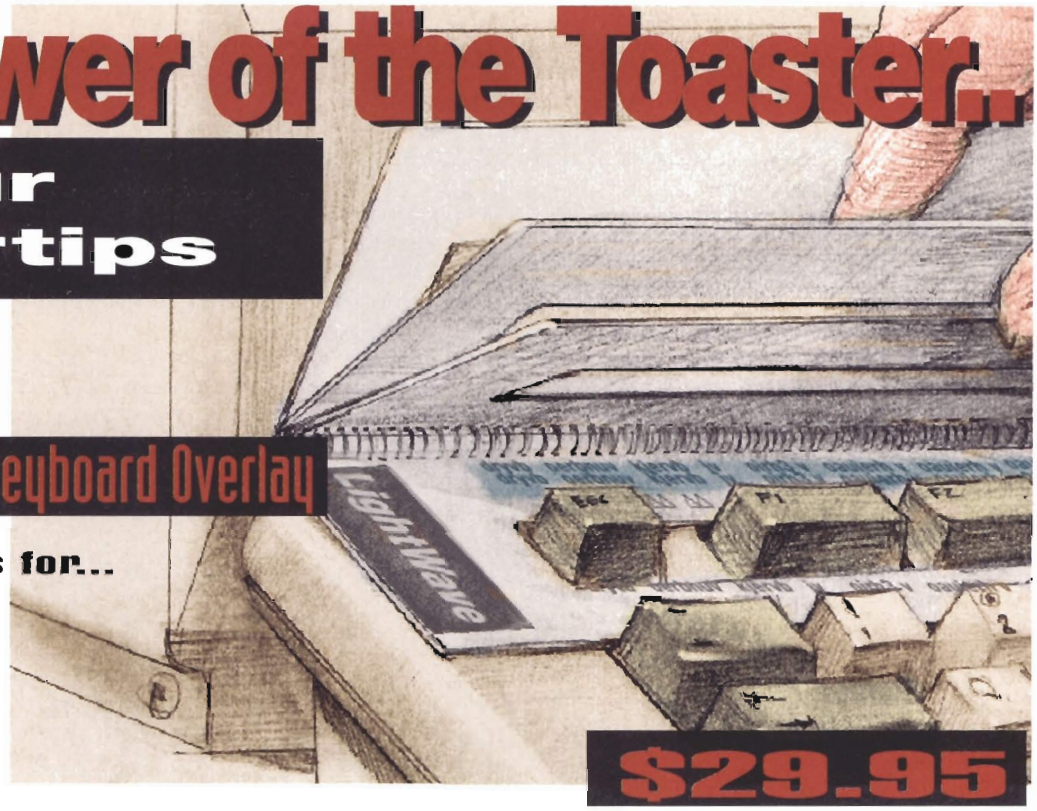

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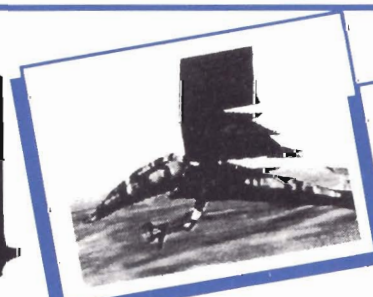

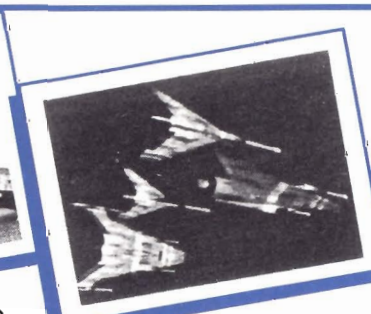

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3 7 5 6 15

3 7 5 4 15

Here is a breakdown of the first line:

3 3 1 2 15

1. 3 is total count of vertices in this polygon.

2. 3 is the number of the first vertex.

3. 1 is the number of the second vertex.

4. 2 is the number of the third vertex.

5. 15 is the color of the polygon—white.

