Avid

# The AMIGA® VIDEO Journal

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3D Perspectives
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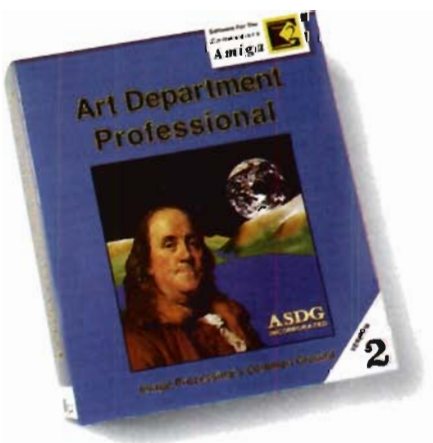


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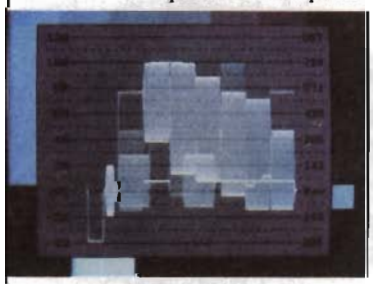

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**About the Cover:** The cover image, named Infinite Possibilities, was created by Charlie Comstock with his program RayDance, a script-driven 3D modeling, rendering and animation package for Amiga computers. Charlie's goal was to depict an Amiga store on another planet, and we think he succeeded admirably. The 1600 x 2048-pixel image was ray traced on a 25-Megahertz Amiga 3000 in 23 hours. The scene contains about 1.3 million polygons and spheres, and required 15 megabytes of memory to render. Most of the polygons are virtual (don't require much extra memory). Each blade of grass contains 10 polygons and there are 512 actual blades of grass. The remaining 130,000 blades were copied from the first patch of 512 using a virtual cloning process that requires minimal extra memory, one of RayDance's unique features. Similarly, there is one actual chain (generated mathematically) and three virtual chains. There are 24 texture maps, including seven background-transparent maps for the graffiti. All bas-relief surfaces, such as the door and plaque are actually modeled, not bump-mapped. The standing infinity symbol contains about 100 spheres, all mapped with the same image. The mountain range was created with RayDance's Landscape statement.

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Besides editing AVID, I work as a salesman in one of the largest Amiga retail stores in the country. So I have daily first-hand knowledge of the process people go through when they need to buy a particular type of program. It's no picnic. You're in a strange environment, confronted with a bewildering assortment of choices, and you're not even exactly sure what you want. So, for one thing, it pays to do your homework first, and that's one way that we at AVID aim to serve you, i.e. with software reviews, program tutorials.

When it comes time to make the decision, you have to decide on the best product **for you** on the basis of how it fulfills your needs, but cost is also an important factor. Or so it might seem at first. You must also consider the investment of time required to master, or at least come to grips with a particular program. Even with seemingly simple software such as word processors, there can be a fairly steep learning curve if you want to achieve anything beyond the basics. And when it comes to 3D and other graphics or video-related programs that may require a whole new concept of interaction with the computer, things can quickly become bewildering. In short, the cost of a program in dollars, whatever that may be, may pale in comparison to the amount of time it takes you to learn to use it efficiently and to its fullest potential.

Well, what about the instructions included with the program, you might ask? Sad to say, the state of software documentation in 1992 hasn't improved much, which is to say it isn't good. Admittedly a few provide excellent directions, particularly those who include tutorial videotapes with their products. Lacking the availability of one-on-one personal instruction, this is one of the best ways to learn a program. But despite its immediacy, videotape instruction can't convey a lot of information by its nature, and it certainly isn't useful as a random-access reference. While software publishers mean well, many just don't have the resources to provide good documentation.

Which brings us to the point of this piece, which for lack of a better term I'll call 'support products'. It's an interesting fact in this industry that certain products seem to create a market for other products from third parties (or in this case, actually 'fourth parties') that aid in their use. Probably the two most fruitful Amiga products in this regard are NewTek's Video Toaster and Impulse, Inc.'s Imagine. While this is to be expected with a piece of technology as complex as the Toaster, it's fascinating that Imagine, which is in my opinion one of the most intuitive and user friendly programs there is for 3D graphics, has such a wide variety of products supporting it. There's a unique multi-tasking online reference and tutorial program called The Buddy System for Imagine. There are also books, videotapes, animated models and 3D fonts, Louis Markoya's splendid tutorial packages on surfaces and texture mapping, and coming soon is an add-on package of procedural textures and more.

This availability of support products is something I strongly suggest that you factor into your buying decisions. If there are support products for a program, it's more likely you'll be able to get the kind of help you need when you need it. It's also more probable that this program offers the versatility that you'll require once you become an expert. Perhaps most importantly, it means the product is quite popular and isn't about to go away, the way some seem to do right after you buy them.

By no means should this be your sole criterion, however. Some programs are so straightforward, complete, and easy to use that there really isn't any support necessary. Another program might have one unique feature you need, thus worth buying just for that. So you have to take things on a case by case basis. If you can't get answers in your area to questions about a potential purpose, write us a letter and we'll try to publish some information in the magazine to help you and our other readers.

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# NAB REPORT

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You know, it feels like I was here in Vegas for a show just a handful of months ago...oh yeah, I was...Hmmm. At any rate, this time it's NAB, the National Association of Broadcasters. NAB is the place where just about everybody involved in the broadcasting industry gathers to examine and play with the latest and greatest high-tech (and high-budget) toys. It certainly isn't a show for camcorder folks, but more for those who understand the difference between MI, MII, M3, and M5 tape formats. If you are familiar with all but the last, don't worry...neither was I until this show!

As is expected with a show of this magnitude, the Las Vegas Convention Center was filled to the brim with hundreds of booths and thousands of people. If you want to know what it feels like to be cattle, you really have to attend one of these shows. I heard rumors of attendance around 70,000, which is fairly small when placed next to shows such as CES (Consumer Electronics Show) and Comdex, but pretty darn big nonetheless.

I suppose the logical place to start our show coverage is with that little NewTek thing. There wasn't a whole lot unexpected in their booth. System 2.0 was being flaunted, thousands of demo tapes were being handed out, and Kiki was being...well...Kiki. I was hoping to get some sort of word on the eagerly awaited D2 interface but that didn't happen. I should also add that Video Toaster User (formerly BreadBox) was being handed out to the tune of thousands of copies.

NewTek was very excited about showing me something that Allen Hastings has been fooling with of late. It seems that field rendering will be part of LightWave in the near future, and there were a couple of examples on an animation reel in the booth. If you aren't familiar with the phrase, all you need to know is that there are 30 frames in one second of video, and each frame is composed of 2 fields. The two fields combined define one full frame. For the mathless among us, we're talking about recording 60 images for every second of video! This has been a feature for quite a while on some of the **real** high-end graphic systems, and give the smoothest animation possible. I, for one, can hardly wait!

Before we continue I've got to mention the amazing penetration NewTek has achieved with the Video Toaster. At previous NAB shows you were lucky to find Toasters anywhere but the NewTek booth, but this year it was hard to turn your head without seeing one somewhere! The Toaster has also inspired a whole wave of pretenders to the throne, none of which really stack up next to our venerable systems.

But first, let me talk about a handy little box that every Toaster user should own. It's called a "Safe Area Generator", and it comes from the minds at Horita, best known as producers of time code generators and the like. So, what is a Safe Area Generator? First, it helps to know what is meant by "safe area". Every TV has a slightly different visibility level in regards to how wide and high the display is. You've probably seen something on an old TV or monitor where the edges of a title or something of the sort were running just off the edge of the screen? That screen was out of the safe area. The SAG, a small box measuring maybe 5 square inches, superimposes a frame to mark the safe area, and anything that is completely inside it is guaranteed to be visible on every TV or monitor upon which the image may be seen. It also has a crosshair which marks the true center of the screen, also a valuable feature. I didn't recognize the value of a SAG until I created better than 90 pages of titles for a large client last week, only to discover that many of them were clipped at their edges when viewed on a different monitor. At $289, the Horita SAG-50 is an important artist's tool.

DPS was showing yet another new tech device on a card to follow up their very nice Personal Vector Scope. This time, it's a Personal Distribution Amplifier, which allows you to split one video signal into four for sending to multiple monitors or VTRs. One of the most interesting aspects of this card is its form. You see, you can buy it for use with the Zorro slots (normally used for IBM-type cards), or for the Amiga slots. This is an excellent idea which I hope we'll be seeing more of. I really hate eating up all of my Amiga slots while the Zorros sit there empty and useless.

Omnicron Video, makers of the Omni-Gen Amiga Genlock, have come up with a chroma keyer named, creatively, The Omni Chroma Keyer. A chroma key generally produces much better results than a luminance keyer, and this device is pretty nice. The unit they were showing was merely a prototype unit, but they expect to be shipping shortly. They're also supposed to be sending me one for evaluation, so look for

further coverage in an upcoming issue. BTW, the unit starts at $3,500 and goes up pretty quickly from there...

GVP was offering a pretty slick image processing package by the name of Addi. It's actually a turnkey system based on an Amiga, but check out these specs for the system! 50 Mhz with 16 megs of 32-bit memory, a 420-megabyte hard disk, 24-bit display hardware with real-time framegrab/digitizer capabilities, broadcast-quality RGB and analog composite genlocking, and component, RGB, Y/C and composite inputs. Optional equipment includes a 1-gigabyte removable magneto-optical disk drive! The 420-meg HD allows you to work with up to 15 seconds of real-time video! Digital compositing, keylayer and mask generation, and dozens of re-touching tools make this one whiz-bang system! Between this and the Toaster, Amiga-based turnkey systems are becoming remarkably powerful. You're certain to be reading more about Addi in an upcoming issue of AVID, so stay tuned! The folks from Caligari, also in GVP's booth, were extolling the virtues of their package as a 3D solution, even providing an interesting Caligari vs. LightWave flyer that raised a few interesting points. President Roman Ormandy spent some time talking with me about the use of Caligari as a replacement modeler for LightWave, an option I'll be exploring in a future installment of Lighten Up!

Digital Creations was hiding in a booth in the very back corner of the giant convention center, and wasn't even listed in the show catalog! The DC crew were, of course, showing DCTV and the Kitchen Sync to the masses, but there really wasn't anything new to be found there.

As far as frame-by-frame animation goes, both Sony and Panasonic had a couple of very exciting options. Sony is offering a Hi8 single-frame recorder, designed exclusively for that purpose at a price of around $6000. The unit itself is very attractive, and image quality is quite nice. For the under-$10,000 crowd, this unit should work out well.

I was more excited by Panasonic's new toy, however. The LQ-4000 Rewritable Optical Disk Recorder/Player is an animator's dream. 400 lines of resolution, a "protective mode" which prevents it from accidentally erasing recorded areas on the disc, and an access time of .7 seconds are really wonderful things! The price...well, that's where it stops being wonderful! Let's just say that the show special, which offered both a player **and** the recorder/player, came in at $25,000, noting a savings of over $10,000. If you compare that with some other formats (such as D1, D2, etc.) it really isn't that bad, but here comes the killer. A single 30 minute disc, which allows 54,000 still images costs...(insert drum roll here)...$1,100! For **one disc**! AAAAIIEEE! But keep in mind that it IS rewritable, with an estimated million or more rewrites, and you could record you're projects to it then dub them to another format... 1,100 bucks! So much for using them for archival purposes, eh?

Well, that's about the size of it. Of course, there was much more at the show than mentioned here (which might be **almost** .001% of the stuff there...maybe...), but these were the items that caught my eye. So, with visions of high-end paintboxes, edit consoles, satellite uplinks and transmission hardware floating in my head, I return you to the regularly scheduled programming, already in progress...

April is the cruelest month of all, as the poet says. First it's winter, then spring, then back to winter. Vermont can be a frustrating place to survive. Luckily, a whole host of new Amiga products have made the fickle season changes survivable.

## ASDG

ASDG has a long-standing association with Commodore's CDTV which has helped to make life easier for CDTV developers. As part of its commitment, ASDG is offering a CDXL input/output module to licensed CDTV developers. With this module, animations can be processed and saved automatically, and virtually any computer can be used. FRED, ASDG's new animation editor, can be used in conjunction with this module for editing purposes. The CDXL module requires ADPro 2.1 or higher. Contact Gina Cerniglia at ASDG, 925 Stewart Street, Madison, WI 53713, or call (608) 273-6585.

ASDG has also added a driver for the Kodak SV6510, a dye sublimation printer that outputs full-color 4x5 prints, and is used in the novelty industry to transfer high quality images to ceramics, plastic, and cloth. Video producers sometimes use these items as props or elements in an ad. The cost of the driver is $250.00.

## Need PostScript Slides?

CV Designs (61 Clewley Road, Medford, MA 02155) might be the answer, especially if you are creating them from Gold Disk's ProfessionalPage or SoftLogik's PageStream. I purchased the CV Design's SlideStream software utility with some nice ProDraw clips in a range of colors, useful for making slide backdrops, and tested them out in PageStream. CV has a nice tutorial in their manual for creating just the right page size for slide work. The advantage to making PostScript slides over using a connected device like the Polaroid Palette is that the resolution is about 4 times as good, making jaggies a thing of the past (16 million colors and 1800 dots per inch!). Oh yes—CV Designs also can process your PostScript files into slides.

Also, take a glance at other products they offer: The Video Musician: Jingle Backdrops/Rock Scenes, The Illustrator:Entertainment/Game Scenes, The Producer: Religious/Political Scenes, Kinseth's Kharacters:ANIMbrush sets...and more, and more, and more. Videotics should investigate their animated video series for intros and backdrops. They also offer special XPander chassis's for all Amiga models, for those wishing to push their Amigas where no hardware has gone before.

## Digital Designs Group

P.O. Box 593, MDG Studio II, Hwy. 701, Whiteville, NC 28472, (919) 642-6295.

If you need some spacey video backdrops for your next Amiga video, including a nice animated Earth, look no farther than Digital Designs. I recently purchased their "Earth & Planets" (4 disks) and "Galaxies & Other Worlds" (4 disks), and am pleased with the sets. If you are a science fiction fan like me, then you'll want these disks just for dreaming as well as video applications. They also produce a host of other Amiga background disks.

## Technical Tools

461 Cherice Drive, Warrenville, IL 60555, (708) 393-6350.

Lissa, a Lissajous path generator for Imagine, is one of the newest 3D modelers on the Amiga market. For around $30.00, you can create some awesome 3D objects ready for transformation and rendering. Lissajous curves are based upon sinusoids that are traced on the surface of a sphere, and can't really be produced or appreciated with other Amiga 3D design software. They can be used as paths or as wireframe skeletons for rendering. Also from Technical Tools is POLY-

HEDRA, a collection of 3D solids of every conceivable shape for Imagine ($25.00).

## ANIMatrix Modeler...

...is going through a bunch of upgrading and revising, which is just going to improve this already interesting package. Reviewed months ago in AVID, this generic modeler may prove to be just what this doctor ordered, at least in fevered Amiga dreams. As modelers go, it is devoted to creating more organic forms (faces, heads, animals, etc.), and does so with the kind of virtual reality interface sported by the highest-end Amiga packages. Because it saves to a load of Amiga formats (Sculpt, VideoScape, Turbo Silver/Imagine...), it also could be a nice utility to Toaster and other users. "Yone" duBois, ANIMatrix creator, just got his B.A. in chemistry six years ago, and after spending a year and a half developing this software, has given the Amiga community yet another jewel for its crown. The magic words here are "intuitive" and "realtime-3D", and as long as this remains a part of the software, Mr. duBois will have the potential of success on his hands. Coming is the hoped-for modeling of bicubic patches and polys in one package, an Amiga (and microcomputing) first. He also offers a $300.00 package that supports the Polhemus 3Space Isotrack system directly. That's a device that "reads" real world 3D images into the computer. Keep your eyes on this fellow and his products. ANIMatrix Modeler by duBois Animation, 1012 N. Chartrand #F, Edmond, OK 73034, (405) 348-4670.

## Maps

I get a fair amount of mail from users needing Amiga IFF maps for their projects, and always refer them to Centaur as one source for their needs (441-B Redondo Beach Blvd., Lawndale, CA 90260 (310) 542-2226). Their "World Atlas" software is more then IFFs, it's also a full featured geographer data base with population and other information, and it has just been upgraded. Check it out.

## Quarterback 5.0

Central Coast Software/Division of New Horizon's Software, 206 Wild Basin Road, Suite 109, Austin, TX 78746, (512) 328-6650, Retail Price: $75.00.

The terror of a hard drive failing, once experienced, is never forgotten. All is lost if you haven't protected (copied) your files. Many Amiga users swear by Central Coast Software's "Quarterback", and now the 5.0 version is out. It accomplishes a slew of tasks, and adds one in particular that its users have begged for...file compression. If you're backing up a 40-megabyte hard disk, no compression means you'd need about 44 floppies to do it. That takes a lot of time, energy, and floppy exchanges. File compression in Quarterback is now a reality. Its other features are too numerous to mention here, but suffice it to say, if you own an Amiga hard drive, get this software (and also its cousin, "Quarterback Tools").

## Back Again!

Unili Graphics (143 Lorraine Ave., Pittsburg, CA 94565, (510) 439-1580), famous for their superlative 3D fonts for the Toaster and Imagine, have decided not to leave Caligari users in the dust. They have a new nine font package of Caligari fonts ($149.95) available. I have used these and can verify their quality design. The nine flavors emulate some of the most asked for styles, including Helvetica ("Helsinki"), Clarendon ("Clarity"), and Cooper Black ("Copper"). Be aware that the files are necessarily compressed, and take about 17megs of space. I transferred them to floppies, and wound up with a total of 18 disks. Remember too that you can save out Caligari2 objects as VideoScape and Sculpt objects, so even these fonts have additional uses.

## Pixel-3D

Watch for the new file formats to be added to the next upgrade of Pixel-3D from Axiom Software. First among these will be Draw-4D Pro loaders and savers!

## It's Sunrize in California!

Sunrize Industries, 2959 S. Winchester Blvd., Suite 204, Campbell, CA 95008, (408) 374-4962.

Amiga music obsessives pay attention! The AD1012 card and Studio-16 software can make your music life a lot easier. All you need is an Amiga, a free Zorro II or III slot, 1 meg of RAM, and a hard disk. The software has a clearly designed graphic interface complete with vu-meter and SMPTE generator and reader. The hardware has four "virtual" output channels, allowing you to partake in high-fidelity four-track hard disk recording. This is great news for the video producer who needs to keep everything compact and affordable. After recording a potential of hours of audio to hard disk, it can be directed out to address your video via SMPTE time code. Resolution is 12-bits at 100,000 samples per second! The sound accelerator chip is rated at 10MPS, and allows the real-time processing of digital effects. Time to buy another dedicated hard disk! List price is only $595.00. The AD1016 does even more, and when released (for about $200.00), AD1012 owners can upgrade at a reduced cost. The AD1016 has 16-bit resolution, and the signal-to-noise ratio of a compact disk! Also be aware that Sunrize's sound editing software, Audition 4, has an upgrade that will be available in early May (to registered PerfectSound and AudioMaster owners for $45.00).

## Amiga Animators!

"The Animation Report" is a newsletter published 10 times a year at a cost to you of $250.00. It will give you up-to-date accurate information on the animation industry, including detailed looks at world class animation studios, cost factors for animators, news and commentary, and more. The report is edited by Harvey Deneroff, the founder and President of the Society for Animation Studies. Contact: The Animation Report, P.O. Box 2215, Canoga Park, CA 91306-3025, (818) 998-3025.

## Oxxi...

...is marching into Spring with its banner held high. The list of its present software and that on the way is impressive indeed. The defunct HAM-E box at least has the support of the Oxxi SpectraColor HAM-E software to soften the blow to HAM-E owners. Oxxi's Visionary, a new adventure game authoring package ($99.95), may also have uses for video professionals. Since it supports IFF graphics and ANIMs in an interactive environment, it could be used as a functional editor, especially when developing instructional videos that feature voice-overs. It's an idea I would like to see someone try and then report back to me.

An interactive editor is also available. Oxxi/Aegis' ANIMagic, Gary Bonham's miracle ANIMware, is undergoing upgrade changes. Besides a new 2.0 interface, it will sport new features, and will be offered to present registered owners at a minimal upgrade cost (TBA). By the way, Oxxi now has a new area code...the phone number is (310) 427-1227, and the FAX number is (310) 427-0971.

## Projection City

Sony is marketing a palm-sized video projector that can display any video that comes from a video output terminal on a VCR or video disk player. It should also work nicely with the composite outs of the Amiga when an animation is running. MultiMedia Amiga anyone? The image isn't that large (only 6 to 40 inches diagonally), but that might be just right (the larger size) for some display situations. The list price is $799.00. Contact Campus Group Companies, Inc., 24 Depot Square, Tuckahoe, NY 10707, (914) 961-1900.

## No Problemo

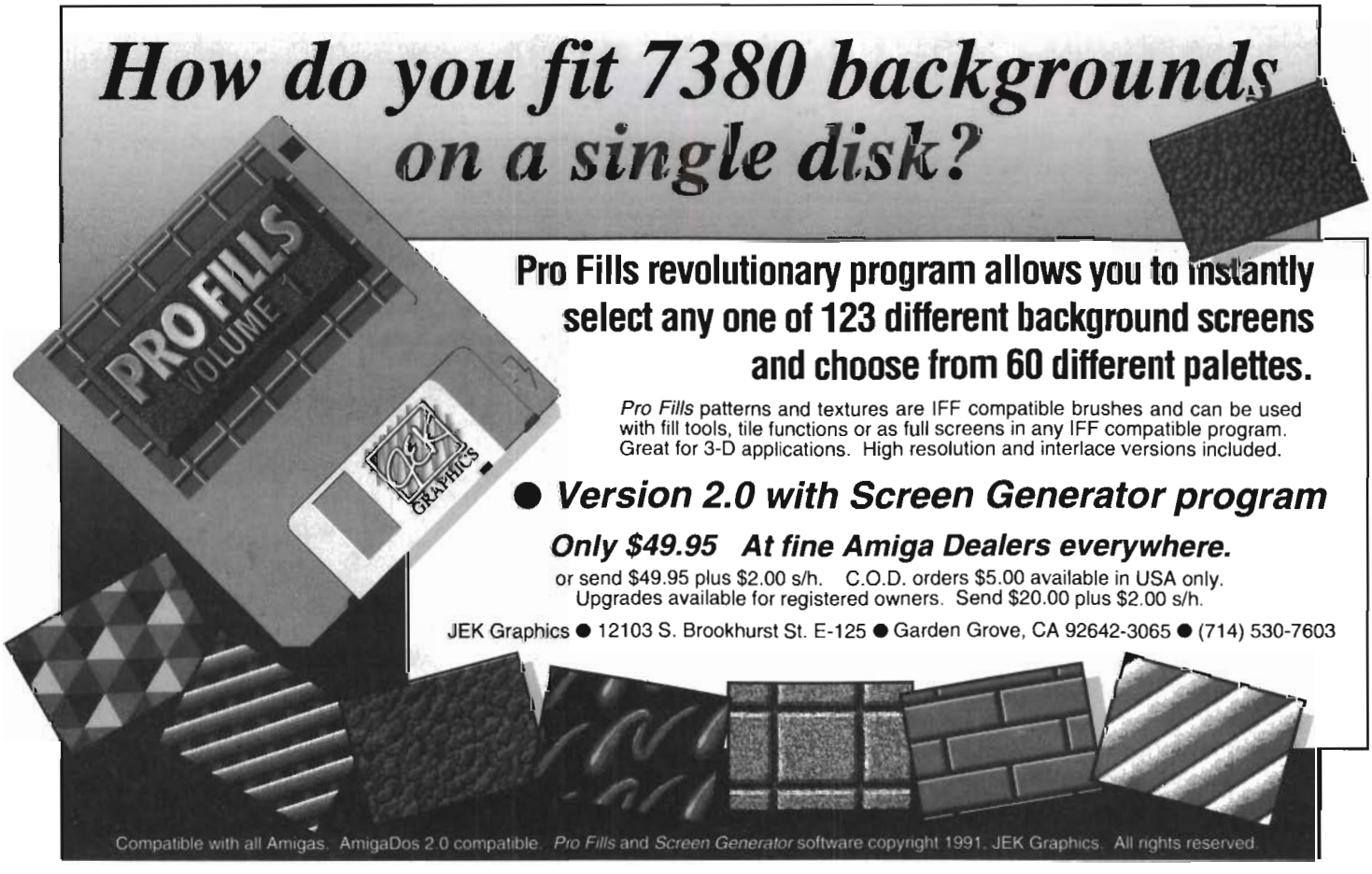
Custom Services (P.O. Box 254, Moorestown, NJ 08057) offers an excellent Amiga utility for about $30.00. It's called S.T.U. (System Test utility), and all Amiga owners should have a copy on hand. It does what it says, that is, it tests the entire Amiga system for faulty parts and bytes on all drives, and gives you the information you need before sending out your machine for diagnostic evaluation and/or repair. This could result in great savings in the short and long run.

## Moved

ADSPEC Programming, the castle within whose secret places Draw-4D Pro was conceived, has recently moved its corporate headquarters. Their new address is 467 Arch Street, Salem, OH 44460. Progress on the 2.0 version continues with a fiery vengeance.

## Your Health

More concerns arise about the potential health risks of those of us who spend major portions of our lives in front of CRT screens. There are steps you can take to protect yourself. One remedy for musculoskeletal fatigue is to give yourself breaks during heavy computing sessions. Get up and do something else for about 20 minutes every hour. Make sure the screen angle is slightly below eye level to prevent neck strain, and get one of those ergonomic chairs if you can. Cut down on the reflected light from windows and lighting fixtures, and reinforce break time to decrease the danger of too much eye focus on a small area (also, get a larger monitor if possible). Skin rashes can be caused by electrostatic charges, so do not install floor coverings that build up static (which can also destroy whole systems!). Low frequency radiation and its capability to effect the human physiognomy is barely understood, but it may be possible to avoid potential risks by purchasing a screen guard. Also, older Commodore monitors have a tendency to emit this radiation from the rear of a monitor at levels far higher than most newer monitors, so a monitor replacement may be necessary. The older Commodore 64 monitors put out so much interference, we used to wrap them in tin foil to prevent them from interfering with data storage. As a last strategy, ask your optometrist if the prescription you are wearing is adequate for the work you do.

## Letters

A letter recently received from Paul White of WPKW Video Promotions (and a tape he sent) again refer to interference jaggies produced with an installed Toaster. He refers to the Vol.3 Issue 2 AVID column in which I related a possible fix for this terror. There is really no way to be sure that one fix will solve all similar problems, but here are some suggestions. The first is to always go directly to the source, NewTek itself, and to do that constantly until the problem is solved. You are the consumer, and you have invested a goodly sum in this hardware/software.

After that, or along with that, here are some other suggestions: Check all of your connections, and make sure you're using the best shielded cable you can buy. Move the system as far as possible from other electromagnetic sources. There is a tweaking adjustment button on the Toaster board. Ask NewTek about it, though their tendency is to recommend that only qualified techies adjust it. A timing delay in the Toaster may require that you purchase an interface that adjusts this delay (see the last issue of AVID for details on purchasing this device). The Toaster GenLock is not as good at the moment for broadcast applications as it might be. Investigate the purchase of an external broadcast quality genlock-encoder (several are made for the Amiga/Toaster combination). Check the Agnus chip in your system, it may be defective. I hope some of this helps.

Another letter comes from Dan Higgins of Electric Eye Enterprises Video Services. He asks about an article that appeared in the September '91 AVID column that detailed a talk with videographer Matt Strauss. For those of you wishing to get info from Matt, allow me to list his phone number so that you might do so directly...it is (802) 879-5403.

## MegaGem's CellPro

CellProMegageM, 1903 Adriam, Santa Maria, CA 93454, (805) 349-1104, Special Price: $55.00.

MegageM software has been in the Amiga business a long time, and is captained by Dr. Daniel Wolf, known far and wide for his dedication to Fractal geometry on the Amiga. One of his programs, CellPro, creates "Cellular Automata", graphic mathematical demonstrations of various algorithms that show ways that digital "life" propagates on the screen. Various schemata are given, so that at this end alone, CellPro is an interesting scientific and investigative tool, providing fun and learning. If it ended there, it would be well worth the $55.00 (special discount price from its normal $89.95) that it sells for. But, my obsessive videotic friends, it doesn't end there at all.

Upon ordering and opening CellPro and being greeted by a demonstration animation, I instantly became aware that I had found another Amiga product to tell you about, especially those of you involved in Amiga logo animation and design.

How may I Cellular Automata you?...let me count the ways. CellPro requires that you load in an IFF graphic (only lo-res and lo-res overscan) in order to use it as a "seed" upon which the cellular alogithms perform their delicious graphic work. There are eight possible operators: Modular, Cyclic, Life, Designer4, De-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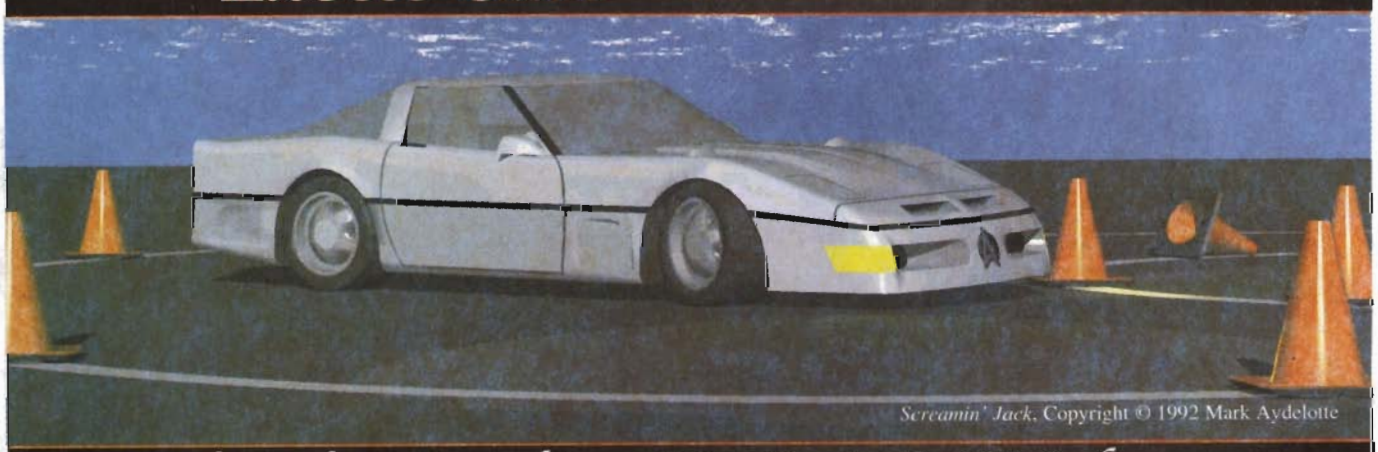

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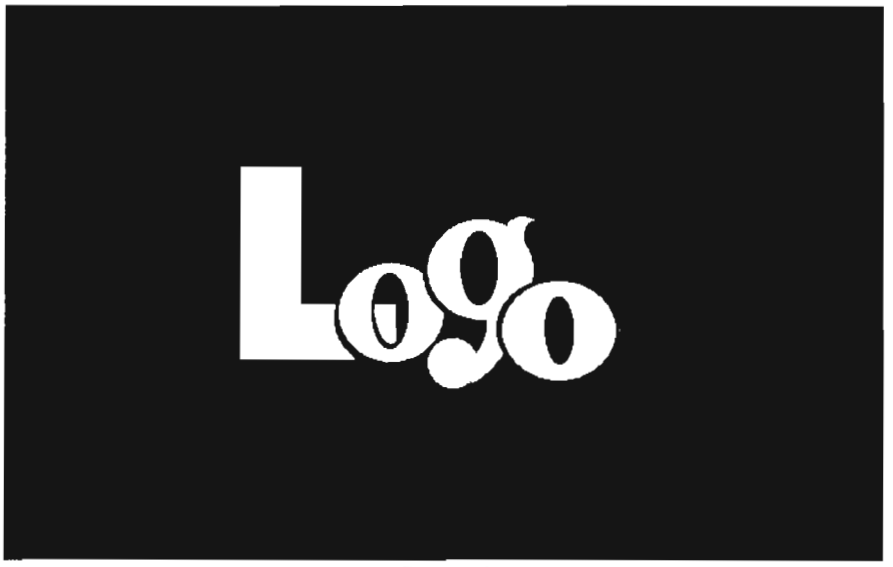


*Figure 1*

signer8, GriffeathE, GriffeathC, and Replicate. 16 colors are used in the process, with toggling of color cycling possible. By turning on a "Shadow" option in the Math Menu, more colors can be added, as opposed to the two-color mode used as a default. "Generations" of the process can be shown with each new frame, with each second frame, or with each fourth, eighth, or sixteenth frame. Obviously, if only each 16th frame is viewed, an animation would show much more radical movement. Smoother movement would need to show each or every second frame. There is a "Pause" and "Draw" toggle activated by either the menu or the mouse, making it easy to start/stop animations. Screens can be saved to disk as single images, or automatically as single frames of an animation. ANIM5 compression can be used to squash disk space after the save is accomplished.

The various operators apply a rather complicated series of calculations on the image. You might also want to access the on-board method of designing your own operators, so that there is really an infinite number of operators possible. Suffice it to say that you will not run out of creative possibilities. Since CellPro accepts IFF "seeds" as starting points, you could just as well load in your own IFF design, be it a logo or anything else. It could be a full screen lo-res overscan (16 color only) graphic. That way, the output could be taped as a full-screen video transition effect! If it's a logo, then the result will be a sparkling bursting of the logo at the seams. This can be saved as an animation automatically (90 frames is a good choice), and played backward when recording. This way, it will seem as if your logo is emerging from the screen color. If the logo is designed from all 16 colors of the palette, its transition will be far different than if using only a single color in the design.

The manual certainly has enough tutorials to become familiar with the pro-

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gram. My Figure #1 shows a simple design that I started with, and Figure #2 demonstrates an animation that CellPro created based upon my design (60 frames). The result looks like fiery jewels swirling and writing my design to the screen, perhaps just right for one of your projects. I think CellPro belongs in every Amiga designer's and animator's library. It's a wonderful new Amiga design tool, as well as an addictive generator to watch in action.

## Some Last Items...

DPaint IV has a nasty problem that you may have noticed that messes with displaying DCTV animations correctly in overscan. You can be aware of it by the look of the DPaint toolbox when the screen comes up. If the toolbox wraps around to the left of the screen, then DCTV animations will look ragged at best. This is because there is a reserved left part of the screen that must remain blank in order for certain DCTV data to show the graphics correctly. To solve this problem, go to the WorkBench Preferences and move the entire screen upward and to the left. When you go to DPaint in overscan, the menu should now be on the right, and DCTV images will display properly. EA should really have made their toolboxes movable in the first place.

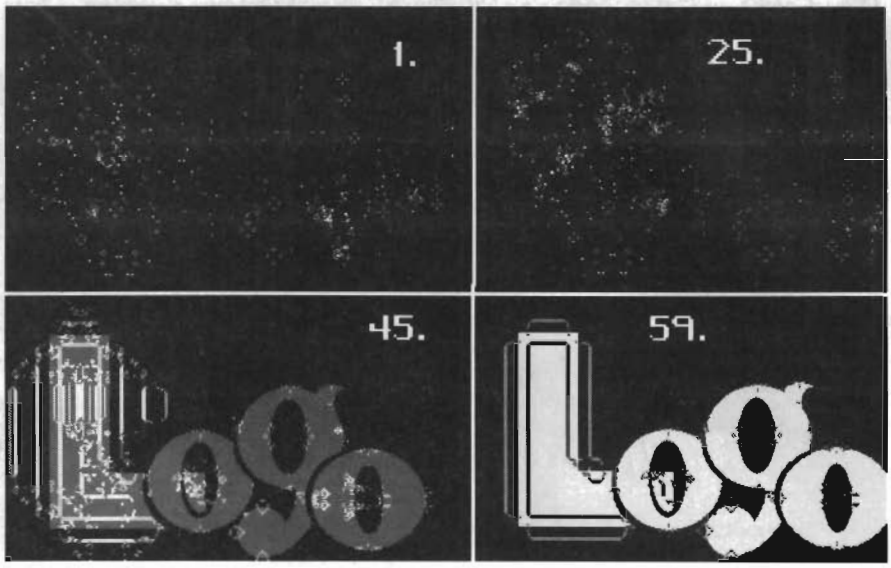
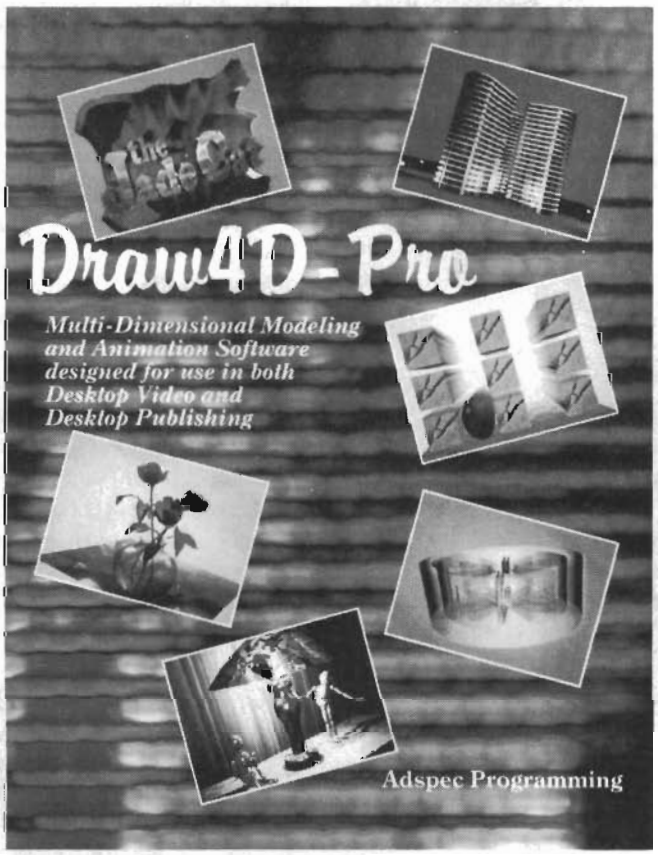



*Figure 2*

Last month, I complained about the incompatibility between the AE high-density floppy drives and WB 2.0 systems, an unforgivable error on the part of the manufacturer. As a temporary fix for those of you with two or more Amigas in your operation, you can always use the drives with a 1.3 system. I am using it now with an Amiga 1000, so that my saved high-density animations can be recorded from the composite out. This is a temporary fix, and I am still waiting for a proper 2.0 driver.

That's all for now. ENJOY! See you in ROMulan space.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Amiga Column!

# Lighten Up

## *Techniques for LightWave 3D Users*

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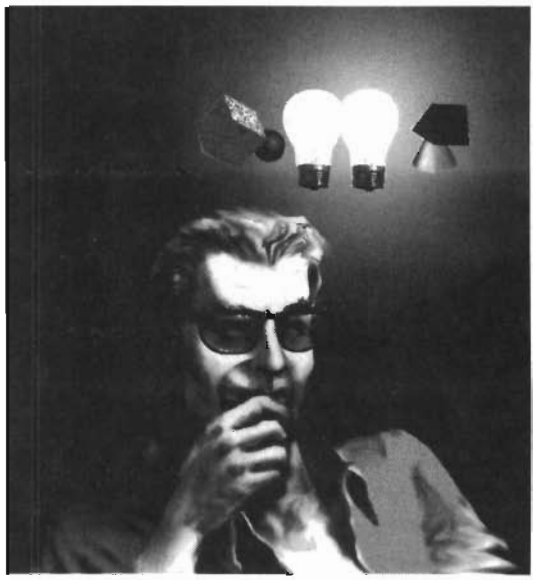

Time for another installment already!? Gee, time flies when you're having fun, eh? Alright, this month I'm going to depart a bit from my standard format and delve into another angle on using LightWave 3D...how to get it to make money. Now, you may already be using LightWave to rake in the bucks, but it never hurts to glom onto some useful information, so grab a snack, sit back in your chair and soak it up.

Before I get into that, however, I want to let you know about an interesting development that took place since my review of the RCS Fusion Forty board a couple of issues ago. As you may recall, I was having problems with the board crashing during normal operations. Upon reading my article, RCS asked me to return the board I had been sent, they would check it out, and send me another one. They were shocked to hear of problems such as those I was experiencing. Well, I sent them the board. They discovered that the 68040 that was on it was dead. It seems a whole bunch of the 040s they had purchased from a major US chip distributor were bad. Replacing the 040 solved the problems and the board is now on its way back to me for another look.

At the same time, RCS would like me to pass along another piece of information. If you have a Fusion Forty with a "Lattice GA 22V10-15LP" chip in socket U37, and are using a Rev 6.2 motherboard in your Amiga, they would like to speak with you. It appears that there is some sort of undocumented "feature" on the 6.2 rev that doesn't get along well with the board if it has that chip, so get a hold of them and they'll solve your problems.

On a business level, it is my pleasure to announce that my company, Mach Universe, has relocated to a new location. If you have questions, comments, suggestions, or even want to order "The Big Rig" (plug), you can write to:

Mach Universe Productions
625 The City Drive, Fourth Floor
Orange, CA 92668
ATTN: David Hopkins
(714) 563-9542
(The phone number remains the same)

Due to situations beyond my control, the release of "Taming The Wave: Exploring NewTek's LightWave 3D", our 2-hour training film, has been delayed. You folks'll be the first to hear of its' release, which I expect to be Fall 92. Lotsa cool stuff...

Now, on to other things...As I'm sure you are aware from the fact that you read this magazine, there is a lot of money to be made in 3D animation. Unfortunately, it's not all as simple as it may seem. The first problem, of course, is finding a client. In my book, there are two types of clients: Those you deal with directly and those you deal with via an existing studio. Both have their good and bad points, but I prefer going through a studio.

### Dealing Directly With A Client

The main problem here is landing a client to begin with. Depending on the type of animation you wish to create, it may not be a big problem. You may be asking, "What's that mean?". 3D is 3D, right? Wrong. A person who is adept with a flying logo may be way over his or her head when dealing with virtual reality-type animation. And vice versa. It's a wise move to decide what you wish to specialize in before you really get into this.

Of course, I suppose you know right off the top of your head that you want to do more than just flip logos end over end for the rest of your life...don't decide that too quickly! There is a tremendous market for that type of animator. Take a look at your TV some day. Not only do you see the flashy dancing mouthwash bottles and the like, but lots of computer generated logos. Ever watch a sports event on television? Plenty of logos there...sure, the work tends to get a bit dull after a while, but money is there. Period.

Then there's 'the other stuff.' You're probably seeing the aforementioned dancing mouthwash, Terminator 2, and morphing cars. That's part of it, but I classify these into a category called 'Glitz' animation. Flashy Hollywood animations like these make a

good amount of money, but that market, commonly known as Commercial, is extremely cut-throat. There is an in-between, called Corporate/Industrial.

Corporate/Industrial animation tends to include flying logos, but there's a lot more to it. Ever think of animating the safe operation of a forklift? How about illustrating the purpose of an air filter? Even how to measure truck tire rims for replacement? These aren't examples pulled out of thin air! I've done each of these, entirely in LightWave. And I've been rather well paid for them, I might add. This is probably one of the most demanding aspects of 3D animation, simply because you have to work with precise dimensions, motions, and so on. It's interesting work, and not all that hard to get into.

## Working with a Video Production Company

OK, so how do you get into any of it? The best way is to get in tight with a video production company. You'd be surprised how many video makers there are across this great land of ours, and the number is rising quickly. Check your yellow pages under Video Production. Send them a demo reel. You do have a demo reel, don't you? If you don't, you better come up with one ASAP!

Why should you tie in with a video company? Well, you've got to look at it this way...these video companies are already working to bring clients in to make videos, right? Advertising, mailings, word-of-mouth. They're taking care of reeling the fish in, and with the proper working arrangement you'll be eating right off of their plate. When a video is arranged, a certain amount of money is set aside for graphics. You want this money!

The alternative is to go and seek out clients yourself. There are certainly things to be said for this approach, probably the biggest being that if the video company turns out a piece of garbage you aren't touched by the mess (in most cases.) The bad thing is that you have much more work ahead of you with a low percentage of payback.

So, the question that remains is how to go about getting hooked up with a video production house. The most obvious way is to send them your demo reel, as mentioned above. That's good for showing them what you are capable of, but it's kind of lacking what I like to call "the hook." Here's the hook...Offer to make a logo for the video production house at no charge. This lets them see how you really produce and gets them involved. If they like the logo you give them, they'll probably pass more business your way in the future. Aren't a bunch of paying jobs in the future worth one free right now? And that hook has worked for me many times...

Now, there's something you've got to watch out for once you get your foot in the door. Many of these companies will offer you a position in-house. If you really hated having to solicit for business and feel that the house will properly support you, you might want to consider this. Be careful not to get into a flat rate situation unless it's **really** good. Instead, work something out along the lines of base salary plus an hourly rate. For example, I have an arrangement with a studio where they guarantee twenty hours of billable time at a certain rate per week, and any hours after that are billed at a higher rate. At first, this deal seems all wrong, but think about it. While I may not ever get into that higher rate zone, I'm assured twenty hours at a good rate...plus, this deal makes me non-exclusive, allowing me to take work from other studios as well. Always push for non-exclusivity!

All right, so you've got that all worked out; how do you deal with these people? Most times, a production house client will be the person you deal with in creating the graphics. This usually will begin with a concept they offer. Some clients are very organized, know exactly what they want, and make it clear the first time through. Others, such as a studio I have recently stopped doing business with, give you a logo and say "Do something with it." These situations tend to take longer than the others because you end up having to constantly rework concepts, submit them to the client, wait for approval (or rejection) and move from there. Ack!

The primary thing you need to keep in mind is the old line, "The customer is always right." Also keep in mind the fact that they usually have no idea how you do what you do, expect you to be able to do it this instant, and at next to zero cost to them. If a client is particularly difficult to deal with, don't be afraid to slap on a minor PIA charge. If you haven't guessed, that's "Pain In..." There are also legitimate charges such as Rush, and I normally charge a bit more for PMS color matching. Don't let these extra charges get out of hand, however! The key to keeping a client is producing quality work at a reasonable price.

Another important part of the business that we, as LightWave animators, have a problem with is speed. Even the fastest '040 boards don't compete with some of the other graphic systems as far as rendering speed. What this boils down to is that while "they" may be charging $300/hour for graphics (including design and rendering time), they may get a whole job done in just a couple of hours, while it takes you dozens of hours. Many clients are more concerned with time than cost, so keep that in mind! As for a good starting hourly rate to charge, try to find out what others in your area are charging, and ask for a bit less.

So, the next question that appears is recording. If you intend to do this sort of thing for a living, you probably already have a way to handle single-frame recording. This usually means owning your own deck, but here's an option you may not have thought of...renting a deck. Since a true, professional-quality editing deck can be amazingly expensive, buy a cheaper system such as the Panasonic AG-7750 S-VHS, or the new Sony Hi-8. Use that deck for recording all of your tests and experiments, and when you are ready to record the final animation, rent a better deck for the duration. In my area, a BetaCam SP deck runs about $250/day, which may seem high, but it's a lot cheaper than buying one! And, of course, you should own a Nucleus Electronics Personal Single Frame Controller, which works on almost any modern deck.