The following lines describe the rest of the polygons. Now that we know what makes up the GEO file, I will show you how to outline a polygon. To make the outline, you need to inform LightWave that this polygon has "details." To accomplish this, we add a hyphen to the color number and follow with the detail information. Take the first line in the above example and add the hyphen to the number that defines the color, 15. Then we need to tell LightWave what edges to outline and what color to make the edges:

3 3 1 2 -15

3

2 3 1 3

2 1 2 3

2 2 3 3

1. -15 informs LightWave that there are details.

2. 3 informs LightWave that there are three details.

The next three lines define our details:

1. 2 indicates that this detail uses two vertices.

2. 3 and 1 are the vertex numbers.

3. 3 is the color of the detail.

Notice that I have rotated vertices 3, 1 and 2 as we progress down the file. Polygons are only visible if the vertices are listed in a clockwise order.

The Next Step

Now comes the fun part. Edge details can be created on single vertices! This is how random stars were made. What if you had as many random vertices as an object has vertices and you morphed between the two? You would get a simulated particle animation! This specialized form of 3D computer animation utilizes clouds of hundreds or thousands of tiny particles, each moving independently but fully under the artist's control, swirling around *en masse* to create different shapes or whatever the artist likes. Until now, true particle animation been inaccessible to Amiga 3D artists due to inadequate technology (software and/or hardware), but by mid-1993 it should be available in several formats. Until then, you can practice with these techniques.

To create single-vertex points instead of defining the connection between each of the vertices, we simply define each vertex's color. We follow our vertices with this type of list instead of the one above.

1 0 28

1 1 28

1 2 28

1 3 28

1 4 28

1 5 28

1 6 28

1 7 28

1 0 28

1. 1 informs LightWave that this polygon has one vertex.

2. 0 is the number of the first vertex.

3. 28 is the color, glossy light red.

Notice also that we start with vertex number 0 and go up to vertex number 7, which adds up to eight vertices. If your count is not correct here, LightWave will not load the object.

Have a look at the VideoScape list below:

The numbers defined as "not used" are not defined by VideoScape, but will use the colors I have entered next to them.

From 32 to 47 the colors repeat for "Unshaded" and from 48 to 63 they repeat for "Unfilled outline."

Morphing Particles

What is needed to create the particle-morph is a solid object and your modified file. Load the solid object into LightWave, then read the vertex count. Use this information to create your particle object with the same amount of vertices. Load your particle object into LightWave and enter the Metamorph Envelope. Create a key at frame 30 and set the morph value to 100. Click on Use Envelope and set the morph target to your solid object.

Now select your solid object and enter the Object Dissolve envelope. Set the dissolve value to 100 and create a keyframe at frame 30. Be sure this frame is set at 100 and Linear is turned on. Now create a keyframe at frame 45 and set the dissolve value to 0. Click on Use Envelope. Now select the Scenes button and enter 45 for Last Frame. Enter Layout and point the camera at the particle object.

Sometimes you may need to load each object into Modeler prior to loading them into LightWave. Resize them so that they are equal and save them. Rotate the target object's heading for a nice spin effect and make a wireframe preview. You will see these random dots spin into the shape of your solid object.

Set the surface of the particle object to Luminous and render your scene. Many tricks can be done using this method. Experiment with different ideas, you will be surprised at the results.

When viewing the wireframe preview you cannot see the fading in of the solid object, so you will have to render some frames to see the changes. Now that you can generate pseudo-particle animations, the possible effects are unlimited.

You can create scenes like "jumping to light speed" by creating star patterns in random circles and flying past them with the camera with Motion Blur turned on. Another trick is to swap the object morph so that the solid object morphs into the random particles. This will create broken fractal surfaces. Surfaces like brown paper bags can be created using this technique and adding a fractal noise to the surface.

Instead of morphing to the solid object, set the solid object to morph to the particle object. Create your morph envelope to have a keyframe every five frames. On every other frame set the morph value to 3 and look what happens! This effect can be placed on flat planes to give them real fractal bumps. Make a car object look as though it has been in an accident. Create brown paper bags that have a crumpled look.

Particle objects can be created by highlighting the points of any object while in Modeler, copying them into a separate layer, and saving the points as a new object. Run Pixel 3D, load the object and save it as a VideoScape 3D object. This file is a text file and can be edited with any word processor or text editor. You need to add the definitions for the single point polygons as described earlier. Remember to start with number 0 for the points and to stop at one less than the total count of vertices. Note: The order in which you highlight the points in Modeler determines the order in which they are saved.