Well, this should get you started on the way to making your Toaster pay for itself. Remember, however, that this is a tough business with plenty of competitors. The only way to really make a name for yourself is with talent and experience. It doesn't hurt to give a reduced price on one project in order to gain a larger one. And every job or experiment you do adds to your abilities, so it'll pay off in the long run. Good luck!

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Welcome to this issue in which I'll teach you an impressive way to use Stencils along with some other tricks to create great looking reflections and add captivating depth to your images. The tutorial below takes you step-by-step through the creation of creating a completed picture, while revealing some great tricks. Here it goes...

**The Stone Reflection**

The Stone Reflection (see above) is a hi-res, black and white image I created to show off the power of stencils. This image is relatively simple to create, yet delivers great results. I have divided the tutorial into three separate parts: The Perspective Depth Grid, The Chiseled Rock,and The Shaded Reflection. I'm including Part 1 this issue, and we'll cover Part 2 in the next issue. Although I try to explain everything as throughly as possible, this tutorial assumes you're an average DPaint user, that you know how the tools work, etc., It's not for the new or first time user. I suggest the excellent tutorials provided in the DPaint manual as good exercises.

**Part 1: Perspective Depth Grid**

1. Set up your screen mode. In my image, I used hi-res, 640 x 400 with 16 colors. If you know DPaint fairly well, you'll probably be able to do this in another mode, but I'll be giving coordinates according to a hi-res screen (640 x 400), so it will be the easiest for you to use hi-res too. Hi-res does require more memory, so be forewarned.

2. Set up your palette (keyboard "p"). Set register 0 to a neutral blue, around R:5 G:7 B:12. I try to use a background color that's not black or white, since I consider both the color black and the color white to be too important to be left in the "background". When drawing on a background other than black or white, it makes all your color placement deliberate. Next, make register 1 (the second from the left) true white (R:15 G:15 B:15), and make register 11 (the 12th one from the left; right before the second red tick mark in DPaint 4.1) true black (R:0 G:0 B:0). Create a spread from register 1 to register 11. These colors are your main spread. I've left some of the true greys out of the palette (The Amiga has 16 true greys) in order to give some room for other colors you may want to add. My image, however, will eventually be completely greyscale.

3. Set up your ranges (Ctrl-r). If you don't have DPaint 4.1, I strongly recomend upgrading, because creating and manipulating ranges in version 4.1 is much easier than 4.0 (to find out the version number, select About from the Picture menu).

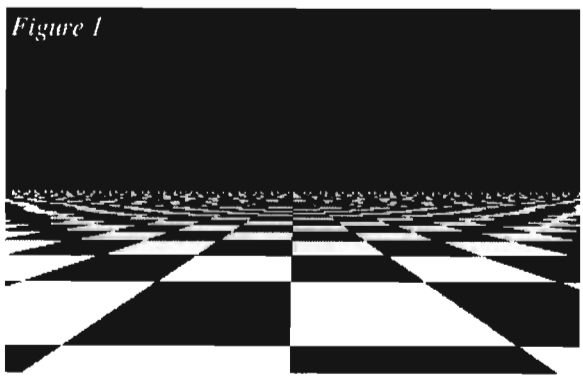


*Figure 1*

If you're using 4.1: Open the Ranger (Ctrl-r) and click on white (register 1). While holding down the Alt key (range select), click on black (register 11, the 12th one from the left). The entire spread of colors should be selected. Click on the Range Clear button, and drop the spread into the leftmost bead of the color necklace. (If any of this is unclear to you, I suggest you read about the Range Requester in the DPaint manual, as ranges can be confusing). You should now have a full range of greys, including true white and true black, in the range. If you missed the leftmost bead, select the range Clear button and try again.

If you're using 4.0: Open the Ranger (Ctrl-r) and click on white (register 1) to pick it up. Click on the Range Clear button (this will clear out the old range if there is one). Drop the white into the leftmost bead of the range necklace. Press the "]" key. The "]" key steps one color right in the palette (the "[" key steps left). When in the Ranger, this also picks up the next color and "loads" it into your pointer, ready for you to drop it in. Place the next color in the range necklace. Press "]" again, and drop that color in the range necklace. Keep doing this until the entire white to black spread is in the range necklace. There should be 11 colors in the range necklace, all right next to each other. If there are any empty beads showing in between white and black, redo the range so there are none.

4. Create the tiles. To create the checkerboard tiles, select the white (register 1), and choose the Filled Rectangle (Shift-R). Drag out a solid rectangle in the middle of the screen. I dragged out a 75 x 75 square for my hi-res screen. To see the coordinates, press shift-"\"; they appear in the upper right hand corner when the menu bar is visible. A quick way to get a perfect square is to hold down the shift key before starting your rectangle. When the Shift key is held down, Deluxe Paint constrains the mouse to X or Y movements (depending on which direction moves first). Using the Shift key with rectangle, Deluxe Paint will square off your rectangle, making it a pixel-for-pixel perfect square. Shift is helpful for aligning brushes, but more importantly, it makes squares easy.

Now, we need a repeating section of black-and-white checkerboard tiles to use in the Perspective Fill. Once you have one white tile on the screen, pick it up as a brush (press "b" once), leaving the original there. Stamp the white tile brush so that the upper left corner of the brush just barely touches the lower right corner of the original. If you don't have room on the screen to do so, either move the

original tile up and to the left on the screen, or try making smaller tiles.

After both white tiles are placed, we'll need to make the black tiles. Select the true black (register 11) from the color palette, and press function key F2. Pressing F2 changes the paint mode to Color, and when using a custom brush in Color mode, the entire brush turns to a solid foreground color. This is really handy for making drop shadows, etc. but right now we're doing it to make a black duplicate of the original tile. Stamp the black tile down exactly right of the upper white tile, and exactly above the bottom white tile. Finish making the section of checkerboard by stamping a black tile just below the top tile and left of the bottom tile.

5. Pick up the tiles. You should now have a repeatable section of checkerboard drawn onscreen. All you need to do is pick it up. But when using a Perspective fill in DPaint, picking up the brush correctly is extremely important. Since in a Perspective fill, DPaint stacks the brushes end to end, you must be sure you don't pick any "dead air" around the image. Dead air is the background color that DPaint treats as transparent. If you pick up any dead air around the brush, the Perspective Fill pattern will not be a checkerboard, but a bunch of separated squares.

To correctly pick up the section, we'll use Magnify to get a accurate view. Magnify the upper left hand corner of the tile section (position your mouse over the corner and press "m"). Press "b" to select the brush tool, and click and hold on the corner of the tile section. With your free hand press "m" to turn off magnify. Drag the brush tool over to the lower left of the tile section, and, still holding down the mouse button, press "m" again. This should take you right back into magnify mode, where you can get a perfect alignment on the tile section. Move right on the lower right hand corner of the tile and let go (popping in and out of Magnify mode while using a painting tool is essential to being efficient with DPaint). If the area you are trying to grab is larger than the magnified view can show, DPaint will automatically pop out of Magnify view and your pointer should be in the direct center of it. If DPaint didn't pop you out of Magnify view, just do so yourself by pressing "m".

**The Perspective Fill**

6. The Perspective fill takes our checkerboard brush and turns it into a huge checkerboard covered land. To enter Perspective, press the Enter key on your numeric keypad (not the Return key). When you go into Perspective, your brush should get a wire frame outline, with a large X and Y drawn in

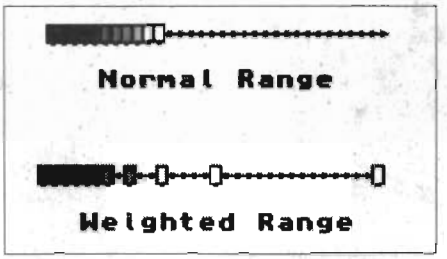



*Figure 2*

it. Move the brush around the screen, in the lower half. Press and hold the Shift key, then press the 7 key on your numeric keypad. We are now setting the degrees for our perspective fill. The numeric keypad is the only way to control the real cool features of Perspective, so get used to using the keyboard here. Shift-7 rotates the brush on its X axis by 90 degrees. Pressing Shift-8 will rotate it the opposite way 90 degrees. Pressing 7 and 8 without shift rotates the brush in one-degree increments.

When the brush gets rotated in any way, the brush image disappears and the X Y wireframe replaces it. Don't worry though, the brush is still there and will be drawn if you press the left mouse button. If your brush gets all flipped and twisted around (by accident or by just goofing around), pressing 0 on the keypad to reset it. Go ahead and stamp a test brush down, to see how it will look. If your brush was too close to the center when you pressed Shift-8, the perspective brush will be huge by the time it reaches the bottom of the screen. If your brush was too close to the bottom of the screen when you pressed shift 8, the perspective brush will be real small at the bottom, and it will look like you're flying over the board, not standing on it. Either way, press keypad 0 to zero all rotation settings and try it again. When you think you have a good position, pressing the "-" key on the numeric keypad will do a perspective fill. Try to get the fill to look something like mine, in Figure 1.

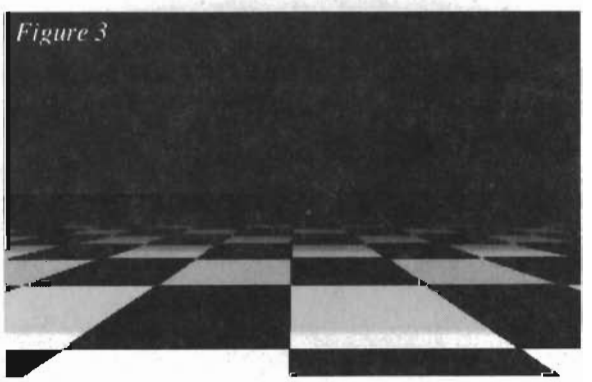
**Adding Depth**

7. Do you have an image similar to that of Figure 1? Good. Notice how it really looks like it's reaching back into the distance. Well, we're going to finish up part I by adding even more depth to this pic, as well as getting rid of that nasty aliasing the checkerboard gets out towards the horizon. Before we go on, take a moment to save your image, in case something goes wrong.

To obtain an extra added illusion of depth, we'll use a weighted range. Weighted ranges are specially designed ranges that puposely spreads colors unevenly, and it requires modifying our range. Press Ctrl-r to get the Ranger up. Select the white to black range we created earlier so it appears on the Range necklace. First of all, click on the Reverse button so the range switches to a black to white range. Now move the colors around on the necklace so that they are spread out like the ones in Figure 2. I didn't switch the order of the colors, they still run sequentially from black to white. I simply spread them out across the necklace to weight the right edge.

Once you have this range set up, turn off the Ranger and select the Vertical Gradient Fill button from the Fill Type Menu (press Shift "f"). The Vertical Gradient Fill button is the button with the arrows going up and down. Press OK when you're done. Now press shift-~ to open the Stencil window. Move from the Stencil window to your picture, and click on the white of the checkerboard. A stencil flag should mark the white in the stencil window to signify that white is locked. Click on Invert to lock all the colors except white. This stencil allows us to paint only on white, without having to worry about any other colors. Click on Make. Now select Shift-R for solid rectangle, and carefully drag a rectangle over the entire checkerboard, starting at the horizon, and going completely down to the bottom. The gradient fill will paint only on the white (thanks to our stencil), and create the look of Figure 3.

Why did we need to weight the white? Well, the way Perspective works is that objects far away appear smaller, while things up close appear big. The range needed to be weighted so that there was a lot of white at the bottom of the fill (where it's close up), and a little bit of black on the top of the fill, where it helps create depth, as well as hide the aliasing that the perspective fill caused. Try it with the normal range, and you'll see that why I used a weighted range.




Well, save your work. Part 1 is over and you have another month before Part 2. You may want to try to figure out Parts II and 3 yourself, with just my screenshot as reference. If you had problems with Part I, try going through the DPaint IV manual. Until then, have fun DPainting...

# An Introduction to 3D Graphics in Amiga Video

© 1992 by David Duberman

While 3D Perspectives is usually about the latest developments in Amiga 3D software and related subjects, this month's column is for the many new readers of this magazine who might like an introduction to the topic. This will be a general overview without too many details, although I will of necessity touch upon specific programs. This column might also be of interest to those trying to determine whether Imagine or LightWave 3D should be their primary modeling and/or rendering engine, although it is by no means a comprehensive comparison.

3D computer graphics are found everywhere today in the mass media in the form of stills (e.g. the cover of this magazine) and especially in animations. If you watch TV, especially sports shows, you've seen the flashy sculpted flying network logos, created with workstations costing hundreds of thousands of dollars. You might be interested to know that you can create videos with the Amiga that can come pretty darn close to network quality for a whisper over $10,000 (i.e. with a 68040-based Toaster or Firecracker/encoder system, a single-frame controller, and a professional VTR), but that's amply covered elsewhere in AVID. What's even better is that for a tenth of that, around $1,000, you can put together an Amiga system, consisting of a one-megabyte Amiga 500 with monitor and Imagine 1.1 software, that can put out great-looking 3D flying logos and many other intriguing effects. Add an inexpensive encoder and you can record your 3D graphics with any VCR or camcorder, adding a special touch to your videos that can increase their effectiveness, no matter what the purpose. For a couple hundred dollars more, you can add a genlock that lets you superimpose your 3D animations over live video, for Roger Rabbit-style combined action magic!

3D graphics are fun and easy to do on almost any model of Amiga computer, and if resourceful you can obtain some pretty amazing results with a minimum of memory and no special equipment. That's thanks to Amiga's HAM mode, a graphics mode that permits the display of all 4,096 of the Amiga's colors on the screen simultaneously.

Despite what you may think, getting into 3D graphics on the Amiga doesn't require any special skills. What it does require is time, patience, dedication, and lots of curiosity. Although I can't draw a lick, I can create interesting realistic images with software. I think of it as photography with the mind, of which the computer is of course an extension.

The two foremost 3D programs for the Amiga are Imagine from Impulse, Inc. and LightWave 3D, available only as a part of NewTek's Video Toaster package. While the Toaster is beyond the price range of many, there are also many who initially bought it for video effects, and would now like to take advantage of its other capabilities, so this column will cover both. We'll also discuss the two contenders, Real 3D and Caligari 2. Another major program is 3D Professional, but its version 2.0 has been under extended development and until that's

released it isn't a current product. Finally there's RayDance, a script-driven 3D program that I don't recommend for beginners unless you have a strong background in 3D geometry and math.

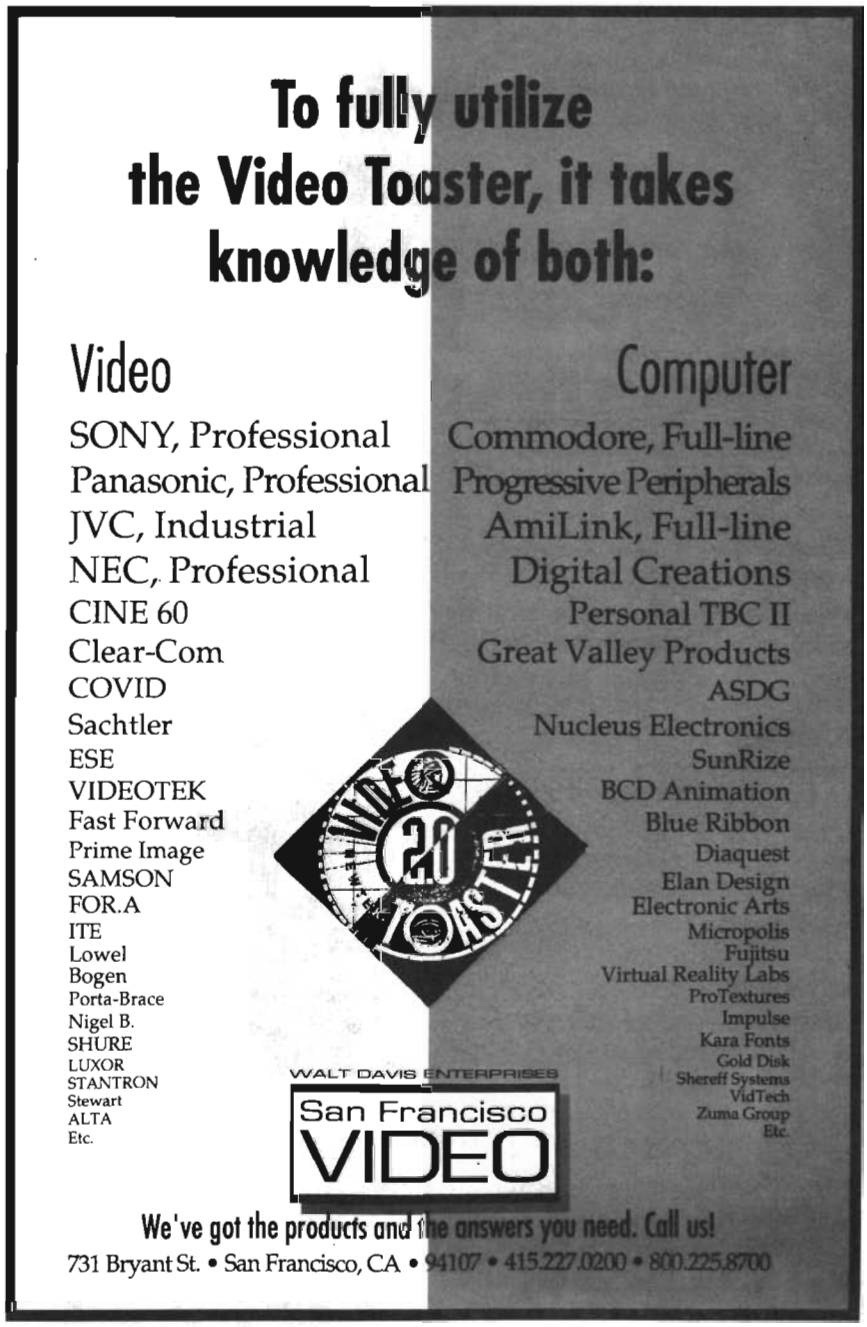
## The 3D Concept

One way to get a handle on this is to think of your computer display as a two-dimensional projection of the box or 3D space behind it. The first two dimensions are width and height, usually called X and Y respectively, and the third is depth, the in-out dimension, usually called Z. Ideally you could just reach through the screen into the 3D space and sculpt objects with your hands like clay. Since that's not currently possible, we must make do with compromise solutions that involve using the mouse and keyboard to work with solid objects projected onto a 2D screen.

The 3D software usually provides an editor that lets you create objects as wireframes, sets of points or vertices in space, usually connected by flat surfaces called polygons or faces. Think of a cube-shaped object, like a die. It's made up of six surfaces or polygons; the top, bottom, front, back, and left and right sides. There are eight corners, defined by the vertices. Note that each vertex serves as an anchoring point for three different polygons. Some 3D programs allow the polygons to be square, but others require all polygons to be triangular in shape, and would thus split each side into two triangles. There are benefits to both approaches. By allowing polygons of more than three vertices, well-designed objects can be composed of fewer polygons and will thus render more quickly. However, objects which change shape and whose surfaces must be smoothed sometimes require that all polygons be triangles to avoid surface anomalies.

A 3D program's object editor interface typically divides the screen into four quadrants, showing orthogonal (non-perspective) views of the virtual 3D workspace from the top, front, and side, plus a perspective view that permits viewing of objects from different angles. Real 3D's editor forgoes the perspective view, while Caligari's gives you only the perspective view, with more restricted object-editing capabilities than the others. While point-by-point and face-by-face construction of objects is often possible, it's laborious, tedious, and often unnecessary. First, most programs provide a selection of basic shapes, such as cube, cone, and sphere, and most come with a library of pre-sculpted objects. LightWave's Phone Book library is perhaps the most complete, including a cow, a triceratops, a running shoe, and a detailed schooner. Also, objects in various formats are available for reasonable fees from talented independent modelers, as covered frequently in this column. But it's hard to beat the feeling of seeing your first complete animation with only objects you've created.

Then there are modeling tools that allow you to quickly and easily to construct complex objects. The two most common are lathe, for objects like urns and goblets, and extrude, usually employed for 3D lettering and logos. In lathe you spin an outline about a central axis, and extrude is like pushing modeling clay through a shaped hole in the side of a box. Imagine and Real 3D let you cut shapes out of other shapes, a powerful and useful method. Imagine and LightWave's Modeler give you a magnet tool for influencing groups of vertices

with strength that varies over distance, excellent for shaping faces and other irregular surfaces. All editors include commands for moving, rotating, and resizing objects on any or all axes. Newer powerful functions available in some editors include bend and twist. Each editor has its strengths and weaknesses, so that some people use several different programs, moving objects between them with a conversion program like Pixel 3D.

While all four programs permit setup of hierarchical or structured objects, the approach of each is markedly different from the others. An example of a hierarchical object would be a stick figure of a human, made up of a head, neck, torso, two legs, and two arms. If you move the torso, the rest of the figure moves, which makes the torso the parent object. The torso's child objects would be the neck, legs, and arms, and the head would be the neck's child. This sort of arrangement eases the animator's task, for example, in having a character walk while wagging his head from side to side. The forward motion need be applied only to the torso, while its children automatically come along for the ride. In addition, any motion applied to the children, such as rotation of the head and neck to simulate wagging, would be relative to the parent object. Another example of useful hierarchical motion would be a flying helicopter with spinning rotary blade. Without the hierarchy, you'd have to recreate the chopper's motion with the rotor every time you moved it. This feature is typically easy to understand and use, and can save you an enormous amount of work. Perhaps the most useful implementation of hierarchical objects can be found in Imagine's Cycle editor. (On the other hand, Real 3D offers the easiest editing of hierarchies.) This special section represents a structured object as a series of diamond-shaped nodes that can easily be pivoted or resized. You can set up a cyclical motion such as walking or running. When you introduce the cycle object into an animation, it repeats its internal motion while moving about within the scene. Tim Wilson's superb Cycleman object takes advantage of this feature to give you a ready-made realistic walking and running male figure that you can use in your own animations. You can even morph cyclical motion, for example, to have a horse gradually and naturally move from a walk to a canter!

## Surfaces

Once you've defined an object's shape you must determine its surface appearance. Modern 3D software offers a wide range of options in this area. First there are the basic attributes such as color, reflectivity, transparency, and specularity (the appearance of a white 'hot spot' that indicates glossiness). Imagine and LightWave also offer 'procedural textures', formulaic patterns such as wood and checker that can be applied to surfaces. While LightWave's are built-in, Imagine's textures must be loaded from disk, and both offer a range of settings for customization of the patterns.

You can take even greater control over your objects' appearances by applying external bitmapped images to their surfaces, a technique for which there are many different terms, and which we'll call brush mapping. Typically the image is in IFF format—most programs support 24-bit IFF—and can be mapped flat on any surface, cylindrically, or spherically, whereupon its colors replace any basic surface color defined for the object. Some programs let you use image sequences for a 'movie-in-a-movie' effects or a gradually changing surface. Some programs also let you use bitmaps to define transparency, reflection, and other characteristics. Bump mapping is a special technique supported by most modern Amiga 3D programs that lets you use a wrapped image to create a realistic 'bumpy' appearance (e.g. pits in a bowling pin or an orange peel) that helps reduce the 'super-perfect' look of much of synthesized 3D imagery. Usually the lighter parts of the image indicate a raised surface, while darker parts define depressions, although this can be reversed in most programs.