I've written a public domain program, Particle_Gen, that can create the random vertices for you. All you need to do is enter the output file name, size of the object, the vertex count and color, and Particle_Gen will generate the GEO file for you. Look for this file on your local BBS. For a disk containing Particle_Gen, this article and a few LightWave scene files, send $10.00 to:

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Here is a list of VideoScape color specs:

0 = Black
1 = Dark Blue
2 = Dark Green
3 = (Not Used) blue grey
4 = Dark Red
5 = (Not Used) purple
6 = Brown
7 = Grey
8 = Black
9 = Light Blue
10 = Light Green
11 = (Not Used) light blue
12 = Light Red
13 = (Not Used) bright purple
14 = Yellow
15 = White

16 = Glossy Black
17 = Glossy Dark Blue
18 = Glossy Dark Green
19 = (Not Used) blue grey
20 = Glossy Dark Red
21 = (Not Used) purple
22 = Glossy Brown
23 = Glossy Grey
24 = Glossy Black
25 = Glossy Light Blue
26 = Glossy Light Green
27 = (Not Used) light blue
28 = Glossy Light Red
29 = (Not Used) bright purple
30 = Glossy Yellow
31 = Glossy White

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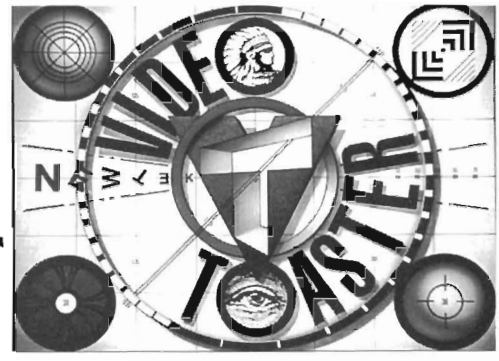

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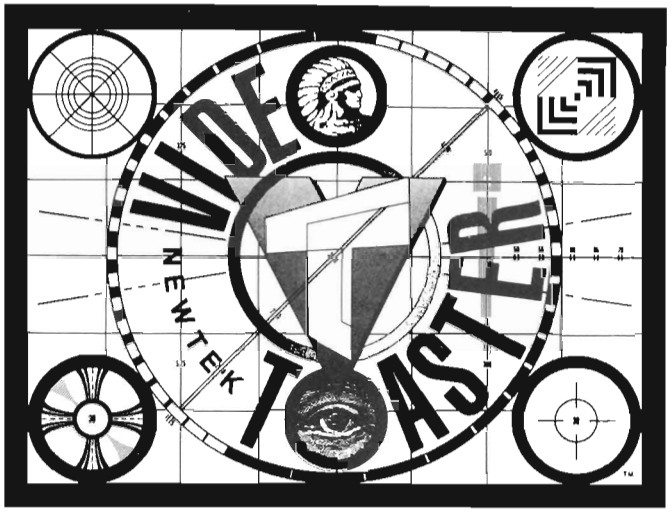

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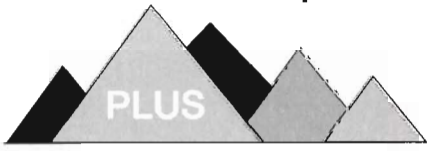

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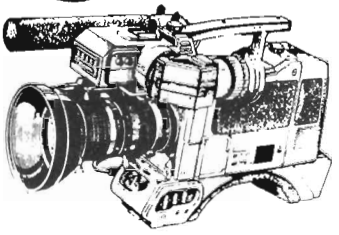

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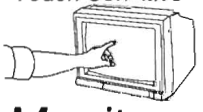

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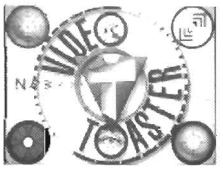

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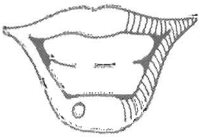

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GALLERY

Dear Video Toaster User:

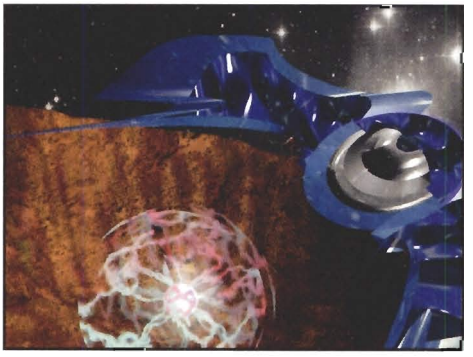
Hello. My name is Jose Luis Almeida Valles. I am a freelance animator here in Mexico. I have worked with an Amiga since 1987. I began with VideoScape 3D and Sculpt 3D for my 3D animations, then I moved to Turbo Silver. I have been working with LightWave 3D since it first came out.

My most recent work is a one-minute animation at the opening of a TV program called "La Hora Azul" that plays on Televisa's Channel 2 every Sunday evening.

Currently I am working on a identification for a new cable channel called "Nuestra Musica." It will play classic Mexican music videos from the 1950's to the 1970's. The style of the channel is Art Deco.

The frame I am sending you, called "Salon," is a view of a dance hall part of a 30-second animation. I created the hall in Autocad on an MS-DOS PC, then transferred the DXF file to LightWave 3D. I used Pixel 3D to reduce faces and redundant points. All other objects were created with Modeler. I framegrabbed the textures with the Toaster, then retouched them with ToasterPaint. I used ADpro to resize them and change certain colors.

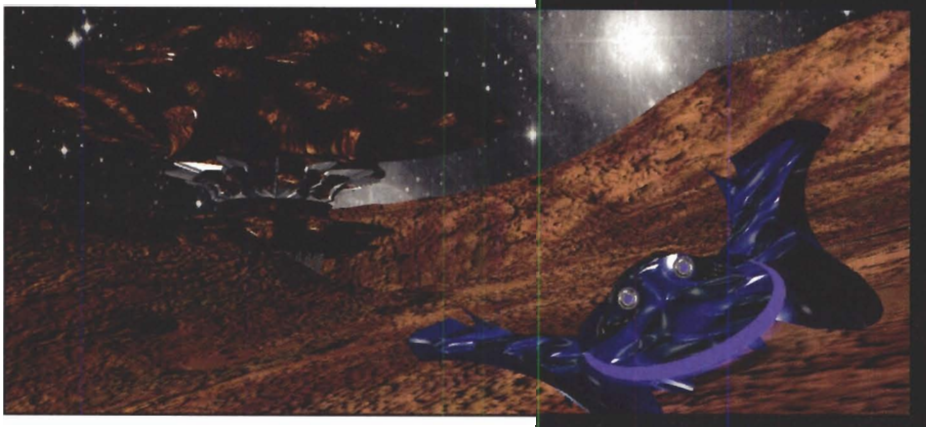
I rendered the frame in Hi-Res with overscan, and saved it as a framestore. The scene has 35 lights. Render time was an hour and 56 minutes on a Amiga 2000 equipped with a Commodore A2630 card running at 25 Mhz and 13 megabytes of memory.

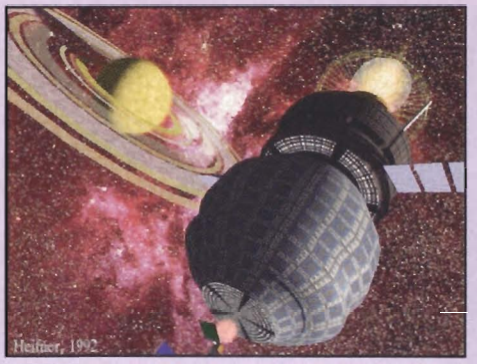


Grant Boucher

The Kazi spaceship depicted here was designed as a unique vehicle for the galaxy's "bad guys," as its blade-like construction has a decidedly vicious look. To create it, Grant first created an IFF brush using Deluxe Paint's arc tool, then loaded the brush into Pixel 3D and extruded and spun it. After additional modeling and modifications in Modeler, surfaces were added in LightWave 3D. The unique wing and hull texture relies primarily on a gross distortion of the Ripple Bump Map texture. Unique organic texture mapping and coloration were provided by TexTiles from Mannikin Sceptre Graphics.