## Rendering

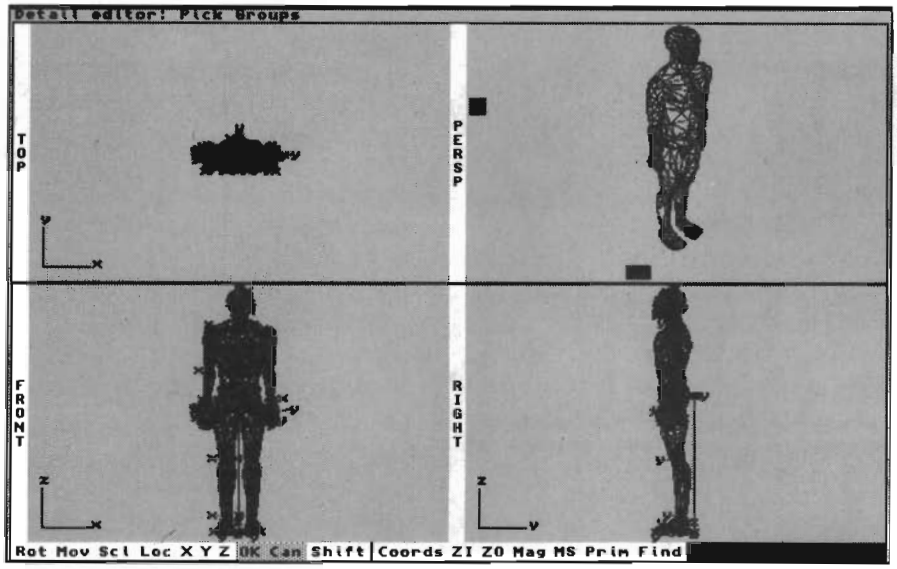
After creating your object or objects you must set them up for rendering whether or not you want to animate them. This is usually done in a special section where you can also define the position and angles of the camera (point of view) and lights. There are usually a number of rendering options concerning the size of and the number of colors in the resultant image. For realistic images you must use as many colors as possible. One common misconception is that using a greater number of colors in the final image increases the rendering time—in general this isn't the case.

If you're using LightWave the images are automatically displayed on the 24-bit composite video frame buffer, so you always get millions of colors. The other programs support HAM for thousands of colors and quite often, great-looking results. If you need more colors, all three—Imagine, Real 3D, and Caligari 2—support output directly to DCTV for millions of colors at a fairly low cost. If you use any of these programs, or plan to, you owe it to yourself to get DCTV.

## Animation

If you drop a rubber ball onto a hard surface in real life, it falls straight down until it encounters the surface, bounces a few times, perhaps rolls a little bit, and then stops. Unfortunately, your 3D software is blissfully ignorant of all these 'natural' principles. If you introduce a sphere into a virtual 3D environment, it just sits there, suspended in space if that's where you placed it. All actions and reactions must be planned and painstakingly implemented. Yes, it's work, but since you aren't tied down by natural physical principles, your imagination is the only limit of the variety of ways objects can move and physically interact. If you're experiencing an exhilarating feeling of freedom right now, you were made for this sort of thing.

There are two basic methods for animation: path and tween. While LightWave doesn't support path animation, its implementation of tweening animation eliminates the need for paths. In Imagine's path animation, you create a curved three-dimensional line that objects follow over a certain number of frames. While this is the only way to create smooth 3D motion in Imagine, precise creation and editing of paths can be difficult. It's easier to simply lock objects into certain positions at key frames




*Imagine Object Editor showing four views of Tim Wilson's CycleMan object*

during the animation, and have the program create the in-between positions over the interim frames, which is called tweening. However, in Imagine objects move in a straight line between key points, which can look unnatural. LightWave uses splines to create smooth motion around key points for more natural motion.

Both programs also support 3D morphing, a powerful technique seen in Terminator 2, Lawnmower Man and other popular films, which lets objects gradually change shape over the course of an animation. Imagine magically converting your boss into the pile of smoking slag you've always pictured him or her as! Unfortunately the techniques are not yet in place that allow you to arbitrarily change a shape to any other.

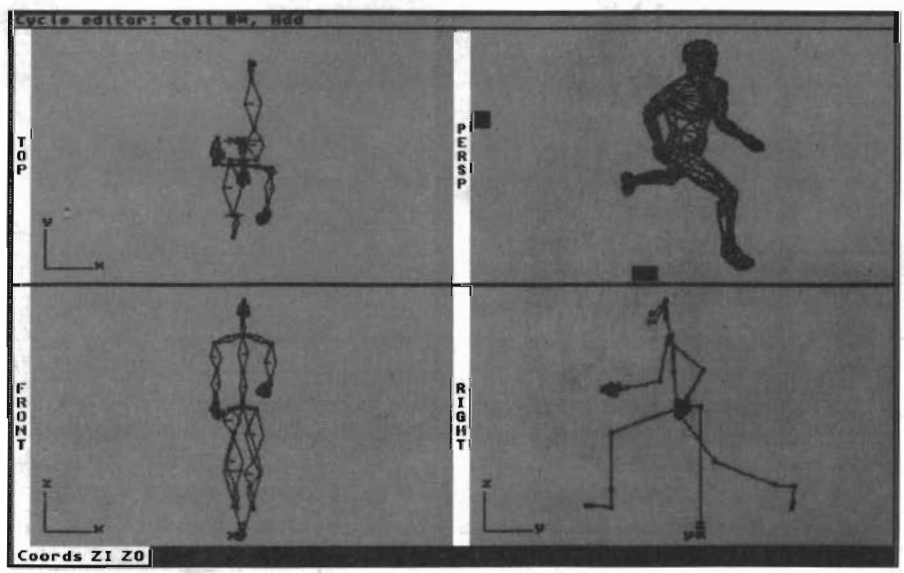
Morphed shapes must contain the same number of points and polygons—always use all triangles for morph objects—and must also be structured the same. One procedure is to take a basic shape such as a sphere, tweak it to make it look like one stage of the morph, then start again with the basic sphere and reshape it to look like the next stage. You can also morph between different lathed or extruded objects providing the template structure and lathe or extrude parameters are kept the same. For example, you could make a goblet outline, save it, and lathe it into a goblet. After saving and deleting the goblet, you could reload the outline, rearrange its points into, say, a half-circle and lathe it into a sphere. You could then morph the sphere into the goblet or vice-versa.

## The Final Product

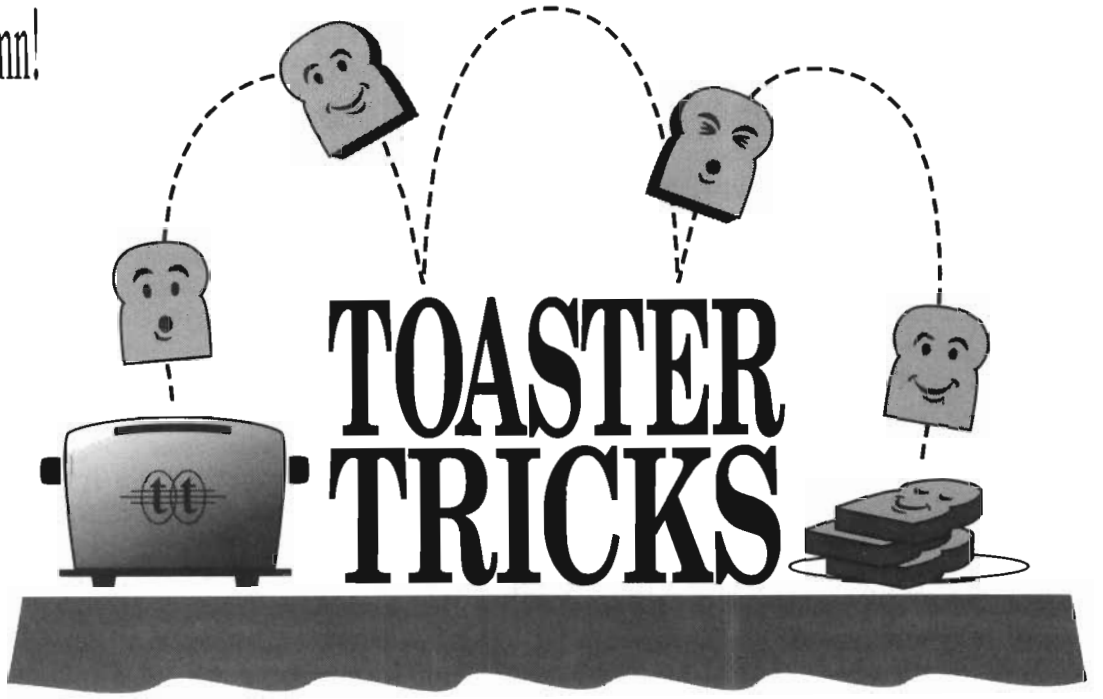
An animation, like a movie, is nothing more than a series of still frames flashed briefly on the screen in rapid succession. Video records and plays at about 30 frames per second, while animation playback on the computer typically runs at half that speed or less. While Imagine can create animations that can be played back on the Amiga in 4,096 colors or less, LightWave supports animation creation only in that it can control a single-frame video recorder. There are ways around this as well as ways of creating and displaying 24-bit animations on the Amiga (with DCTV), as covered regularly in AVID and Video Toaster User magazines. The variety of ways animations can be created, manipulated and displayed with the Amiga is a vast and important topic, and one you'll see covered soon in these pages.

Once you've got an animation and a way to play it back, you need simply plug in your encoder, connect it to your VCR or camcorder's video input, and hit Play on the computer and Record on the recorder. With a genlock, which you can get for $229 or less, you can create animations with blank backgrounds that will be replaced by an incoming video signal, which is keyed under the animation. With a little imagination and some effort you can use these basic techniques for productions that will get your freelance video production business all the work you want.

If you have any questions about getting started in the fascinating world of 3D graphics on the Amiga, please address them to me in care of AVID magazine. You can get involved for far less than on any other computer platform, so if you're intrigued at all you have no excuse for not at least getting your feet wet and seeing what it's all about. Do yourself a favor and check it out—you won't regret it!




*Imagine Cycle Editor showing Tim Wilson's Running CycleMan object*



# TOASTER TRICKS

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Before I get into this month's tips, I want to clarify a point from last month's column. While discussing linear movements in LightWave, I mentioned that you can click on the Spline Controls button in Layout. There is only a Spline button if you are using Toaster 2.0. If you are still using 1.0, you need to exit Layout and select the Objects control panel. After choosing the required object, you can click on the Object Motion button and choose Linear for the required key frames.

## The Digital Source

Have you ever executed a Toaster effect and noticed that your video source seems to freeze or stutter momentarily as the effect is first executed? What you are seeing is digital delay. Digital delay is inherent in any device that processes video digitally. It's important to understand the digital video concept: Whenever the Toaster does an effect that squeezes, shrinks, zooms or flies video on or off the screen, it is doing so with a digital source. Therefore, a tumble on is a digital transition. Conversely, a wipe is an analog transition. If you choose source 1, 2, 3 or 4 on any bus, you are selecting an analog video source. If you choose DV1 or DV2 on a bus, you are selecting a digital source.

Here's where the stutter comes in: Let's say you have source 1 selected on program and source 2 selected on preview (remember, they're analog sources). Now you choose a digital effect that flies the program source off. In order for the Toaster to execute this effect properly, source 1 has to be digital. As soon as you execute the effect, the Toaster automatically makes source 1 digital — this is the stutter you witness — and then completes the effect. Notice what happens as you start the effect — both DV1 and DV2 are cleared and selected along with source 1 on the program bus. This is a digital source! Anytime you have an analog source and both framebuffers selected on the same bus, you have a digital source.

Knowing what you now know about the digital source, it is an easy matter to avoid the stutter. Simply make the proper source digital before you execute the effect — this way the stutter won't be seen. Let me explain how this is done.

1) Select your two analog sources on program and preview.

2) Clear the framebuffers by making sure that the Freeze button is off.

3) Select either DV1 or DV2 on the program bus. You should now have your source plus DV1 and DV2 pushed in on the program bus. This tells you that your program source is now digital. Executing a digital 'fly-off' effect will now perform without the stutter. You can make the source analog again by simply clicking on the analog source button, thus turning off the framebuffers.

Why the delay in the first place? Try this — select the same analog source on both program and preview and then manually perform a digital effect where the video shrinks and zooms away. Make sure to stop halfway through the effect so you see both sources on the screen. If one of these sources was not delayed slightly (1/15th of a second), there would be no way that you could see the 'same' source, both large and small, being drawn on the screen in two different places at the same time.

Knowing that digital video is delayed slightly behind its analog counterpart opens up some interesting possibilities for unusual effects. Select the same source on program and preview, but make one digital (if you've been paying attention, you should know how to do this by now). Performing a wipe pattern halfway be-

tween the two sources should yield interesting results — especially if you use the new wipe patterns supplied with System 2.0. Some of my favorites are the implode, explode and spiral effects located on the E bank and the diamonds and squares wipes on C bank. Doing any of these effects part way will give you a shattered or paned glass look. Make sure the video source you're using is moving quite a bit else you won't notice the delay much.

### One Field Versus Four

When saving framestores from the switcher or grabbing framestores from within Toaster Paint, you have the choice of selecting between one field and four fields (not 1, 2 or 4 fields as you may have read elsewhere). What's the difference? Let's take the switcher first. If you grab an image containing motion and save it using the four field option (without first doing a motion removal), the next time you load it, all the motion will still be there. If you use the one field option when saving, motion removal will automatically take place and the next time the framestore is loaded, you will notice that the image is rock-steady solid. Saving the image as one field however will cause a resolution loss (one field is only half a frame). It is best used when you have a frame that has a tremendous amount of motion in it. Four field saves should be used whenever you have a still image or an image that has motion that you wish to keep. Four field saves retain the most color information and the highest resolution. If you have a moving image that you would like to save as a still, you will get the best possible resolution if you first remove motion using the two field option and then save the frame with the four field choice. If removing motion to two fields does not remove all the motion, you may need to use the one field motion removal option.

From the Preferences menu in Toaster Paint you have the ability to grab either one or four fields directly from DV1 or DV2. This is a very nice option because it allows you to freeze an image and then go directly into Paint and grab it without having to save it from the switcher and having it take up space on your hard drive. When you grab images


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using these options, motion removal is automatically performed. There is no need to remove motion before going into Toaster Paint and grabbing the image. If you grab the image using one field, you will get a rock-steady image just as you do when saving a framestore from the switcher but grabbing one field is going to give you an image that is lower in resolution than the four field choice. Grabbing a four field image is going to give you the best color, but if there is any motion in the image it will show up in the grabbed image as horizontal lines. The four field choice is best used when grabbing still images created with LightWave or images that have had motion removal performed upon them.

## Compressed Framestores

Lately I've talked to people who have been confused about the new framestore format. I've read reviews of Toaster System 2.0 which state that framestores are now compressed. This is true, but only if you save framestores from within Toaster Paint or CG. When saved from either of these two slices, the number of colors in the image determine the size of the framestore file. It's possible to have a framestore file as small as 15K! (only 1 color in whole image). Framestores saved from the switcher are always 722K in size. Sometimes you will notice a slight difference in a framestore saved from within Paint vs. the same framestore saved from the switcher. Every time I have seen the difference, it was due to the fact that the image I was starting with had a few areas that were hot (over 100 IRE). These sections seemed to be a bit duller than in the frame saved from the switcher. Other than that, I could not tell the difference. If you take the Video Toaster logo framestore and save it from within Paint and compare it to the original, you won't be able to tell the two apart. The only difference will be that the image saved from Paint will be smaller in size (664K vs 722K). If you are short on hard drive space, you may want to consider loading all your framestores into Paint and resaving them using the same names (it would be simple to write an ARexx script to do this).

## RGB Versus Framestore

Speaking of saving framestores from Toaster Paint — what's the difference between saving an image as a framestore and saving it as an RGB image? The important thing to remember is that a framestore is a video image whereas an RGB file is a computer image. If you enter Toaster Paint and just start painting, you are basically painting on an RGB image. As soon as you render that image out to your program monitor, you are looking at a video image (on program). RGB images will maintain true color information whereas framestore images will tend to 'bleed' colors — especially reds and highly contrasting colors. That's the nature of the NTSC video signal, folks. If you didn't need to display your images on a video monitor, you could just save everything as RGB, but the reason you bought your Toaster in the first place was so you could work with video images. If you are working

on a project in Toaster Paint that will take a while to finish it's a good idea to save your work in progress as RGB. When you are finished and ready to go to video, you can then save it as a framestore.

### Cleaner Keying

Under certain conditions the luminance keyer will enable you to have sharper edges when using System 2.0. You have to be keying an analog source (remember what an analog source is?) over another analog source or over a digital framestore in DV2 to get a nice clean cut. If you are keying a digital over a digital, or an analog over DV1, you will get slight black or white edges along the right hand side of the key image. When using analog over analog or over DV2, you will notice a slight shift to the right of the image as you began to adjust the clip level. What the Toaster is doing is moving the analog source over into the key edge so it coincides with the black or white edge.

## Quickie Tips

### LightWave 3D

1) When creating animations, create your last frame first (usually you know where you want your objects to end up) and work backwards to the start positions.

2) You don't have to go to a particular frame to create a key frame there. You can be on frame 0 and move the object around and then click on the Create Key button and type in the frame number you wish to create a key for.

3) If you move or rotate an object incorrectly and want to put it back to the way it was, just click on the next frame button followed by the last frame button.

### LightWave Modeler

1) If you have no points or polygons selected before choosing to modify an object, Modeler assumes you mean all points and polygons.

2) Creating polygons by adding points in a clockwise manner will assure that polygons are facing the correct way.

3) Solid moving preview will show if you have any polygons that are flipped the wrong way.

### ToasterCG

For CG 'build' pages, create the final page first, then copy it the required number of times and delete successive lines from each page in the order that they need to appear.

2) The page that shows up when you enter CG is the last page you rendered from the switcher. If you haven't rendered any CG pages from the switcher, you will see page 0 when you enter CG.

That's about it for this month. Watch this space next month for more tips and tricks.

*John Gross is a Video Toaster Graphic Artist employed by Alpha VIdeo in Minneapolis, MN. Questions, comments and tips can be sent via mail to:*

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Alpha Video
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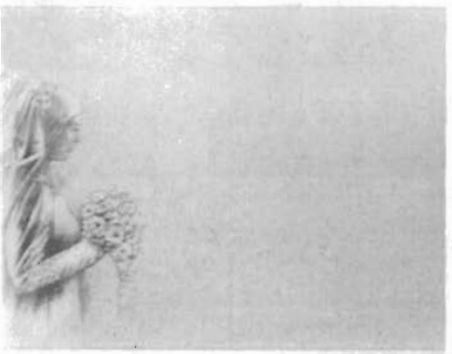
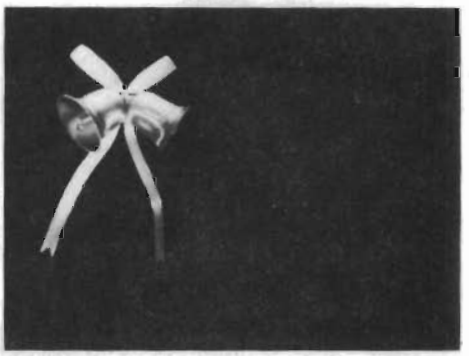
Bloomington, MN 55420
or via Compuserve at 71740,2357.

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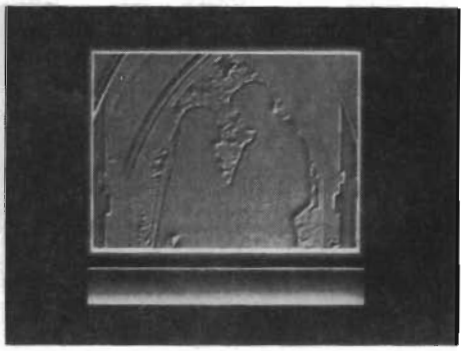

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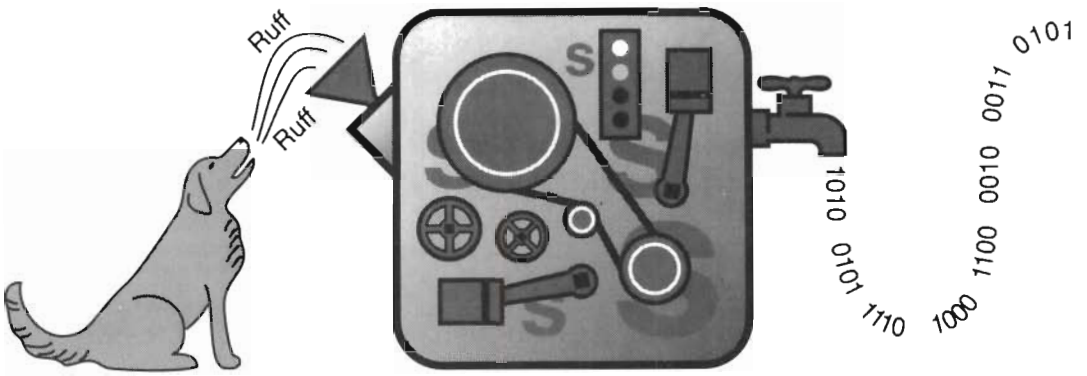
# Secrets of Amiga Sampling

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Good video is not simply a matter of the right arrangement of light, color, and composition. It is not just the skills of the producer, editor, or camera operator which make a successful video project. Whether the end result is a commercial, documentary, tutorial, or feature film, the invisible other half of outstanding video is audio. And, perhaps one of the most powerful (and least understood) aspects of the Amiga computer is its ability to sample and reproduce sound.

With the addition of an audio sampler and controlling software, Amiga video producers can have access to some extremely powerful, state-of-the-art tools for the production of audio for video. Until quite recently, similar digital audio systems were only available to a few high budget A/V production houses. In the next couple of issues of AVID, we'll take a closer look at some of the hardware and software used in the process of sound sampling and audio editing for video.

For readers who aren't familiar with sound sampling, it is a digital recording process in which an analog sound wave is encoded and recorded as digital information. The sound wave can come from any source, such as video or audio tape, a CD player, or a microphone. Samples are made by measuring and recording the volume level of a sound wave at discrete intervals of time. The speed at which these measurements or 'samples' are taken (expressed in cycles per second) is referred to as the sampling rate. The faster the sampling rate, the closer together the interval of these measurements will be. And, when reconverted to an analog sound wave by the Amiga's sound circuitry, the more closely this digital information duplicates the original sound.

Most Amiga music programs use the IFF-8SVX sound standard, which requires that sounds be saved at 8,363 samples per second. In digital audio the highest frequency of a sound wave cannot exceed one-half of its playback speed. In other words, digitzed sound reproduced at 8,363 samples per second yields a top audio frequency of just under 4,200 cycles per second. Once sampled, sounds can be graphically edited, special effects may be added, and the resulting sounds can be saved, to be reproduced, or imported and utilized in other music and multi-media programs. For most video applications, a much higher sampling rate can be used,thereby resulting in a wider audio frequency range.

The other factor which largely determines the sound quality in digital audio is the resolution or length of the digital words (i.e., the number of bits) used by the recorder/player. You've no doubt read or heard about 8-bit sound as compared with 12- or 16-bit sound. The Amiga's internal sound resolution is 8-bits while CDs, PCM and DAT recorders use 16 bits. CDs incorporate these 16-bit words with a sampling rate of 44.1 cycles per second, giving an audio frequency range of 20 to over 20,000 hertz, which is the range normally audible to the human ear.

An analogy can easily be made between various Amiga paint and graphics formats, and the different sampling resolutions. In digital painting, the higher the number of bits used by the display, the larger the number of colors which are displayed simultaneously. And the greater the number of bits in the palette, the smaller the differences which can be achieved between colors. This allows much smoother gradient fills and ranges to be created. In using 24 bits, there is a possible range of over sixteen million colors. The greater number of in-between values allows a much wider palette of colors. Similarly, 16-bit samples give a much wider range of values (around 32,000) as compared to the 256 possible levels available with only eight bits. In digital sound, the larger number of bits allows the resulting sound wave to more closely reproduce the original (smooth) analog sound wave. The sound of a 16-bit sample is not louder than an 8-bit sample, it simply contains much more detail, and therefore is closer to the original sound. This is why the greater resolution of these 16-bit devices provides much better sound quality than their 8-bit counterparts.

12- and 16-bit digital sound cards and recording systems are available (and soon to be released) for the Amiga. These systems offer the advantages of higher quality sound, graphic editing, SMPTE time code synchronization, and multi-track digital recording. However, for most applications, the Amiga's internal 8-bit sounds are quite acceptable. (SunRize Industries is now shipping their AD1012 12-bit hard disk recording and reproduction system for the Amiga. We'll have a complete review of the AD 1012 and its accompanying editing software in a coming issue.)

## Sampling Hardware

With the simple and inexpensive addition of a sound sampler, any sound source can be sampled, edited, manipulated and saved. Because of the flexibility of the digital medium, it has become the prefered method for editing dialog and/or sound effects for video. The use of a sampler is also an ideal method

of incorporating diverse sounds into your original video, music, and multi-media projects. This month, we'll have a side-by-side look at SunRize Industries' Perfect Sound 3, and the new DIgital Sound Studio (DSS-8) from Great Valley Products.

Both the DSS-8, and Perfect Sound 3 packages include hardware devices (called analog-to-digital converters), and the software used to control the sampling and editing processes. These A/D converters plug directly into the parallel port on an Amiga 500, 2000, 2500 or 3000, but both require a special adaptor to fit the 1000. It is suggested that you use an A-B switcher if you own a printer or digitizer which also requires the use of the parallel port to switch between the devices. Both samplers are about the size of a deck of cards, with a DB25 connector for connection to the Amiga, and two RCA jacks for audio input. The DSS-8 has two knobs for adjusting input levels, and two small red LEDs to indicate the presence of an audio signal. (Unfortunately, due to the placement of the parallel port, on the back of the Amiga, these knobs and lights are awkward to reach. For that reason, it is suggested that you use an extension cable between the DSS-8 sampler interface and the computer.) Additionally, the Perfect Sound 3 interface has a single 1/8" mini microphone input in addition to its two line level (RCA) input jacks. Before installing either sampler, turn the Amiga's power off. This will avoid potential problems, and is a good to follow when connecting any hardware device with the Amiga.

Many similarities exist between the two programs. Both programs come on bootable disks, and are not copy protected, so they can be easily operated from floppy disk, or installed on a hard drive. Both accommodate sampling in mono and stereo, and offer graphic editing of the samples with standard cut, copy and paste functions. Also included are several special editing features allowing you to reverse or filter the waveform. Volumes can be ramped or faded up or down, and loop points can be set to simulate long sustaining sounds or repeating phrases. The maximum sample length available in either program is determined by the size of the largest contiguous block of memory.

## Digital Sound Studio

The Digital Sound Studio (DSS-8) represents the first audio product manufactured and distributed by Great Valley Products, one of the oldest and most respected names in Amiga peripherals. The program was designed to take advantage of today's expanded and accelerated Amigas. With a 68020 or '030, the DSS-8 offers a higher sampling rate, at approximately 40,000 cycles per second in mono. (However, the Amiga's hardware is limited to a maximum playback speed of just under 29,000 hertz, so these higher speed samples must be re-sampled or converted to a lower sampling rate. There is also a direct correlation between sampling speed and sample size in bytes, with high speed samples requiring a great deal more memory and disk space.) The program is divided into three main modes: the Sampler, the Editor and the Tracker. After starting the program, you are presented with program and system information, and then taken to the Samples screen. Depending on the amount of memory available, up to 31 individual samples can be loaded simultaneously. These sounds appear by name in 31 numbered slots. A small indicator also shows whether the sample is stereo, and under 128K bytes in length, and whether it is loaded into Chip RAM. (These factors come into play when using the Tracker mode of the program). At any given time, only one slot can be active to be edited or played.

The Sampler mode gives access to settings for left, right, or stereo input, sam-


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pling rate and length, and the method chosen for visually monitoring the audio input. The signal's waveform can be viewed on a screen which emulates an audio oscilloscope, or by sonic spectrum analysis, which displays the relative frequency ranges of the incoming signal in a segmented graph, much like some hardware graphic equalizers. During recording, any other tasks which may be running will be suspended. This yields superior audio recording quality, though during sampling the signal may sound a little distorted in the monitors.

After sampling a sound, you are again returned to the samples list. To sample another sound, select an empty slot from the 31 available. (Otherwise, you will overwrite the sound you just completed!) By double clicking on a slot which contains a sound, you are taken to the Editor mode.

It is in the Editor mode that all processing of samples takes place. You can select part of the wave by dragging the mouse, or by manipulating the on-screen sliders. Waves can be edited by drawing on the screen, or by selecting a segment and altering the numerical values. Echoes can be added, the wave's high frequencies can be filtered, or the volume can be made to fade in or out.

The DSS-8 Tracker mode offers a means of producing four-channel audio "scores" through a script-oriented playback system. The 31 slots in the samples list can be called by the Tracker to be played by the Amiga's four oscillators. All of the sounds to be used must meet certain criteria; a sound containing no loop must be less than 128K, a looping sample may not exceed 256K, samples must be loaded into CHIP RAM, and their sampling rate must not exceed 28,867 cycles per second. Although the Tracker mode could be quite useful, the method of programming in this mode is very obtuse and difficult to utilize. An inordinate amount of calculation must be done in the Tracker to produce a piece of music. Special effects (simulating pitch-bend, filter, or tempo changes) can be added, however, the values must be set in hexadecimal (base 16 numbering system) notation. Complete pieces are assembled in blocks of 64 events, up to 128 blocks can be linked to form a music or sound score. These scores can be saved to disk along with the appropriate samples. Actually, an impressive demo score is included with the program that demonstrates the potential of the Amiga's sound, but programming a score with the Tracker is not an easy task. Users will no doubt find it much easier to work with a dedicated sequencer package which can handle the Amiga's internal sounds, such as Bars and Pipes or B&P Professional or any of Dr. T's Music sequencers, including M, Music Mouse, MIDI Recording Studio, and KCS 3.5 (By the way, the Bars and Pipes demo disks contain the AmigoPhone Tool, necessary to play the Amiga's sounds. AmigoPhone is also included with Blue Ribbon SoundWorks' Internal Sound Kit.)

## Perfect Sound 3

Perhaps one of the first, and most widely known samplers for the Amiga is SunRize Industries' Perfect Sound. First released in 1986, Perfect Sound is currently available in version 3.22. The package also contains a number of public domain programs and tools specifically included for use by programmers who wish to address the Perfect Sound hardware.

Perfect Sound's software has six slots which can be used to hold individual samples, and segments can be copied or moved between the slots. Volume levels can be scaled to fade in or out, and echoes can be produced by duplicating and pasting sections of the waveform. Also, IFF instruments (or drum sets, etc.) of up to five octaves in size can be created with Perfect Sound 3. Several menu options make the creation of these instruments very easy. Such instrument files can be used in other Amiga music and multi-media programs which utilize the IFF instrument format.

Volume levels are automatically set by the program when you first monitor or record an input signal. Signals should reach very near the top of the input graph, but should remain at the maximum level, or distortion will occur. Input levels are adjusted for the Perfect Sound sampler by using the up and arrow keys on the Amiga's keyboard. Alternately, the 'a' key resets the automatic input level adjustment.

Perfect Sound 3 has a top sample rate of 32,000 cycles per second, even though the Amiga's playback speed cannot exceed 28,876 hertz. Samples can be made at the highest sample rate, and then they may be re-sampled to a lower speed to match the Amiga's playback limit, or the desired sample rate for the final waveform.

## Practical Applications & Tips

The Amiga can basically be used to replace a multi-track tape deck in video applications, with a number of significant advantages over conventional audio tape decks. The primary advantage is the precision editing available with the graphic display of sound data. Sounds and music can be edited with an accuracy of few thousandths of a second. Audio tracks for video (i.e., narration, music, dialog, or sound effects) can be recorded and edited independently, then processed and mixed, providing a limitless number of virtual audio tracks. As long as the component sounds are saved individually, multiple takes can be tried, and the tracks can always be restored to their original content. several takes of a single passage or phrase can be sampled, then the takes which best synchronize with the video can be selected and reproduced. (Up to four separate tracks may be produced at once.) Multiple tracks can be recorded by a single speaker, then these tracks can be made to overlap. Since all recording takes place in the digital domain, there is no additional tape noise produced by multi-track overdubbing. Excessive backgbround noise and unwanted sounds can also easily be located and removed from video takes.

Also, an Amiga sampler can be used to allow the computer to function as a real-time audio special effects processor. In this way, the Amiga can serve as a digital delay, echo, or audio filter, doing the job of a dedicated stand-alone signal processor.

To avoid unnecessary noise, it is also advisable to use a graphic equalizer to remove high frequencies above the frequency range of the final wave before samples are recorded. To achieve the best possible sound fidelity, samples should be recorded at the highest sample rate. Then, after the samples are successfully taken, a low pass filter can be applied with the sampler software to remove frequencies which are higher than the one-half of the sampling rate. (These frequencies aren't actually heard, but simply add noise, called aliasing, to the finished sound wave.) The sound can then be converted, or re-sampled to a lower sample rate to be played back by the Amiga's Paula chip.

While the input signal should be as loud as possible to produce a clean sound, care should be taken to assure that the input signal does not distort or clip due to an excessively high volume level. If the signal is too high when the sample is recorded, it must be recorded again, as there is no way to remove this distortion through software.

The software which accompanies these two hardware samplers is useful for recording basic samples with the Amiga. But to unleash the true potential of the Amiga's audio processing power, it would probably be worthwhile to investigate some of the stand-alone sample editing programs now available. Although it is not necessary to purchase a separate sound editing package for a sampler, there are real advantages in some of these programs, particularly for use in video applications. Next time, we'll compare some of the best software packages on the market for the recording, editing, and manipulation of Amiga sounds. We'll also examine the practical uses of those features which should be of particular interest to Amiga video producers.

Working demo versions of Bars and Pipes, Bars and Pipes Professional, Synthia Professional, and M can be provided if you'll send me the appropriate postage, and four blank 3.5 inch disks.

Perfect Sound 3 and AD1012are from:
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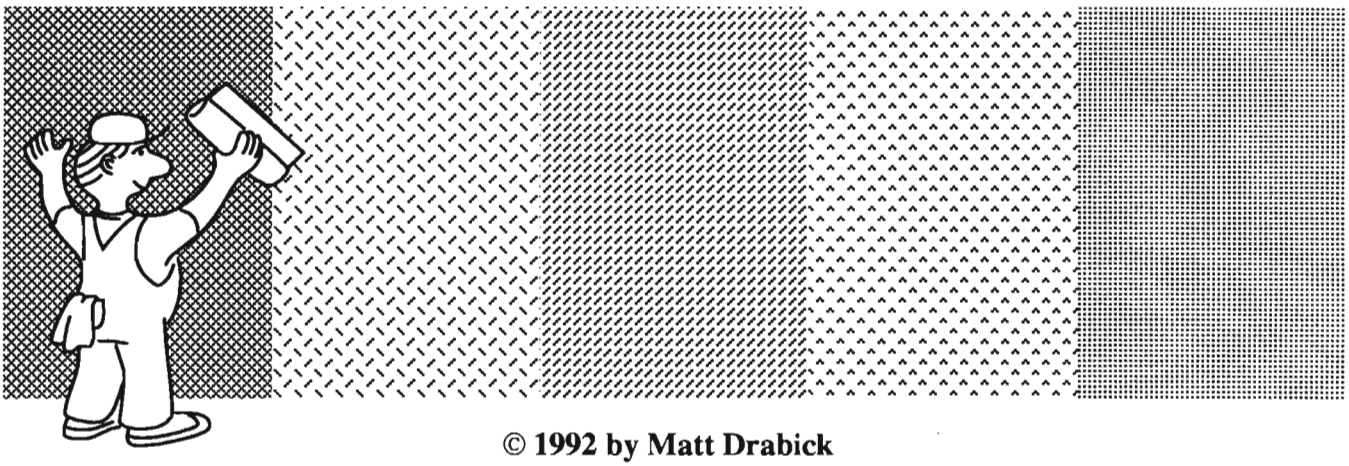

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A number of background image libraries and screen generators are currently available, providing the Amiga user with a wealth of material to work with for title screens, backgrounds for flying logos and animations, even texture maps for 3D rendering. Both 24-bit and standard Amiga display (16 or 32 colors, etc.) are offered. For the 24-bit libraries, JPEG compression has made it possible to provide a large number of images distributed on a few disks with no obvious loss of quality. The 24-bit libraries are shipped with their own JPEG decompression utility. Art Department Professional 2.0 from ASDG works with JPEG files as well. Because of the time required to decompress a 24-bit JPEG file from floppy or even hard drive, HAM versions of each image or a color spreadsheet are included as a means of quickly previewing each library's contents.

In addition to the time saved by using ready-made images instead of creating them by hand, not to mention anyone whose artistic abilities need some improvement, another reason for using an image library is to have images readily available that would be difficult to produce, such as a shot of the planet Earth in space. By buying an image library you are also avoiding any potential copyright infringement. Too often when trying to meet a tight deadline the temptation to use a photograph from a book or magazine without getting permission from the author or publisher is very strong. It's also illegal.

## Texture City

Texture City offers a series of 24-bit, HAM and DCTV images. Three 24-bit volumes are currently offered, Pro-60 #1, Pro-15 #1 and Pro-15 #2, with 60, 15 and 15 images respectively. Each of the 24-bit libraries has marble, rock or wood categories but no duplication of images. The DCTV and HAM libraries offer 40 images selected from the 24-bit sets. The 24-bit images are shipped as 752 by 480 pixels, tailor-made for the Video Toaster but perfectly usable by any device that supports the IFF-24 standard such as the Firecracker 24 from Impulse, the IV-24 from GVP, etc. The HAM images are 368 by 480 pixels. All are interlaced, overscanned images intended for video use. A CD-ROM version with 100 images that supports Targa, TIFF and the IFF-24 file formats is also available.

Texture City sent me their Pro-60 #1 set for this review. I can honestly say that out of the sixty images (distributed using ten floppies) there wasn't a single dud. Categories with the Pro-60 set are animal, earth, foliage, FX, granite, marble, metal, rock, scenic, space, stone, textile and wood. All of the images are naturally occuring and not computer generated. Befitting the name of the series most of the images are textures (pebble, burlap, wicker, pink marble, lizard, etc) with some scenic images (clouds, desert, mountains, sunset) included as well. Care was obviously given for choosing images that record well to tape, without any color saturation problems or moire patterns. While all sixty images are very good, some are exceptional, including the close-up of the pheasant feathers and their warm rich colors, the sparkle image with what looks like a soft-focus shot of car head-

lights at night, and the metallic titanium image with its beautiful rainbow bands of color. A beautiful image of Earth seen from space is also part of the set.

While the images can be left on the original floppy disks and loaded using either the supplied decompressor or Art Department Professional, Texture City works best with a hard drive. After an image has been decompressed it can be automatically saved to RAM or hard drive. The included browser allows the user to preview four images at a time as HAM images. Finally, a VHS videocassette is included that highlights the images from the set.

## ScreenMaker 2.2

ScreenMaker 2.2 from Digital Graphics Library Inc. contains 100 24-bit images broken down into five categories: 1) exotics and geometrics, 2) frames and panels, 3) strips, bars and squigs, 4) foils, scrolls, and banners, and 5) natural images. The entire library is contained on four disks. Two megabytes of RAM are recommended for running the decompression program. Because the library uses proprietary compression format, the images must first be saved to your hard drive, taking up about 3 megabytes of space. A fold-out color identification guide is included that illustrates what each image looks like. Files can be decompressed in NTSC or PAL formats, with 736 by 480 pixels or 736 by 580 pixels respectively, either as single images or by group (frames and panels, natural images, etc.).

While all of the images included with the library are professional-looking and very useful for doing video work, some of the images look just a little bit coarse compared to the smoother gradients used with Texture City, perhaps due to the severe compression used to save so many images to so few disks . However, this isn't too objectionable. The five natural images are somewhat impressionistic looking, in particular the snow-covered cabin and city skyline scenes. It's simply a difference in style and taste and the degree of photo-realism used by the two different packages.

Favorite images from ScreenMaker include all of the natural images and the


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red marble slab with the gold and marble frame. A noteworthy feature is the careful attention paid to image composition, with objects either centered or obeying the rule of thirds. Plenty of room is allowed for titles, and color choices work very well for video, with no saturation or contrast problems. I highly recommend this package as a source of backgrounds for title and credit screens as well as a source of textures, and for the five stylized natural images.

## Pixel Perfect 24

Pixel Perfect 24 from Digital Designs Group is a collection of 150 24-bit images saved as JPEG files and distributed over 36 disks. Each image is 752 by 480 pixels. A JPEG decompression utility program is included with the library. Two catalog disks are included with HAM versions of each 24-bit image for previewing purposes. Each of the catalog screens contain nine HAM images (except for the last screen) and are labeled for easy correlation with their 24-bit siblings. The entire collection of 150 images can be purchased all together or the user can join a subscription service and receive three disks per month. The price is the same either way. Finally, a non-JPEG compressed version on SyQuest cartridges is also available at a slightly higher price.

Categories include the American flag and red, white and blue bunting, images using horizontal and vertical colored bars and blinds over gold, marble and solid backgrounds, maps of the world and the United States, the US dollar bill, and many natural scenes including flowers, rural buildings, sunsets, sea birds, the seaside, and mountain views. Pixel Perfect 24 offers a nicely rounded assortment of images that work well with video. The natural images look real and are not stylized or impressionistic.

Some favorite images include two horizontal scrolls (one of red marble and the other of green marble) against a black background, a shot of the green hills of Hong Kong with tall buildings and a small mountain ridge in the background, a very nice image of red, white and blue bunting with streaks of color radiating upwards, and a beautiful blue marble plaque with beveled edges centered against a blue marble background. My favorite of all, and one with an obvious use as the background for a television movie promo, is a mostly dark image with an overhead spotlight shining down and highlighting a diagonal strip of motion picture film receeding into the backgound, with the spotlight casting a shadow of the film strip against the ground.

All three of the above 24-bit image libraries can be used to supply backgrounds for title or credit screens and billboards with Art Department Professional 2.0. After the image has been decompressed and loaded into ADPro, simply open the text operator. Text can be easily added to the image as an outline, embossed, transparent, etc. with or without anti-aliasing in any color. Any of the other operators (convolve, line art) can be used as well to manipulate the original image. Once the text has been added to the image, record it directly to tape using a genlock for some easy but professional-looking title and credit screens.

## VGLD and MGLD

Also available from Digital Designs is an extensive collection of standard IFF images called Video Graphics Library Disks (VGLD). Special attention has been taken to avoid using overly saturated colors, fine horizontal lines that cause flicker, and Color 0 is excluded from any images. A similar collection of images called Multimedia Graphics Library Disks (MGLD) is also available, the distinction being that the multimedia images include HAM images, use saturated colors and may include Color 0 with the images. Eight sets of the VGLD and four sets of the MGLD are currently available with four disks per set for a total of about eight hundred images. The MGLD includes two sets of worldwide maps, a set of digitized bird images saved as overscanned HAM files, and one set of car racing images.

The VGLD series offers a wide variety of images to work with, using either overscanned medium (352 by 480 pixels) or high (704 by 480 pixels) resolution with 32 or 16 colors. Digitized images, drawings, brushes or clip art, and a few simple animations using the Anim 5 format used by DPaint are included. A nice feature is the inclusion of "magic palettes" which allows the user to load new palettes with an image to quickly try a different color scheme. This is especially useful with the video backgrounds sets. Most of the images always have a few free colors available in the palette for titles and credits. The list of image categories is quite extensive and includes earth and planets, galaxies and other worlds, birds up close, two sets of video backgrounds, nature and scenery backgrounds, and auto racing. The video backgrounds offer a wealth of textures to choose from including drapes, tassles, woodgrains, marble, burlap, pebble and carpet, as well as shapes such as embossed tiles, diamonds, and tubes. The overall quality of the digitized and drawn images is very good. I was thoroughly impressed with how realistic the outer space and auto racing images are even when using only a handful of colors.

With so many images to choose from, it's difficult to narrow down the list to a few favorites. The images of the earth and moon are very well done, as well as the planetscapes of Saturn, Jupiter, etc, often with stars or other planets in the background. Many of the outer space images remind me of the covers from 1950s science fiction pulp magazines. Other favorites include a beautiful image of a single oak tree on some sand dunes at the beach and some tobacco barns alongside a road framed by some trees. A catalog is available from Digital Designs listing all of the images they offer.

## Virtual Marble 1 and 2

For those Amiga videographers interested in some marble textures saved as HAM files, Rapid Eye Technology offers their Virtual Marble 1 and 2 image libraries. Each library has six 368-by-480 pixel images on a single disk. Both disks include white, gray, dark green and dark red, tan and blue marble. These are among the best HAM images that I've ever seen, without any hint of fringing. Given the price ($25 for both disks, $15.00 for one disk), this is the perfect opportunity to acquire some beautiful stone textures at a very affordable price. 24-bit versions should be available soon.

## Pro Fills Volume 1

Pro Fills Volume 1 from JEK Graphics and VidGen 2.0 from Microft Software differ from the above products in that they are screen generators and not image libraries. Pro Fills is a simple but very elegant program that creates high, medium or low resolution backgrounds with or without overscan up to 736 by 482 pixels using color palettes and 123 patterns and textures supplied with the program. There are no pull-down menus, just one screen and an easy-to-use control panel. Both composite (for video) and RGB palettes are provided, with either 8 or 16 colors even when using low or medium resolutions. With an 8-color palette only color registers 2 through 7 are used, and with 16 colors only color registers 10 through 15 are used, leaving the remaining registers free for use with titles, credits, etc.

Patterns include variations with brick, tile, paneling, weave and miscellaneous (circles, clubs, diamonds, hearts, spades, triangles, etc). Textures include blocks, stucco, speckle, stones, and terrazzo. To generate a background simply select a pattern or texture and click on the render gadget. Alternative palettes can be loaded for different color schemes. The various patterns and textures from Pro Fills can be loaded into DPaint and used with the fill shapes or flood fill tool. Included with the program's excellent manual are several tutorials explaining how to create drop shadows and beveled edges using Pro Fills together with DPaint. DPaint can be used to modify textures and patterns that can in turn be used with Pro Fills. Pro Fills works fast and efficiently, generating backgrounds almost instantaneously. 512K of RAM is all that's required to run the program.

## VidGen 2.0

VidGen 2.0 from Microft Software differs from Pro Fills in that it uses IFF brushes to create backgrounds. Brushes are supplied by the program or can be imported. VidGen essentially creates embossed backgrounds using repeated brushes with only two shades of gray (a light highlight and a dark highlight) although any colors associated with the brush can be optionally "turned on" and used. Simple shapes or brushes such as the dollar bill sign, car, cloud or tulip are provided with the program. Brushes can be easily scaled and rotated if needed. Although a fairly simple program, pull-down menus are provided. The heart of the program is the control panel, which is automatically displayed after a brush is loaded and the background created. By default a brush has a light and dark highlight, but by using the control panel can be changed to display only the light highlight or the dark highlight, change the entire brush to the lighter shade of gray or the darker shade of gray, or fill the brush with the lighter shade of gray and add a dark shadow. The light source can be rotated, and the highlight depth and contrast changed. The spacing between the brushes both in the vertical and horizontal can be increased or decreased, much like kerning letters with a CG program, and brushes can be either arranged as straight rows or staggered. Other controls include the ability to move the entire screen up or down and left or right. An RGB palette with sliders is provided for changing the overall image color.