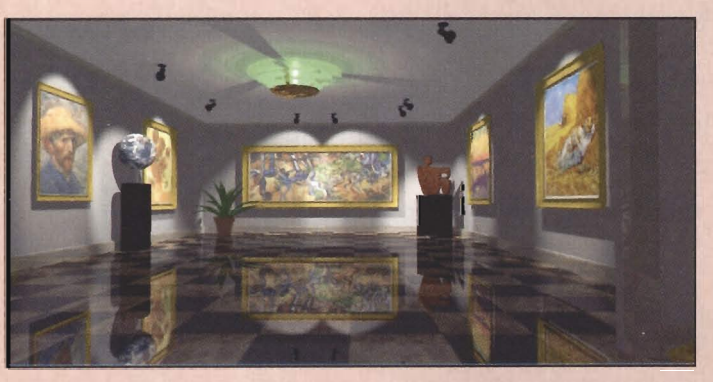
Grant Boucher is an independent freelance animator and science-fiction/fantasy author in Orlando, Florida. His work first appeared in Video Toaster User's Gallery in the October/November 1992 issue. For more on Grant, see this month's ProFiles department.





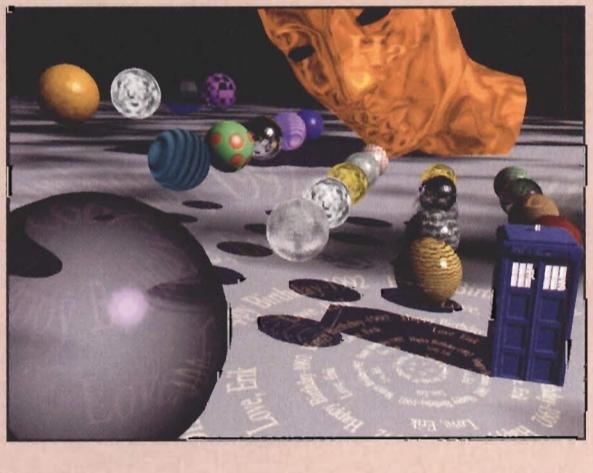
Greg Heifner

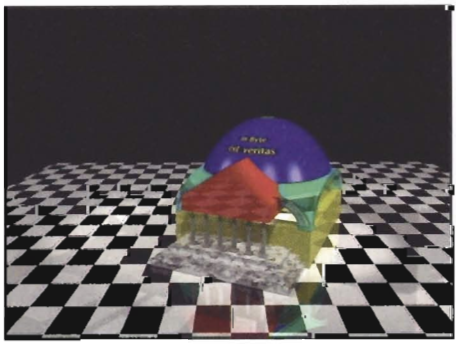
These images were created by Greg Heifner, president of Heifner Communications and true LightWave 3D nut. He has used LightWave to produce cover images for several national and local computer magazines, as well as about 100,000 frames of animation. He spends four to six hours daily with LightWave, and claims to really enjoy it. He's also a big science-fiction fan, to which these renderings readily attest. The images shown here were rendered over the past 24 months with two Toaster systems networked together via the public domain program ParNet. According to Greg, any chronic LightWave junky needs at least two machines: one to model on and one to render day and night. Expect to see Greg's renderings in these pages on a regular basis.



Erik Flom

Erik Flom's ELF Works 3D Construction Company is a full-service 3D modeling and animation business in Alameda, California. Services include simple logo/animation, complex animation, object creation, object morphing, image rendering, and more. These images, which are representative of Erik's work, were all created entirely on the Amiga with Modeler and LightWave 3D. Rendering times with a 25 Mhz 68030 CPU ranged from about three to 20 hours.





Building

Joseph Hassan, a LightWave artist from Patchogue, New York, was inspired to create this image by an article in the May, 1992 issue of Byte magazine. The article, entitled "Precision Times Three," evaluates eight PC and Mac 3D modeling programs. Since the article neglected Amiga 3D modelers, Mr. Hassan decided to try his hand at replicating the model used as a test object in the article. This model, called the Byte Pantheon, was designed to test the capabilities of programs not directed specifically at architects. The Greek-style building's architectural elements include simple blocks, nested rectangles, columns, a dome with oculus, supports, and surface-mapped text. Mr. Hassan created the text with ToasterCG in two-monitor mode with the dome rendered and displayed on DV1 for proper registration.