Brush categories supplied with the program include shapes (ellipse, small, medium and large circles and squares), sports (baseball, football, and tennis), text (dollar sign and news) and other (telephone, house, rainbow, video camera, etc). Of course the user can supply their own brushes to generate a custom background. By using a digitizer such as Digi-View or DCTV and capturing a client's business logo, an embossed background using the logo can be easily created. Be sure to save the image as a standard IFF file (not 24-bit) and use a paint program such as DPaint to cut out the logo from the background and save it as a brush.

Low, medium and high resolution screens with or without overscan up to 736 by 480 pixels are possible. Images can be easily saved as IFF files. One megabyte of RAM is recommended to run the program. A very nice feature of VidGen 2.0 is the ability to very smoothly scroll the background at variable speeds.

The above image libraries and screen generators will make a nice addition to the software you are already using to produce video graphics. With so many different options to choose from, selecting which one to buy can be difficult. Whatever the decision, enjoy!

Products mentioned in this article:

Pro-60 #1, $299.95
Pro-15 #1 and #2,
DCTV Pro-40 #1,
HAM Pro-40 #1, $119.95 by:
Texture City
3215 Overland Avenue, #6167
Los Angeles, CA 90034
(310) 836-9224

Screen-Maker 2.2, $99.95 by:
Digital Graphics Library, Inc.
1382 Third Avenue, Suite #333
New York, New York 10021
(212) 978-8508

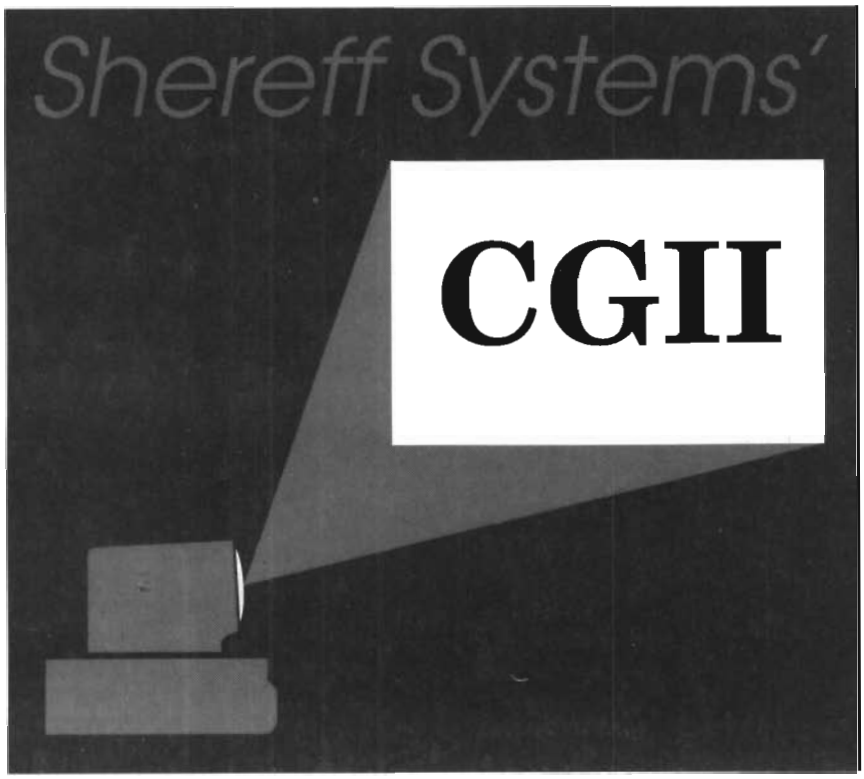
Pixel Perfect 24, $399.95 by:
Digital Designs Group
P.O Box 593
Whiteville, NC 28472
(919) 642-6295

VGLD and MGLD,
$49.95 per 4-disk set by:
Digital Designs Group
PO Box 593
Whiteville, NC 28472
(919) 642-6295

Virtual Marble 1 and 2,
$15.00 per disk, $25 for both by:
Rapid Eye Technology
2313 5th Street #1
Santa Monica, CA 90405
(no phone number supplied)

Pro Fills Volume 1, $49.95 by:
JEK Graphics
12103 S. Brookhurst St. Suite E-125
Garden Grove, CA 92642-3065
(714) 530-7603

VidGen 2.0, $99.95 by:
Microft Software, Ltd
P.O. Box 1072
Exton, PA 19341
(215) 642-7638

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As we all know, there are four things that simply are not discussed in polite company: politics, religion, text editor preferences, and which character generator software is best for the Amiga. Politics and religion are easily resolved; yours are the best for you and mine are the best for me. Text editor preferences? I long ago lost interest in whether the new 'Wordfabulous' version 8.2 will imbed printer control strings in auto-formatted indent macros. That leaves only Amiga CG software. That, gentle friends, is why we have called this meeting.

Our first Amiga (we now have seven) arrived with no more of a challenge than to make nice message system screens to be shown between instructional television programs on our five-channel closed circuit television system. We considered buying another dedicated CG like our existing Chyron, but it seemed a better idea to acquire the capability to do paint, animation and sound as well as nice characters. Once that was decided and the budget reviewed (nil), it was apparent that the Amiga was a sure winner. The only software that met our specs, 'Pro Video,' was published by Shereff Systems in Beaverton, Oregon. Our first impressions: nice people, amazing product. Our local Amiga dealer, CPU, Incorporated, was already heavily into desktop video and helped convince us that this was the right move. The message system was inaugurated and soon thereafter we planted machines in our edit suites, production offices and even our studios for 'Telestrator' type applications using Summa tablets.

Since then, we've never looked back. We have upgraded with each new Shereff product. The line includes 'Pro Video Gold,' 'Pro Video Post' and now 'CG II'. For comparison, we bought 'TV*Text' and 'TV*Show'. They were OK but not structured enough for an intense television production and editing environment. Nothing ever compared to 'Pro Video'. I know, I know. You can make Broadcast Titler or TV*Text stop on a dime and give you nine cents change. Great. Do it. With 'CG II,' I'll have the program edited and fonted before you get the dime out of your pocket and my screens will be killers. End of background.

We almost didn't buy 'CG II'. How could it be better than 'Post'? Well, it is and it isn't. But mostly it is. Simply put, it meets or exceeds virtually all of our CG needs for the type of production we do, which is corporate/industrial.

Like its predecessors, CG II uses function and shifted function keys to select the commands. It also provides a mouse interface for these same functions; position the pointer at the top or bottom of the screen and rows of 'buttons' appear. A click on any of the twenty on-screen 'buttons' brings up the feature just as if a function key had been pressed. Initially, we loved the mouse interface. However, as we grew more proficient with the program, it started to get in the way. No problem. There are keyboard equivalents for many functions (called 'Quick Keys') and a soft-toggle to turn the mouse interface off completely. Somebody was thinking.

The basic functions are as follows:

F1 - Line Size Select
F2 - Font Style and Size Select
F3 - Anti-alias Level and On/Off

F4 - Shadow and Outline Select
F5 - Italics Select
F6 - Kerning Specifications
F7 - Underline Select
F8 - Justification Specifications
F9 - Line/Page Clear
F10- Line Operations

SF1 - Go To Page Requestor
SF2 - Declare Job Name and Size
SF3 - Page Operations
SF4 - Line Background Specifications
SF5 - Page Background Specifications
SF6 - Palette Modify/Copy
SF7 - Color Cycle/Flash Specifications
SF8 - Transition Select
SF9 - Set Global Cycle
SF10- File Operations

If you are a user of Shereff products, most of these will look familiar. You will be pleased to discover, however, that many are supercharged or at least much more "friendly." Additionally, there are many "Quick Key" commands which, through clever and logical combinations of the Ctrl, Alt, Shift, Amiga, keypad and cursor keys, directly execute many features offered in the function key requestors. How about Ctrl-C to center a line, Ctrl-I for italicize a line and (my favorite) Ctrl-E to erase the current line? It is not quite word processor emulation but very close.

Here is the short course on the F-key and SF-key functions listed above. Bear in mind that space limits the amount of detail we can present. You will find all the information you need, however in the accompanying manual. The 'CG II' manual is **excellent**. It is well- organized and contains a tutorial, a very complete reference section, lots of appendices and a terrific command summary.

F1 - Line Size Select
F2 - Font Style and Size Select

These go hand-in-hand. You may select from any of the six fonts (typestyles) supplied. Depending on the amount of memory you have available, you may load as many or as few of the sizes of your selected fonts as you wish. Sizes range from a dainty 22 lines to a respectable 120 lines. They can be any of 16 colors. Line sizes may be selected to accommodate the desired font. Baselines (where the lower case letters sit) may be adjusted continuously from super- to sub-script levels. It makes for a very contemporary look and makes copyright or degree symbol placement a cinch. Here's the killer feature of the whole program as far as I'm concerned: go to a composed line of text, change color, size and typestyle and then select "Change Line Text." All of the text on that line (or the whole page) is immediately changed. No more re-keying just to change color or size. Want more font styles? A separate font convert utility allows you to convert virtually any Amiga font for use with 'CG II'. Palette management of converted color fonts is excellent. This utility is a real bonus.

## F3 - Anti-alias Level and On/Off

As supplied, the standard palette provides for two anti-aliased colors, a white and a yellow. You may select or de-select this function on a line-by-line or page basis, or change from a one to a two-level anti-alias. Try it. It's easier to do than explain and it works much better than in previous products.

## F4 - Shadow and Outline Select

This provides for drop- and cast-shadows and outlines. Each can be in a different color and, cleverly, they allow you to outline just the character or the character and its drop-shadow. The hot addition here is a transparent shadow which lets some of the background video show through. All the networks are using it--very today.

## F5 - Italics Select

Line-by-line italics. Basically, no change. Sorry, we still need word-by-word italics. Maybe next time.

## F6 - Kerning Specifications

This allows lots of adjustment to the spaces between letters. You can also specify how many spaces you want between words when you press the space bar. We were forever having to double-space between words in 'Post'. Very handy.

## F7 - Underline Select

This is much improved. Underline color and position may be specified and then turned on and off with a 'Quick Key'. As a bonus, you may return to composed text and specify many options for adding an underline (or mid-rule or overline). No more re-entering text just to get a darned underline. Big improvement.

## F8 - Justification Specifications

The usual: line or page flush left, right or center. The 'Quick Key' line center function is a solid winner!

## F9 - Line/Page Clear

No surprises. Clear text on a line or page basis, including shadow/outline specs, if you wish. Nice 'Quick Key' line clear function.

## F10- Line Operations

Use this to copy, cut, insert, replace, swap or vertically flip a line. This does more than in 'Post' and 'Gold,' but having to copy a line to move it is not quite as fast as it used to be. We'll get used to it.

## SF1 - Go To Page Requestor

Go immediately to any page. You can also use the 'Page Up' and 'Page Down' keypad buttons to move sequentially through your pages; a big time saver.

## SF2 - Declare Job Name and Size

This is a little obscure to us even after intense use. At the very least this is where you specify and change how many pages you want in the job. The program no longer writes files of 100 pages even if you only used five. Big disk space saver. There are other functions relating to naming groups of pages and sub-groups identified by letters A-Z or something. Frankly, we don't use any of that. I guess we'll figure it out when we need it. We plead ignorance.

## SF3 - Page Operations

Here you can copy, delete, insert or replace pages. This is a major improvement in page management. Thank you!

## SF4 - Line Background Specifications

Use this function to specify line-by-line background color. You may adjust the left and right margins or the color bands and position them to cover the entire line or just the top, bottom or middle of the line.

## SF5 - Page Background Specifications

This is the function which allows you to specify a solid color or an imported IFF image as a background over which you type your fonts. It is easy to turn all functions on and off and miniature representations of the pre-loaded pictures appear when you request a graphic. Nice touch and handy when you can't reconcile

the picture name with the image. Be careful loading 16-color images. Bizarre palettes can ruin your whole day: requestors occasionally "disappear" and you may find you have no colors left to make characters. Plan ahead when you create the image.

### SF6 - Palette Modify/Copy

This is basically the same flexible palette load, modify and copy scheme found in earlier products. The appearance and function of the modify requestor is improved.

### F7 - Color Cycle/Flash Specifications

Have fun with this one. It offers four channels of cycling, flashing, moving, swapping and shifting. Call me when you can use all of these. I just want to flash characters and their shadow and outline. No doubt, with judicious palette management and SF7 manipulation it can be done. We haven't been able to do it, though. Couldn't do it in 'Post,' either. We're sure it's 'cockpit trouble' at our end, however.

### SF8 - Transition Select

Transitions have long been one of Shereff's 'claims to fame,' and upgraders will not be disappointed. There are more than 140 page and line-by-line transitions. You'll have fonts flying everywhere (do ask yourself occasionally if this effect is called for, won't you?). Many more have a 'window' specification which locks some lines in place and allows others to move.

### SF9 - Set Global Cycle

We don't use this. It will allow you to set the page groups to be displayed in automatic page display mode. Or something. This is similar to the F-Key group display mode in earlier products. Didn't use those either. Doesn't mean you won't think it's the hottest feature in the package. Read the manual. Knock yourself out.

### SF10- File Operations

Thank you. Thank you. Thank you. I love you folks at Shereff, but your file handling in earlier products was **the worst**. Now you can easily load and save jobs, add and delete fonts, and add, delete and save IFF images. Are you ready for this 'Post' and 'Gold' users? All fonts and IFF images used in a job are reloaded when you load the job. No more editing of those stupid piclists and fontlists! I thought I was going to cry when I found out how good the new file handling is in 'CG II'! I almost don't mind having to move any images I think I'll need into one of 'CG II's' picture libraries before I run the program. The upside is no path management and only 'CG II' jobs, fonts and pics appear in their respective directories. I'm gonna cry.

Fair is fair. Time to whine about things I wish were different or present at all. We do miss the DVE moves and image manipulation capabilities found in 'Post'. I suppose there has to be someplace to go with 'CG III'. The control of the 'Super-Gen' was a nice touch in 'Post'. We used it a lot and miss it in 'CG II'. What happened to the nice F-Key designation strip sup-


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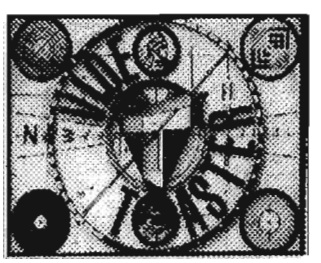

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plied with earlier products? We just made one up with our DTP program, but we still need one for this program.

I typed my way through undergrad and grad school with two fingers. I have two-fingered ten million pages of fonts on a dozen character generators. Why then can I overtype 'CG II?' What's holding up keyboard entry? This holds true for all of the other Shereff products and applies equally to our A500s and our accelerated 2000 HDs.

We **need** transparent line backgrounds. Again, all the networks are doing it. If we can do it for the shadows, why not for the whole line? Watch CBS Sports graphics for some good examples. This is a must have for the next version.

It is too bad that, like word processors, the 'Line Clear' 'Quick Key' doesn't clear the line from the cursor position to the end of the line, leaving all the text to the left intact. It's a nit, but I'm happy to pick it.

I have **never** had the program come crashing down around my ears. Ever. The files have always saved. I have never lost a single character of work. This is a solid program. Now, having said that, I'll mention that upon exiting the program, we have experienced machine lock-ups. It has only happened about one percent of the time, but it has happened.

Finally, a weird one that seems to have perplexed even Shereff. Occasionally the font selection or line size requestors leave traces of the font sample on the screen after the requestor itself is gone. Moving the cursor to the affected line makes these 'ghost bytes' go away and the text is unaffected. No problem, really. Just weird.

How can we have yammered this long without once mentioning character quality? If you know Shereff products, then you know the characters are superb. If you are not a customer, you will be stunned when you see the quality. It's not 'Toaster CG,' mind you. But then you don't grow old and gray waiting for one silly screen to render, either.

We have demonstrated this program for several large companies and for other users in departments within our own company. To a person, they have left the demo impressed (and some of them are using Scribes and Scribes, Jr.'s). If you need quality, creative, high-volume font generation with practical transitions for your productions, look no further than your local Amiga dealer and 'CG II'. The quality is there. The support is superior. They did it right.

*Jeffrey L. Walker is the Senior Television Producer-Director for the Indianapolis Public Schools' Center for Instructional Radio and Television and has been with the company for 23 years. As a freelance television producer concentrating on commercials and industrial presentations, assignments have taken him to the British West Indies, England, Europe and throughout the States*


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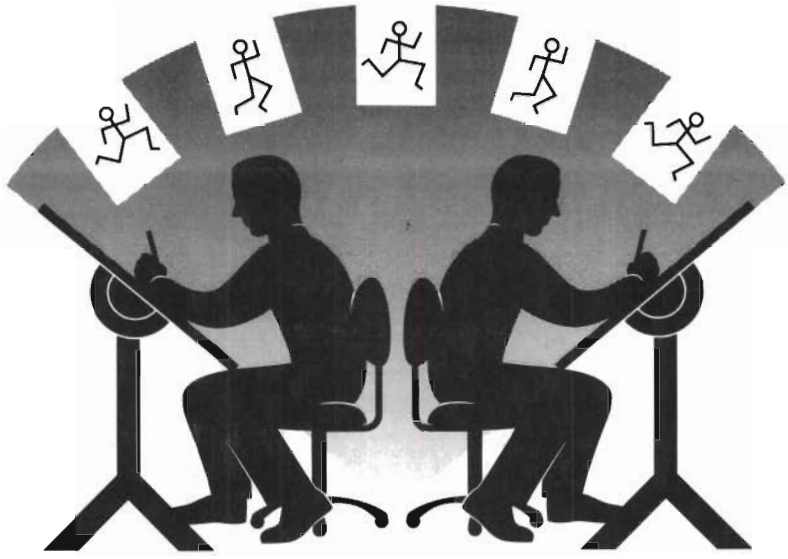


# Custom Transitions with Director 2

© 1992 by Joel Hagen

Interesting transitions between images are of constant interest to most Amiga video artists. Typically, authoring or sequencing software comes with a library of canned wipes, fades and dissolves. In this article, I will focus on a few easy methods you can use to create your own custom animated wipes and dissolves with The Director version 2. I have been closely involved with developing, publishing and using The Director from the beginning, so I hope these 'insider's tips' will be useful. You may be able to modify these techniques to the capabilities of other software such as AmigaVision or Deluxe Video.

The Director is a program developed by Keith Doyle to make the Amiga's sophisticated graphics and sound more accessible to artists. While I have heard it referred to by animators as an 'underground powerhouse', The Director is becoming more and more widely known to the average Amiga user. Commodore itself has chosen to use The Director to create its recent Amiga demos. Part of the power of The Director lies in its rich vocabulary, and in its ability to follow instructions written in that vocabulary. You can make a set of instructions as simple or as complex as your project requires. Your instructions tell the Amiga how to combine images, animations, sound, text and music.

The set of instructions you write is referred to as a 'script.' From that script, The Director creates a 'film' that anyone can play using the freely distributable "projector" program. You write your script using the Director's editor, DEdit. DEdit's menu can bring up special interfaces such as the Button Utility that will create sections of scripts for you. You can run scripts from within DEdit and benefit from its error-checking features. DEdit also allows you to configure the keyboard Function keys to simplify script writing.

## Random Dissolve

The first custom transition you might try is one of the easiest, the Random Dissolve. The Director's default dissolve effect replaces one image with another in an airbrush-like cascade of single pixels. Here is a simple script which loads five images and displays them using the default dissolve as a transition.

```
load "work:demo/5"
for picture=1 to 5
load "work:demo/";picture
dissolve
pause 10
next picture
```

As in this example, I often rename my images as numerals to make them more easy to manipulate in a script. Here, images named 1-5 are in a directory called "demo" on a drive partition (or floppy) named "work." The script first loads image 5, displaying it in the process. The word "picture" is used as a variable to stand for the number of each image to be displayed. Then, a simple loop causes picture 1 to be loaded into a hidden memory buffer, dissolved over the displayed image and paused. After the pause, the loop returns to the next picture in sequence and repeats the process. When it has displayed all five pictures in this manner, it is finished.

The Random Dissolve effect requires only a simple addition to the script. The DISSMODE command allows the dis-

solve to be controlled in powerful ways. Width, height and skew parameters in DISSMODE affect the cell size of a dissolve. Cell, in this case, refers to the chunks of an image that are transferred in the transition. The default is single pixel chunks, but you can enter just about any variation you like in the dissmode command. For example, a dissolve using 20x20 pixel cells instead of single pixels has the look of a checkerboard and is written like this: Dissmode 20,20.

I like to go a step further and use Director's random number generator, the question mark, to produce transitions that are never the same twice. Here is a simple Random Dissolve script.

```
load "work:demo/5"
for picture=1 to 5
load "work:demo/";picture
dissmode?20+1,?40+1,?3-1
dissolve
pause 10
next picture
```

The DISSMODE line is the only change. Instead of a fixed cell size, the random sign creates a different cell every time a new image is dissolved. The expression ?20 generates a random integer between 0 and 19. So, ?20+1 gives me random cell widths between 1 and 20 pixels. Cell height will be between 1 and 40 pixels. The last parameter, skew, will be 0, 1, or -1. A zero specifies no Skew to the cell. A one slants a cell to the right. A negative one slants a cell to the left. With this simple addition to the script, you can have a slide show run all day with transitions ranging from single pixel dissolves to checkerboards to slanting rainstorms. As a video transition, an Amiga title graphic can dissolve into a black, color zero screen genlocked to a live video source.

## Animwipes

The second custom transition you might try is the AnimWipe. This is one of the most fun to create because your own imagination is the only limit. You create a 16 frame, two color anim to use as the transition between images or image and genlocked video source. Use DPaint in 2-color mode to create the anim. Make frame 1 solid white, then paint a little more black on each frame until frame 16 is solid black. This animation becomes the wipe. The accompanying illustration, 'drip,' shows such a sequence.

To try the drip AnimWipe, clear a two color DPaint screen to white. Next, select Frames/Add Frame from the Anim menu. This creates an anim, copying frame 1 to frame 2. Use the filled freehand tool to paint the beginning of the drip along the top of the frame in black. When you are satisfied with frame 2, press the 'a' key to repeat your last menu action, Add Frame. Frame 2 is duplicated, creating frame 3. Use the Filled Freehand tool again to draw a new drip shape extending beyond the previous drip area. Press the 'a' key and continue until all 16 frames are finished. Play the anim to check it, touch it up if needed, and save it. The anim should be created in the resolution of the images you want to AnimWipe.

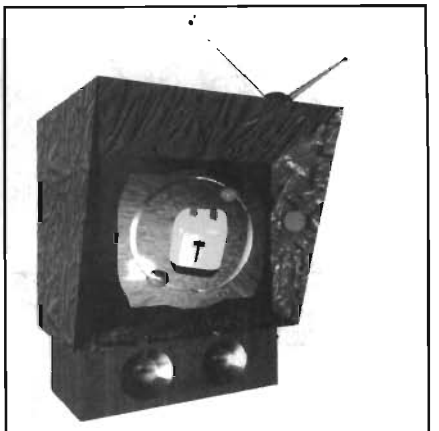
To use the DPaint anim in an AnimWipe, it must be converted into a reversible Op 5 XOR mode anim. Director 2's Tutorial disk has a script called 'Convertanim' which is a simple utility for converting DPaint anims into the proper format for AnimWipes. Running the script brings up a file requester allowing you to select, convert and save the anim file.