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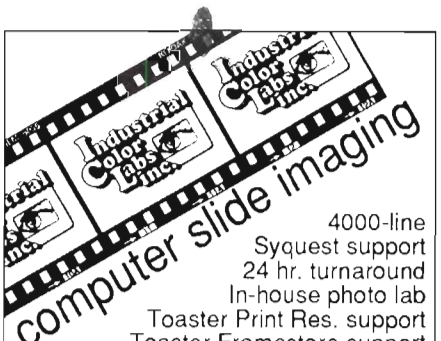

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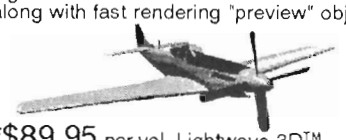

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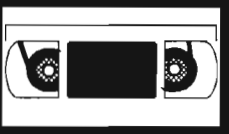

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LAST WORD

By Lee Stranahan

EXTRA! EXTRA! READ ALL ABOUT IT!!! Hot scoop here folks, right in the little ol' column at the end of the magazine. Big NewTek product announcement exclusive! You won't be reading this anywhere else, so move in closer to make room for the people in back. Okay, friends, here it is: this month NewTek announces—drum roll, please—nothing.

Okay, okay—it seems exactly like last month's product announcement, in which NewTek also announced nothing. Same as the month before and before and before, and you get the idea. In fact, the last product they announced and shipped was the Toaster System 2.0 software, and that was about a year ago. (ToasterLink, the Macintosh/Toaster connection, should be out any second now, but as I write this in the beginning of January, it is not yet a shipping product.)

What have they been doing there in Topeka for the last year? NewTek seems to have clammed up completely. They haven't even been showing anything new at conventions lately, which they used to do all of the time. So what gives?

A short history lesson is in order here. Before the Toaster was released, it had reached a legendary status in the Amiga community. NewTek had shown bits and pieces of it at conventions for a couple of years, doing one of the longest product teases in history. But teases can be very seductive—there was incredible demand for the Toaster among Amiga users when it came out.

It's important to note, however, that the world was a smaller place then. While everyone in the Amiga universe knew all about the Toaster, in the much larger world of video gear, the Toaster was a Stealth Bomber—barely a blip on anyone's radar. The surprise attack element is one of the reasons that the rest of the video industry is still struggling to catch up.

But with success has also come attention. NewTek is now a player, and if they show something at NAB, it's guaranteed to get major press coverage. Every move the company makes is now watched by a much larger crowd, and so the strategy has changed. NewTek used be able to wow the crowds with future technology; now the attitude is, "We will show no product before its time."

It's also crucial to understand why the Toaster took so long to come out in the first place. The Alcatraz Research & Development team, led by NewTek President and Toaster inventor Tim Jenison, had a number of working "Toaster" boards that could have shipped long before the final box actually went out the door.

Why didn't they ship the early versions? Because they kept coming up with better ideas. Patience is a virtue, and the boys in Topeka acted like saints. There was a tremendous amount of pressure to release the Toaster early, but the reason the Toaster is as cool as it is is that NewTek did the right thing and waited.

So what have they been doing there in Topeka for the last year or so? Working—and waiting. I think we might see some of the results of that work this year, and I think everyone will agree that it was worth the wait.

Just so that you don't end up completely frustrated, let me give you a few all-purpose rumor squashers. It's important to note that *nothing* you are about to read is official NewTek news. These are just my views, and they might be wrong.

CD-ROM - Will future Toaster releases come out on CD-ROM? I think so. Just do the math—it costs about $2.50 to duplicate a CD-ROM, including those nice plastic "jewel-box" cases and printing the insert card. That's cheaper than duping six floppy disks, and System 2.0 took up around 15 floppies. One CD-ROM can hold over 500 megabytes of data.

Should you go out and buy a CD-ROM drive? Maybe, but maybe not. If you do, it's a gamble, because there's more than one CD-ROM format. If NewTek decides to go CD on a future release, it's still up in the air as to which format they would pick. Pick the wrong format, and it's yours to keep.

Character Generator/ToasterPaint - Everybody wants the same things from the CG and ToasterPaint. It doesn't take a rocket scientist to know that multiple fonts on the same line or full screen painting would come in handy. NewTek knows this, too.

I'm not sure how soon you'll see really big changes in CG or TPaint, however, because NewTek has indicated that what they really want to do is give both programs a serious overhaul. My guess is that there will be a bit of redecorating before we see the big changes. Just remember that sometimes a little redecorating goes a long way.

The Amiga 4000 - The Video Toaster doesn't work with the Amiga 4000, Commodore's new model Amiga. The 4000 has some nice features, including a built-in 68040 processor and a 32-bit hardware bus (which make it *very* fast), and some useful new display modes.

So, will there be a Toaster for the 4000? I'd have to guess that there will be at some point, but I'm not holding my breath waiting for one. (In fact, I just bought myself another Amiga 2000-based Toaster system this week—with the '040 board I use, it's faster than the current Amiga 4000, by the way.)

I'll tell you one other thing— if NewTek doesn't release a board for the 4000, I don't see how the 4000 is going to succeed as a CPU. Outside of the Toaster, the world of Amiga software is drying up quicker than free beer at a football game. And I don't care how great your hardware is, without a compelling application, it's hasta la vista, baby. The Amiga has found its compelling application—it's called the Video Toaster.

Editing / Audio - NewTek has said that the Toaster will eventually have editing and audio capabilities on board. When? What kind? They haven't said. Let's face it, though—when it comes to video, everyone knows that the future is nonlinear.

New LightWave - Read John Gross's preview in this issue—yikes! *Boy*, it's gonna be good!

Kiki Stockhammer is madly in love with me - No comment.

There you go. More grist for the rumor mill. That ought to tide you over for a bit. And who knows what the next issue will bring? The most important thing to remember is that you have to use what you have on your desk now. But keep watching that desk—it's going to get interesting.

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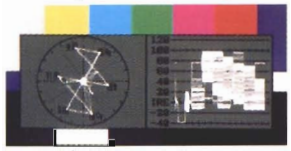

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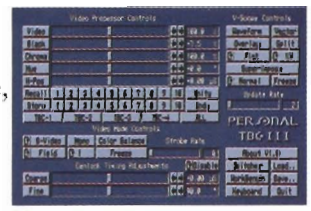

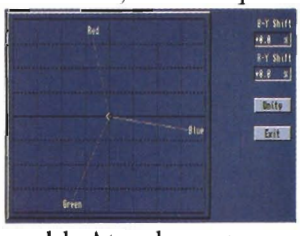

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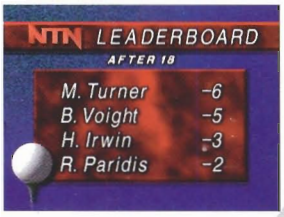

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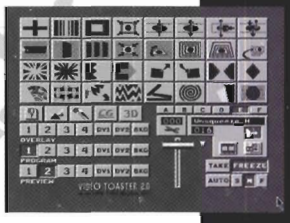
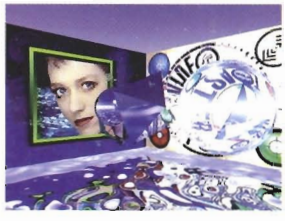


4 Input Production Switcher
Perform cuts, fades and wipes between 4 video inputs and 3 internal sources. Now includes amazing new transitions such as fire, liquid and breaking glass.

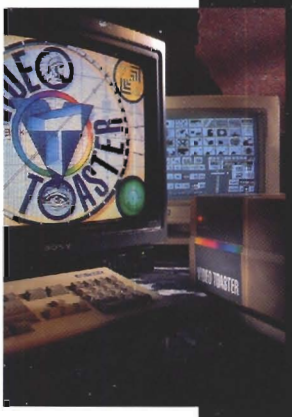


Dual Frame Buffers
Hold two high-resolution 16 million color video frames in perfect broadcast quality.

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 9 essential tools for making broadcast video can now be on every desktop.

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.

Complete systems starting at $4595. Outside North America call 612-882-1662. Demo also available on S-VHS, Hi8, 3/4", M11, 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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