Also on the Tutorial disk is a script called 'animwipe' which can be used as a template for your own experiments. Here is an example animwipe script using the 'drip.anim' as a transition between the five images from our previous example. Words preceded by a slash are line labels which make it easy to transfer control to different parts of the script.

```
loadanim  2,"Work:demo/
drip.anim"
load "work:demo/5"

/mainloop:
     for picture=1 to 5
     load"work:demo/";picture
     do animwipe
     pause 10
     next
     goto mainloop

/animwipe:
     new 1,320,200,1 :REM
This is resolution of anim
/animplay:
     anim 2,1,done
```

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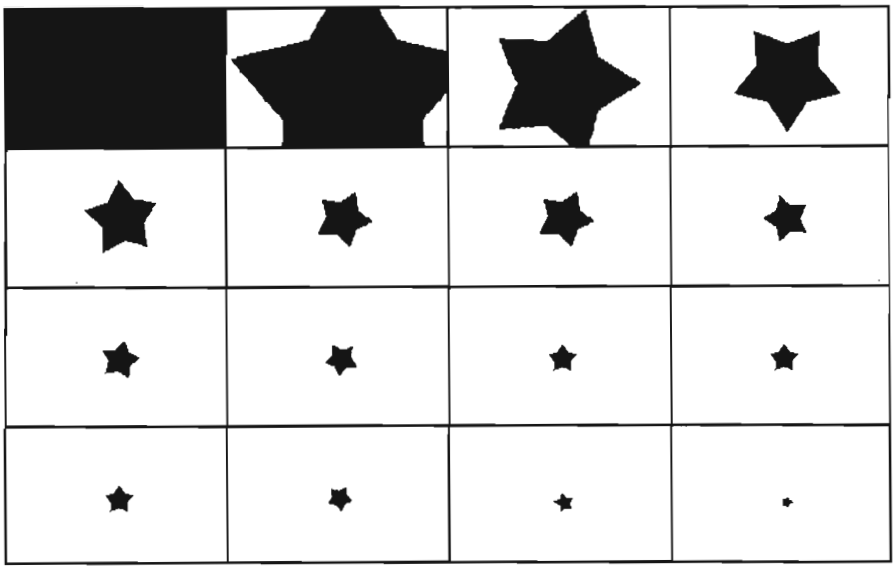


*Star Wipe*

```
    stencil hidden,1,1
    ifdone=0thengotoanimplay
    palette hidden
    free 1
    return
anim 2,1, done
```

Note that the first section of the script is similar to the dissolve script. The drip anim is loaded up front along with the first image. Instead of doing a dissolve, the script does 'animwipe'. Frankly, I don't think I would have ever had the insight to come up with the part of the script that uses an anim as a transition. I just load it from the disk and modify it to suit my needs at the time. There are so many useful tutorial scripts on the disk that I often use this approach.

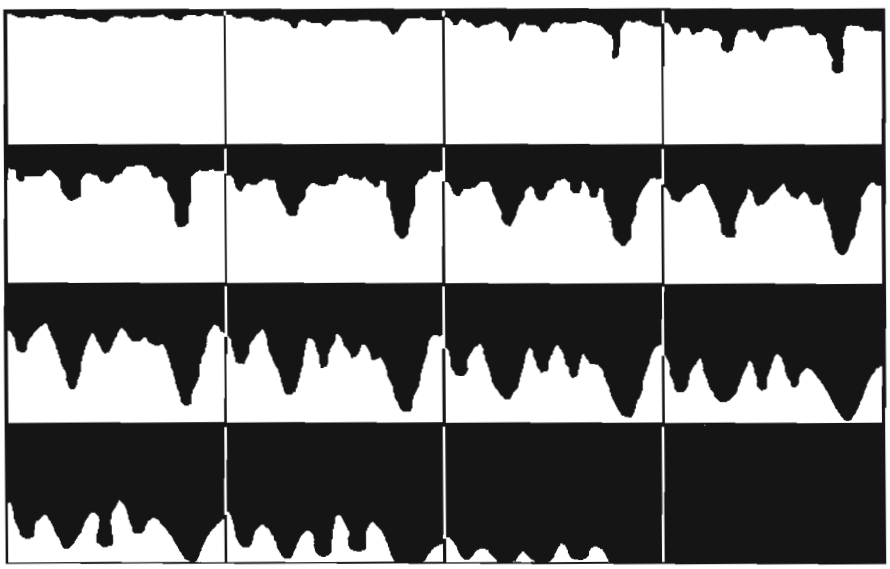
One modification I came up with makes use of random numbers to switch between different anims when doing the animwipe. I load all the anims up front. They are small files and compress well due to the 2-color format. Other script changes are just before and after the /animplay line.

```
loadanim 2,"Work:demo/
drip.anim"

loadanim 3,"Work:demo/
star.anim"

loadanim 4,"Work:demo/
explode.anim"
load "work:demo/5"
```

```
/mainloop:
    for picture=1 to 5
    load  "work:demo/
";picture
    do animwipe
    pause 10
    next
    goto mainloop

/animwipe:
    new  1,320,200,1:REM
This      is  resolution
of anim
    step=0
    A=?3+2
/animplay:
    anim A,1,done
    stencil hidden,1,1
    xfade-1,hidden,step,16
    step=step+1
    ifdone=0thengotoanimplay
    palette hidden
    free 1
    return
```

Having loaded animations designated as 2, 3, and 4, the program chooses one of them by generating a value for variable 'A' equal to random 2, 3, or 4 then playing anim 'A' in the /animplay section. Director's stencil features let the anim serve as a mask between images. The 'xfade' and 'step' lines perform a crossfade on the image palettes. Remember, the animwipe can also be a transition between an Amiga image or title screen and a genlocked video source.

By converting digitized sequences to two color animations, an unlimited number of effects can be created. A ball player swinging at a ball, for example, can be digitized in 16 frames. The palette can be manually reduced in DPaint and each frame cleaned up to produce the desired coverage. DPaint's Move requester is another powerful tool for building animwipes. The 'Star Wipe' illustration shows a 16 frame sequence in which a star created using DPaint's symmetry tool spins away from the screen into the distance. The possibilities are endless, and remarkably easy to experiment with. Imagine using a client's own logo as a zooming overscan transition between an Amiga-generated title and live video.



*Drip Wipe*

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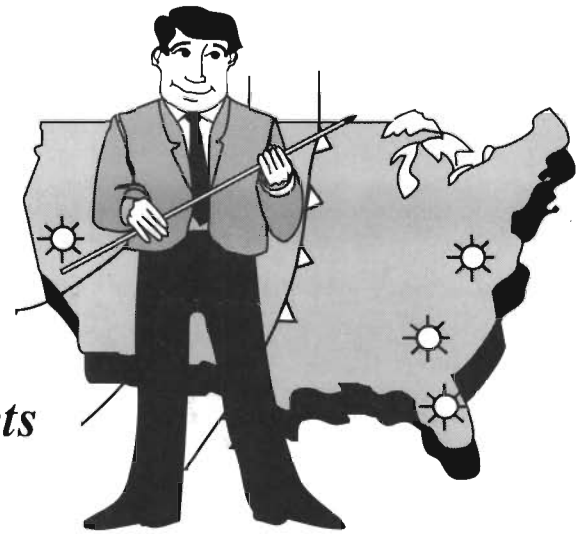


## *Improved Chroma Key Video Effects for the Amiga and Video Toaster*

© 1992 by Tony Gomez

### Introduction To Luminance & Chroma Keying

Perhaps the hottest video products to arrive in the desktop videotape arena are called luminance and chroma keyers. How do they compare to keying with traditional genlock units? How does a chroma key effect differ from a luminance key effect, and is it any better? To answer these questions, let's begin with a basic understanding of the simplest of keying effects—the traditional genlock, and work our way through the new kids on the block--luminance and chrominance keyers.

With a conventional genlock, the Amiga computer is forced to sync with an external video source, such as a camera or a video tape playback. In addition, everywhere there is Color 0 in the Amiga graphics color palette, the external video will be keyed over. It's as if a cookie cutter cuts a hole in the Amiga graphics screen and allows the external video to show through. Traditional uses for this genlock effect are the application of title graphics over video tape playback.

Luminance keying takes that several steps further. Instead of color 0 defining if external video will key over or not, the foreground video's brightness or luminance range determines the amount of background video to be keyed over. In addition, this background video is not limited to computer graphics. It can also be another live camera or videotape playback. For example. in the 'Revolution' video, Kiki Stockhammer was shown keyed in front of a background scene with Robbie the Robot using the luminance keyer in the Video Toaster.

Chroma keying is a further refinement. The keying area is determined not by brightness levels as in luminance keying, but by a certain color hue, usually a shade of blue. For example, with the chroma key effect active, a TV weather person standing beside a blue background will actually be seen standing next to a computer graphic weather map. If one replaces the computer generated weather map with a videotape playback of flying over mountains and valleys, our live camera subject now becomes an imaginary Superman flying over hills and valleys.

Chroma key video systems have been available since the early 60's to the professional video market. These professional chroma key systems required expensive three-tube or three-chip cameras with their associated camera control units. Also needed are video switchers with specific chroma key modules. The chroma key effects that we see on television today (weatherperson shadows on a keyed weather map background) require even more sophisticated equipment and investment. The costs for these sophisticated systems are in the five-figure range. Do we Amiga/Video Toaster DTV producers have anything available for a more cost effective yet quality chroma key effect at our disposal? Fortunately, the answer is a resounding **yes**!

### MicroSearch's ChromaKey+

Early in 1991, MicroSearch, a Houston-based Amiga product development company, introduced the first chroma key device for the Amiga—their original, affordable ChromaKey. The original ChromaKey unit ($395 list) required an external Amiga compatible genlock and it provided low cost chroma key effects. But it proved somewhat difficult to obtain keys with professional quality clean edges. One must remember however, it was never advertised or designed to be a broadcast quality chroma keyer. ChromaKey also could only key a live camera input over the Amiga's background graphics.

Mike Balzer, MicroSearch's ChromaKey designer, has been busily improving their original product, and has just released their new ChromaKey+ (CK+ for short) for the same $395 list! It's in the same stylish small case, but with improved electronics. It now offers the Amiga as well as the Video Toaster desktop producer significant enhancements in operation: Composite or S-Video camera input; improved chroma keying circuits; and for you Video Toaster producers, the ingenious adaptation to permit the VT's powerful luminance keyer to function as a real chroma keyer.

The CK+ package includes the CK+ box, RGB interface cable for stand-alone operation, special Video Toaster cable, power

supply, blue chroma key background cloth, new manual, and a new instructional videotape. There are two different operating setups and equipment requirements--either without or with the Video Toaster, and these will be described next.

## Setup 1: ChromaKey+ without Video Toaster External Genlock Required

Power down your entire Amiga computer system. Next, take the provided CK+ RGB pass-through interface cable and plug the 5-pin DIN end (only 4 pins are actually used) into the KEY OUT connector on the CK+. Connect the 23 pin female end of the same cable into the RGB video connector of your Amiga computer, which on some Amiga models may be a tight fit. The 23 pin pass-through connector will eventually fit and its cable must not be pinched.

Next, plug your external genlock's RGB input cable connector into the CK+ interface cable's RGB pass-through. It's extremely important that the CK+ RGB pass-through connector connects **between** your Amiga's RGB video port and your genlock's RGB cable. The system will not work properly if you leave your genlock directly connected to your Amiga first.

Now let's hook up the video source. Any 'live' composite or S-video source (camera, camcorder) can be connected to the video input of the CK+. Video tape playback will **not** work. This video input is identified by the inward pointing arrow, and has a BNC female connector. If your video input cable has a consumer RCA male plug, you'll need a BNC to female RCA adapter, such as Radio Shack part No. 278-254. If you have a Super VHS or Hi-8 camera or camcorder, you can get a better quality key effect by simply connecting that source to the CHROMA IN 4 pin Y/C connector with a standard Y/C video cable. You must also open up the CK+ box and switch the J2 jumper from the right position (factory set composite mode) to the left position (S-Video mode). Even if you don't wish to open up the box and set the J2 jumper, you can still use your S-VHS or Hi-8 camcorder's composite video output. It just won't provide the higher quality chroma key effect that the Y/C connection permits.

Next, connect CK+'s video output (identified by an outward pointing arrow) to the video input of your external genlock. Now connect your genlock's composite video output to a video monitor (or to your vcr for recording). Also, connect your Amiga's RGB monitor to your genlock's RGB output. Note: not all external genlocks have an RGB output. Finally, plug the provided CK+ power supply plug into the jack labeled 'power' at the rear of the CK+ box.

## Chroma Key Operational Controls

In the non-Video Toaster environment, only three controls are required to operate the CK+. From left to right on the top of the chassis they are: Genlock/Chroma, Key Level, and Normal/Invert. The Genlock/Chroma switch is a two way toggle to allow you to select between Genlock mode and ChromaKey mode. Genlock mode bypasses the CK+ unit and allows the genlock to operate normally. Chroma mode enables the CK+. Key Level is the middle slider control for changing the amount of 'blue replacement' from the camera/camcorder video source. This amount varies according to the lighting in the scene. The third control is the Normal/Invert switch. This selects between a normal and a reversed chroma key operation. As the name implies, in the Normal mode the color blue in the video scene will be removed and replaced with the Amiga's computer graphics. In the Inverted mode, everything that is **not** blue will be replaced, leaving the original blue in the scene showing. For most conditions, the Chroma operational mode and Normal Key mode will be selected. The CK+ is factory preset for proper operation with most external genlocks and consumer cameras/camcorders.

With your favorite graphics image loaded up or animation running on the Amiga, and your foreground subject in front of a properly lit blue background, you should be able to obtain a successful chromakey effect that shows your subject in front of the Amiga graphics or animation background. If you have a problem with the quality of the chroma keying, there are internal adjustments to CK+ that can improve the effect. Follow the adjustment procedures in the Operating Guide.

## Setup 2: 'Toasterized' ChromaKey+

Realizing that many desktop video producers are now using NewTek's Video Toaster, MicroSearch came up with an ingenious way to utilize their ChromaKey+ in tandem with the Video Toasters' luminance keyer to attain true high quality chroma keying effects from VT's switcher for the first time!

The 'Toasterized' connection for the CK+ is different than the non-Toaster setup. The video camera/camcorder input to the CK+ is still either composite or Y/C. However, the Video Output from the CK+ must now be connected to the Video Toaster. Through use of a special cable, The CK+ also now provides a new chroma KEY OUT signal for the the Video Toaster. The front panel CK+ controls are bypassed in the 'toasterized' connection.

Unlike the original ChromaKey, which could only allow Amiga computer graphics as background video, the 'Toasterized' setup with the new CK+ offers you the option of using any **synchronized** video source, such as time base corrected videotape playback, as a background. Since most Video Toaster users now have at least one TBC installed, this is a very practical option. I tested this option, and will now describe this connection.

## Toasterized ChromaKey+ Setup with TBC Videotape Playback

Set up the provided blue background material and light the background and foreground subject for minimum shadows. Connect a composite (or Y/C) video camera/camcorder source to the VIDEO IN (or CHROMA IN) on the CK+. Connect the CK+ VIDEO OUT to the genlock/reference input of your time base corrector. This genlocked input is looped through the TBC and then passed out to the Video Toaster's VIDEO 1 INPUT. Since the TBC is now synchronized to the camera, we can time base correct a video tape playback and connect it to the Video Toaster directly.

Using either your video tape playback's S-Video or composite video, connect it to the TBC's video input. Connect the TBC's composite video output to the Video Toaster's VIDEO 2 input. Connect the CK+ KEY OUT connector to the Video Toaster's VIDEO 3 input with the special 5-pin DIN-to-BNC Toaster cable provided. This special CK+-

to-Toaster cable is different from the stand-alone Amiga RGB cable. Connect the CK+ power supply connector to the provided power adapter.

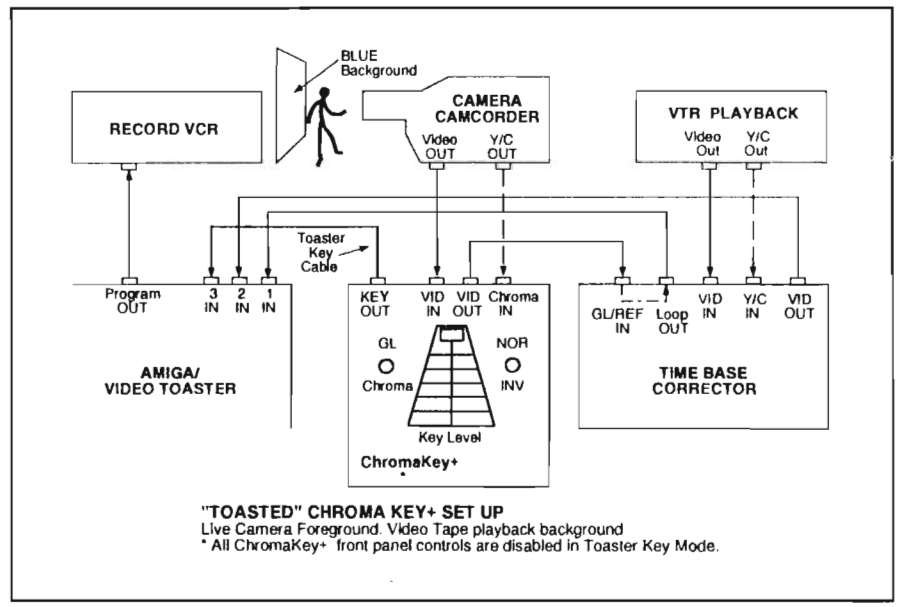
The secret to using the CK+ with the Video Toaster is the Art Card effect in the switcher interface. The Art Card effect crouton looks like a keyhole and on V2.0 software it's located on Bank F, effect #046. On Toaster 1.0 software it's on Bank D. With the Art Card effect active, the video selected on the VT's Program bus will be the foreground. That on the Preview bus will be the chroma key background, and that on the Overlay bus will provide the keying signal.

From the Toaster's Switcher interface, verify that Video 1 input is live camera, Video 2 input is tape playback, and Video 3 input is the CK+ key signal (don't worry if it looks black and white and distorted.) Now set up the switcher as follows: select the Art Card effect. Set the Overlay Bus to Video 3, the Program Bus to Video 1, and the Preview Bus to Video 2 input respectively. Select the Luminance Keyer (scissors icon) to white background. At the 000 luminance setting the Toaster's Program out will only display camera video. By placing the mouse cursor on the luminance number (or on the T-Bar itself) and dragging downward, any blue areas in the camera video will be eventually chroma keyed out and replaced by Video 2.

If you need computer graphics as the background video source, it can come from the Video Toaster's frame store. For example, load in your background graphics into either DV1 or DV2, and set the Preview Bus to whichever bus contains your background graphic. Adjust the luminance keyer as before to chroma key in the frame store. It's also possible to genlock an external computer with the source camera video and connect this to Toaster VIDEO 2 input directly. This may be the most practical way to chromakey live computer animation into the background.

## Blue Background and Proper Lighting Techniques for Good Chroma Key Effects

Regardless as to whether you use the CK+ as a stand-alone product, or with the Video Toaster, a proper blue background and lighting of the subject and blue background is crucial for an effective chromakey.




**"TOASTED" CHROMA KEY+ SET UP**
Live Camera Foreground. Video Tape playback background
* All ChromaKey+ front panel controls are disabled in Toaster Key Mode.

Blue backgrounds can be created using special blue paint (Chroma Key Blue #5710 or Ultimatte Blue #5720) for about $32/gal from Rosco Labs. Another technique is to use special blue Chroma Key fabric material from Rose Brand. Their fire retardant fabric is a cleaner alternative to paint, but it is somewhat expensive, ranging from about $10-$16/yard in various widths.

MicroSearch's low-cost answer, packed along with each ChromaKey+, is a usable piece of blue fabric which has similar hue properties to the more expensive Chroma Key Blue paint or aforementioned fabrics. It can be ordered in additional amounts at $4 per linear yard (60" width) to cover wider areas. It is a thinner type of fabric, so it can be draped over objects for a partial chroma key effect.

Bad lighting on the blue background ruins an otherwise good chromakey effect. Badly illuminated backgrounds have shadow areas, which make complete removal of the background very difficult.

Foreground subject lighting is equally important. A camera mounted video light can provide direct lighting for the subject. Place the foreground video subject several feet in front of the blue background, and light it separately from the background. That way, any shadows created by front lighting the subject won't fall on the blue background. Also, diffuse or shadowless lighting can help.

Professional diffuse lighting costs more than the consumer 300 watt tungsten lights you are likely to have. However, you can also use sheets of inexpensive professional diffusion filter material (Rosco Labs). This spun glass material can be placed over your consumer lights to create professional diffused lighting. The diffusion material will also safely withstand the high tungsten lamp temperatures. Another technique is to bounce the lights off an adjacent wall, ceiling, or white reflector card to achieve an evenly lit background. Be careful not to overheat the white reflector card!

The most important end result to achieve is an evenly lit background, as well as properly lit foreground subject with no significant shadows. With that goal achieved, adjust the CK+ KEY LEVEL control (or your Toaster's Luminance Key level) again and set for the best looking chroma key effect.

## Conclusions

With MicroSearch's ChromaKey+, the chroma-key video effect has been refined and enhanced for the Amiga! It's easy to use, affordable, and with proper lighting is even more effective. It now has the more powerful ability to use S-Video camera/camcorder sources such as Super-VHS or Hi-8 for improved keying of foreground camera over your choice of background video.

As a stand-alone product, ChromaKey+

still requires an external genlock. Background video is limited to Amiga graphics or animations, but thanks to the new ChromaKey+ circuit design, the chroma key results are significant improvements over the original model. For Video Toaster users, the same foreground video options apply, but for the first time it's now possible to perform real chroma key effects from the Toaster's switcher interface! Chroma key effects are greatly enhanced through combined use of the ChromaKey+ key signal and Video Toaster's luminance keyer. Background video can be video tape playback through an optional TBC, Toaster frame stores, or externally genlocked computer graphics.

If you already have the Video Toaster, would its luminance keyer be sufficient? With some subject material, it is possible to key out most of the dark or light areas of your foreground video, and replace them with the new background material. However, for really critical keying applications, a true chroma key effect will result in a cleaner looking key. This is because a true chroma keyer replaces a certain color--normally blue--and not a brightness level independent of color, as a luminance keyer does.

Contact MicroSearch for an interesting VHS tape entitled "How We Used The MicroSearch ChromaKey+ To Save The Universe" ($5.00 including shipping/handling). It's an instructional video on using the ChromaKey+ package and will get your creative energies and ideas flowing.

Production Information:

MicroSearch
9896 S.W. Freeway
Houston, TX 77074
(713) 988-2818/2819
(ChromaKey+and
inexpensive blue cloth)

Rosco Laboratories
Entertainment Lighting Services
5426 Fair Avenue
North Hollywood, CA 91601
(800)622-6628
(Ultimatte Blue/Chroma key
Blue video paint, and diffusion material)

Rose Brand
517 W. 35th Street
New York, New York 10001
(Chroma key blue background fabric)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# Real 3D ProDraw Clip Extrusion

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Using Activa International's Real 3D ray-tracing package and Gold Disk's Professional Draw, you can easily produce high quality 3D logos and text, and as a bonus, create detailed 3D objects from IFF images for use in your animations.

## Here's How

First, you need to create a ProDraw clip file made up of bezier curves (mathematically defined curves with resolution limited only by the output devices resolution). This can be made with any ProDraw font, or can a freeform design, structured drawing or logo you have created. ProDraw allows text to be slanted to any angle, character-kerned, or bent and manipulated in many ways, and has many versatile drawing tools available. Also, to convert an IFF image or logo into ProDraw clip format, Gold Disk supplies a stand-alone program called 'Trace' with the package.

To convert the clip file to Real 3D format, first define and save your clip from ProDraw or Trace, then run the Real 3D utility PDrawtoReal. You will be asked for point density which can be between 1 and 10. 1 is the minimum points required to define a curve, and 10 is a large number of points per curve, when a super-smooth result is desired. One disadvantage of higher values is that the resulting Real 3D objects created from the curves are more complex, require more memory, and rendering time increases proportionally.

The default conversion value of 3 produces acceptable general purpose results, and level 6 and above is ideal for more detailed 24-bit work with no apparent 'jaggies' on close inspection of the images, but there is a tradeoff in terms of total animation memory requirements and rendering speed. Often, some manual point editing of the curves at higher densities can pay dividends in reduced rendering time if this is critical, or the converted text, clip or logo is to be used in an animation. Good memory saving animation techniques with Real 3D include moving the observer, aim point, light sources and backgrounds instead of the complex object, but that is a subject for another tutorial.

## Reducing Object Complexity

Reductions of curve point counts in excess of 50% can be achieved without any discernible loss of quality if you take the time and care to do this. With practice, you can see which points are redundant. Obvious targets for savings include anything in excess of two points on straight line segments, and elimination of in-between points on shallow curve forms, but the procedure is time-consuming. Fortunately, Real 3D's easy-to-use point editing features make the process fairly painless, with an undo function always available in case you make a mistake. Two hours spent editing out excess points from a logo or typefaces can often save a day of animation rendering time, and when there are deadlines to be met, this is important.

The decision to resort to point editing your creation is usually best left until after the first full test render is done, or if memory runs out during development. Experience will soon tell you if things are getting too complex. A good rule of thumb is to satisfactorily (expertly) complete the job with the least complex objects you can in the minimum amount of time **and** satisfy your clients' and your desire for quality.

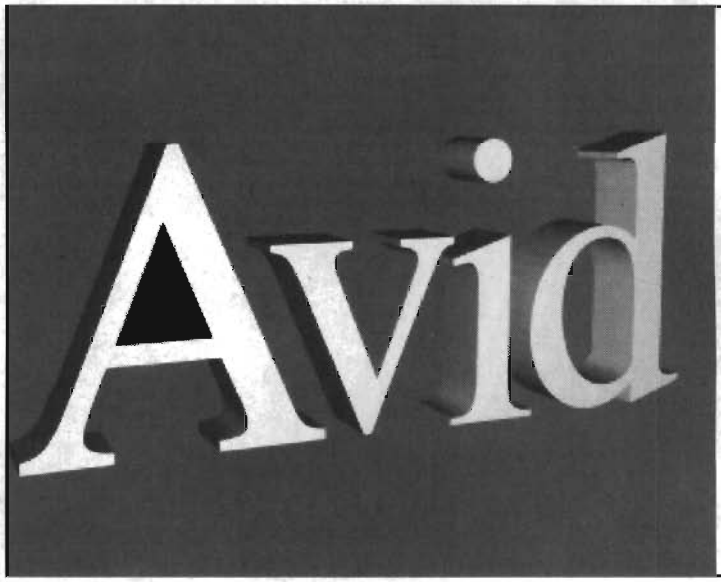
## Converting The Curves Into Real 3D Objects

Select OK when you have entered your required level of detail into the PDrawToReal requester, or use the default value. Now select the ProDraw clip file in the file requester and select OK. PDrawtoReal will now convert the bezier curves in the clip file to Real 3D format

and ask for an output path for the Real 3D animation file. Select the name and path to save the file to disk. It is probably better not to save this file to RAM, as if is particularly complex, such as an intricate logo, or a large number of words, you may need all the free RAM you can get for rendering, particularly at higher point counts. A message "Conversion Done" appears after processing is completed. It doesn't take long to do the job.

Now run Real 3D 1.4 and load your converted file as an animation. Use the Projects->Animation->Load menu item or the keyboard short-cut 'L' to bring up the requester, select the file you just created then select Replace, Concatenate, or Join. Use Replace unless the converted clip file is being combined with a scene already present in Real 3D's editor.

A series of curves will load and appear in a hierarchy as two dimensional objects in Real 3d's projection windows and the Selection window. Click on the clip name in the selection window to see the individual curves. Each curve represents either an external outline, or with the letters 'a,b,d,e' etc, an internal curve.




*Level 6 (of 10) conversion of a Times font clip rendered in Real 3D's greyscale hi-res mode*

To see this, click in the top left projection window, click on a curve name in the selection window and press the Tab key to blink it. To get a closer look, use the '<' key to auto-focus on the selected curve. Type 'o' to return at any time to the default overall view.

You may wish to scale your curves now by using Real 3D's sizing function. Select the parent clip name (of your curves) in the selection window. Use the menu item Modify->Hierarchy->Size, or the shortcut key 's'. Drag a box around your clip while holding the left mouse button to select its center. Release and then press the left mouse button again and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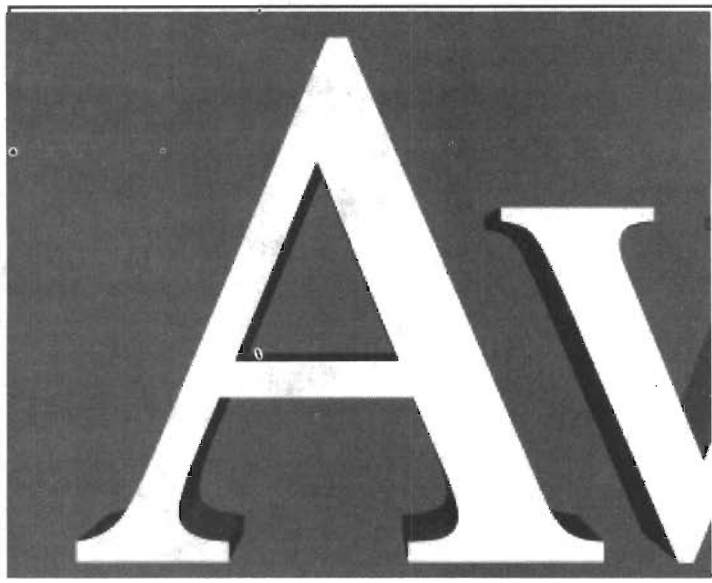

*Same picture in close-up. No jaggies here!*

move the mouse to resize, or press the ';' key to use the sizing factor requester, and select OK.

## Extruding To 3 Dimensions

The process to extrude a curve is simple, but can sometimes be a little tedious, so a methodical approach works best. The results are worth it. First select the menu item Settings->Attributes. In the 'Set Realpref' requester, use the scroll slider until 'Polyhedron' comes into view. Click Depth. Enter your desired value—10 is a good starting point. Click OK twice. This process is necessary as a default depth of 100 is often more extrusion than you would want, but this depends on the relative size of the objects or letters. Also, you can select 'Custom Depth' to be prompted for depth as you create each object. These preferences can also be saved for later.

1. Within your clip's (object) hierarchy, click on the bottommost object (use the scroll bar if necessary) in the selection window. This is the easiest way to proceed, as Real 3D will automatically select the newly created polyhedron after the operation has been performed. The following steps assume you will be doing this, renaming your objects to something more meaningful than 'polyhedron' as you create them, and deleting each curve after it is used to avoid confusion. Undo is always available ('U') if you make a mistake.


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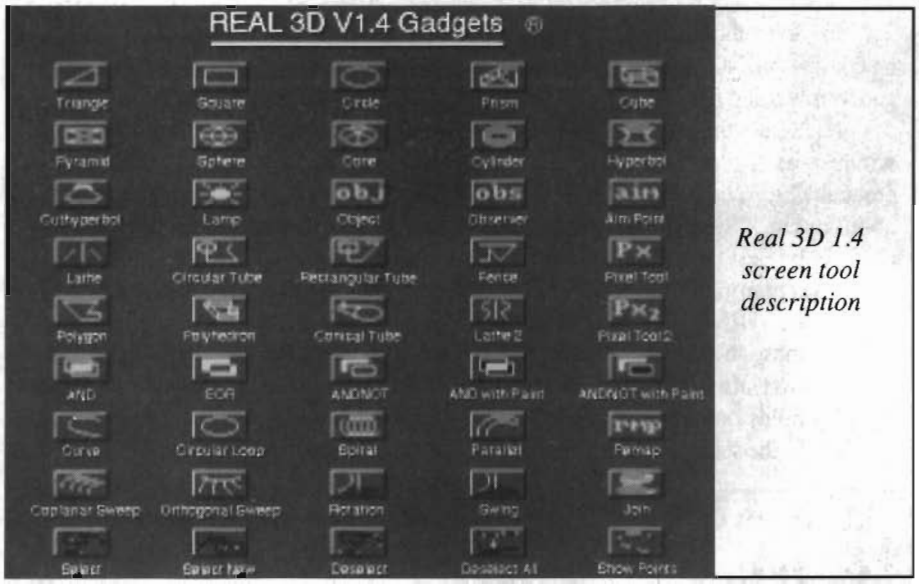


*Real 3D 1.4 screen tool description*

Click the left mouse button in the top left window and press the Tab key to see which curve you are working on. (Also, you can autofocus on it with the '<' key, and you can zoom in with the '+' key and out with the '-' key). Return to the default overall view at any time with the 'o' key.

*Note: If the curve is an internal part of a letter or is entirely within an object ie. a,b,d,e,o etc, you will first need to extrude it as in steps 1 to 4, then cut a hole for it in the outer polyhedron as described in additional steps 4a-4d.*

2. Select Polyhedron Tool by one of these methods:-

a) Menu Creation->Tools->Polyhedron

b) Press right Amiga and m (recommended method)

c) Click on the screen tool gadget, 5th row, 2nd from left

3. Type '*' to select the curve for a point definition that the polyhedron tool will use to make the shape. If it is not already selected, click on the curve you are working on then click OK in selection window.

4. Click the right mouse button in top left projection window to extrude. The default depth you have selected will be used (Hint: This is a flat extrude. Other variations are possible by using a left mouse button click to define the size of the back or front face—experiment! Remember that the extrusion will go to where the '+' is in the top

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turn to page 56

right window.)

Use the next steps (4a - 4d) only if an internal curve, that is a curve forming the inside parts of letters or objects (a, b, d, e etc) or internal parts of a logo)

4a. Type 'i' to bring up the object info requester, click on 'INFINITE' and click OK. This removes 'standard limits' from an object used as a tool to cut another object. In the case of polyhedrons used here, standard limits means the two flat end planes that define length. This ensures a cut that goes right through without worrying about depths.

4b. Select the menu item Modify->Operations->ANDNOT or use the screen tool gadget row 6, 3rd from left.

4c. Select the target in the selection window as the polyhedron object you created which contains the 'hole' you are about to cut. Click on OK. This operation can be performed many times if the object has many cut out sections as logos usually do. (HINT: It's easy to animate or move these 'holes'. Use the Ctrl-s key combination after selecting the object. Moving holes in logos? What next?)

4d. In the selection window, click on the polyhedron you just used, (the top one) Type 'd' and click the left mouse button in the top left window to delete it, as it is no longer required. Your 'hole' is now in place (the color of the object's name in the selection window has changed to indicate it has had a logical operation performed on it and has its own substructure)

5. Select the menu item Modify->Hierarchy->Rename or the keyboard shortcut 'n' to rename 'polyhedron' to a meaningful name. This is recommended so you can keep track of your objects.

6. Select the curve you last used to create the object. Type 'd' to delete and click the left mouse button in the top left window to confirm the deletion.

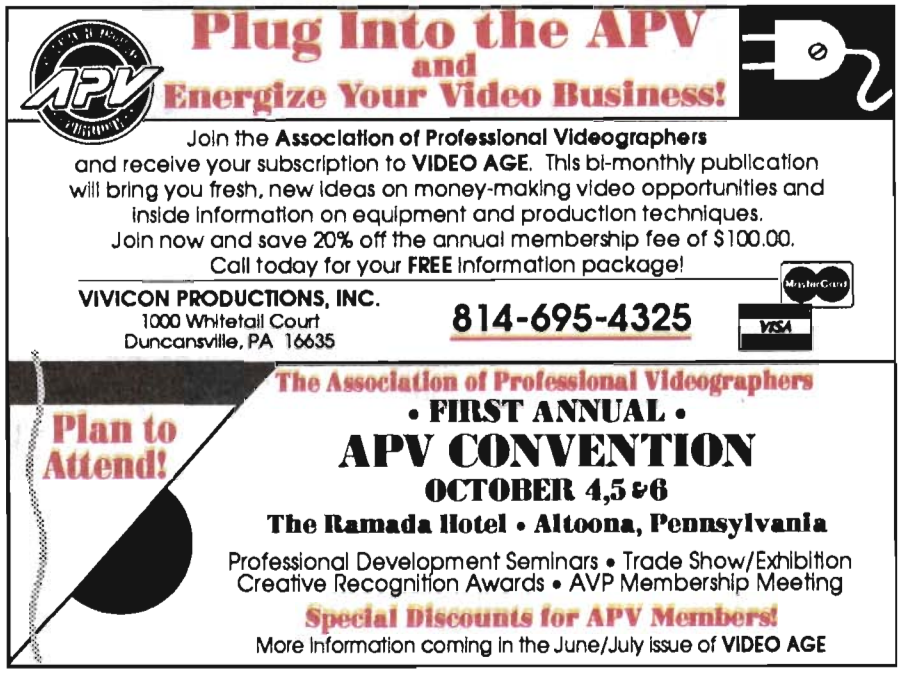
7. Repeat steps 1-6 until no curves remain.

## Rendering

You should now have polyhedrons the exact shape of your letters or logo. Some moving around may be necessary to line up any text to your satisfaction. The Grid and mouse averaging functions simplify this process. When you are happy with the arrangement, type 'w' to go to wireframe mode to position your observer and aim point for a test render. Click on the 'RBOX' gadget to speed up redraw in wireframe mode while spinning and zooming in real time if your creation is complex. Click on 'REC' when you are happy with the view.

To go to the rendering screen, type 'q'. Use the default 'FAST' render for a quick check that you haven't missed anything, and cut all necessary holes. Type 'r' to render or click on the 'Render' gadget. If all is well try a render with LAMPLESS, GREYSCALE, INTERLACE to see if the result is smooth enough and to get an early idea how long the final render may take after textures, backgrounds, environment maps and light sources are added. If smoother results are desired, just increase the point count when using the PDrawtoReal converter and use anti-aliasing when rendering, but this will increase rendering time.

About now is when you can decide if reducing the point count will be worthwhile, or you need to rush out and buy some more RAM and a 68040 accelerator. This also the case with other render-

ing packages when performing operations like this. Just when I thought I had the ultimate 18 MB A3000, I modeled an logo too complex to render! Real 3D actually gets faster when you add more RAM due to it's dynamic table handling techniques, and an '040 optimized version is on the way to take advantage of that chip's new maths co-processor instruction set. Should be **fast**!

## What To Expect

Higher resolutions and 24-bit renders will give the best results, but be prepared for longer rendering times. Especially if you start playing with a combination of complex logos, mirrors, chiseled glass letters, higher than the standard recursion level 3 for reflections (level 99 for up to 99 light bounces per pixel!), multiple 24-bit environment and bump maps and other goodies. Where's that '040?

## More On Fonts

Any Compugraphic font (even converted IBM and MacIntosh fonts) can be used for this process, so a customer's exact typestyle should be able to be, in most cases, matched closely with a bit of research and maybe an investment in a suitable font disk set. There is a huge base of available Compugraphic fonts, and many are available for programs such as Professional Page and Professional Draw. Others are also available from various suppliers, including AGFA.

I consider Professional Draw a 'must have' for serious Real 3D users (and vice-versa for that matter.) because the clip conversions work so well. It adds so much versatility and provides structured drawing facilities to supplement Real 3D's rendering capabilities. Also, the Trace program supplied with the ProDraw package is very handy for converting IFF images or logos to ProDraw clips.

## Other Software

Another useful software package to have is Pixel 3D from Axiom Software. Pixel 3D converts and extrudes the objects for you, and saves to Sculpt format along with many others. Real 3D's 'SculptToReal' utility does the necessary conversions, including color information. My results to date indicate that ProDraw's bezier curve clip output combined with the 'PDrawToReal' utility supplied with Real 3D gives better results, but the disadvantage is that the extrusions have to be done manually.

Real 3D provides many extrusion variations and methods of animating logos, objects, words or individual letters, including key-framing, morphing and IFF image mapping up to 24-bit and a diverse range of materials properties and attributes can be easily added. Combining 3D fonts with the use of Real 3D's logical operators can give a new look to familiar typestyles. Additionally, Chisel-style 3D fonts can be made by using the menu item, Freeform->Create Curve->Parallel, moving the new curve forward and using the join function to connect the curves, or by using the polyhedron options mentioned earlier. There is a lot of hidden power in Real 3D behind that friendly interface, if you take the time to get to know the program.

## Conclusion

The font and 3D object construction method described here works very well, and is certainly a lot easier to use than trying to construct a logo or font by hand in an editor designed for ray-tracing and not structured drawing and compugraphic font handling as ProDraw is. You will be well rewarded with great results if you take the time to practice these methods, so what are you waiting for?

## Real 3D Tutorial Videotape

A comprehensive one hour tutorial video covering all major operational aspects of Real 3D with many hints and tips for the beginner as well as the advanced user is available from Color Computer Systems, 18 Appleby Street, Balcatta, Western Australia 6021 for $A44.50.

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Australian Real 3D support
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# Interview with Tracy Sabin

© 1992 by Stephen Jacobs

Tracy Sabin is a freelance illustrator and animator. The full-time illustration work keeps the bills paid. The animation is a part-time labor of love. Tracy's demo reel is brief, with only a handful of pieces on it. It contains all the animation work he has done so far. You could say he really hasn't done much animation at all. Yet Tracy has made a big impact on the Amiga animation community. Three of his five works; Morph, Gumbo, and The Box, can be found on AmigaWorld's two animation compilation tapes. 'Personal Ethics and the Future of the World,' an animation done for a potential PBS series, has found its way onto Verbum Magazine's first interactive CD issue. His demo reel won this year's AmiEXPO Art and Video Contest for Best Commercial Animation.

Tracy's work is very different than what most of us think of when we think Amiga animation. No raytraced, virtually real spaceships or teapots here. Tracy's work is all done in 2D paint and animation programs, sometimes only in black and white. His animations are characterized by smooth motion, and a 'cartoony' look. 'Morph', 'Gumbo', and 'Ethics' are all filled with rapid, flowing, changing characters. These aren't morphed ANIM Brushes. Tracy's characters in these pieces are all single-line, smoothly animated, full-screen characters. He makes his morphs the old fashioned way. He draws the tweens in 'one on top of the other.' Tracy's work proves that style and skill are at least as important as complex software.

*AVID: What's your background?*

Tracy Sabin: I got into art because of Walt Disney. Originally it was my goal to be an animator for Disney. I never really lost that interest, though now I wouldn't want to work in a studio situation. I went to Brigham Young University (BYU) and got a Bachelor of Fine Arts degree in Illustration. At that time, BYU didn't have a BFA in Animation, but they did have some animation courses and I took all of those.

Once I graduated, I went to work for TICIT, one of the first computer-controlled interactive educational television curriculum programs in the country. It was one of the first attempts to produce multimedia in the early 70's. TICIT was done in association with BYU and paid for by the National Science Foundation. It was implemented in three schools. I was in charge of creating animated introductions for English and math courses.

*AVID: How did it work?*

TS: It used a mainframe computer and a series of instructional video tapes. A student would request a lesson on videotape and someone would play it for them. The student would see the videotape on a terminal connected to a mainframe and then they would do their work on the same terminal. The mainframe software would let you keep track of where you were in the program and it would add additional drills or let you skip ahead depending on how well you were doing at the lessons on the terminal.

There were ten tapes for each of the two educational programs developed for the system. Each tape had a fifteen minute animated introduction on it, so I created 20 introductions for the materials. At the time, I used traditional cell animation methods to create the pieces. I did that for two years. Then some people left TICIT and created Courseware, Inc. I was the art director for the manuals for Courseware. Then I tried to freelance for a year, but I didn't have the right kind of portfolio for it. So I worked for Ernest Hahn, a developer of shopping malls, as an illustrator doing advertising and marketing for them until I had built a portfolio. I started freelancing again in 1983, and that's all I've been doing since. My own business is based in illustration and design. Gradually I've been developing my animation on the Amiga and have gotten paying jobs.

*AVID: How'd you get involved with the Amiga?*

TS: I owned a Commodore 64 and had tried to do animations and illustrations on that, but it wasn't professional enough. Then I got an Amiga 2000.

*AVID: What was your first paying animation job? How did you get it?*

TS: Well, I entered Morph in the AmigaWorld contest and someone developing a show for PBS saw it and liked it. Duggan and Associates was developing the series on Ethics for junior and senior high school kids. They thought that the animation style I had would be funky, like MTV, and would hold the kids' interest. The original concept was to have kids talking about ethics. Later they leaned more to having the moderator do most of the talking.

*AVID: I like the way that the images kept changing to really mirror what the kids were talking about. What was the process in developing the animation?*

TS: First they sent me a sound track. I just started with their soundtrack and I brainstormed ideas. The thing they really liked about Morph was that it was in black and

white and used really simple lines. It helped to be able to work that way because I could just do it in low res and have long animations that moved fast. Because it moves so fast you don't miss the color not being there.

So, I just brainstormed the whole piece, almost stream of consciousness, and animated it on the fly. I guess the thing I like most about working in 2D on the computer is being able to see your animations in real time.

It was exactly what they were looking for. In fact, they only asked for one change, and that was related to a font that was used. I did about six minutes of animation. What they used was about four and one-half minutes long. They trimmed the rest when they decided to focus more on the narrator than the kids. I was able to do about a minute a week. I was doing other illustration work at the time as well, but even so it was all done within a month.

*AVID: What software did you use for the animation?*

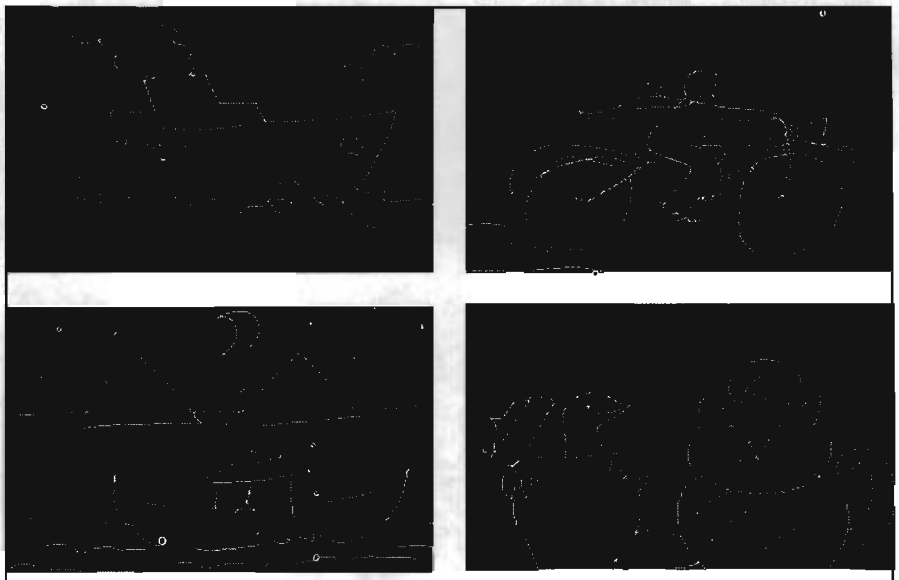
TS: I used Disney's Animation Studio. I drew the whole thing completely with a mouse, so I need the 'onion skin' (a feature similar to Lightbox in DPaint IV). At the time, it was the only program that had that feature.

*AVID: Have you switched over to DPaint IV?*

TS: Not for that kind of work. If I'm going to be doing a lot of metamorphing I still use Disney's because I like it best.

*AVID: Why is that?*

TS: The onion skin is automatically set up in the program and it works faster.



*Four Frames from Morph*

Also, the proprietary animation format it uses loads faster and seems to hold more information in less space than ANIMs do.

Lately, I've been drawing on paper and digitizing the drawings on an Epson 300 in black and white. I've also done some scanning of backgrounds for animations. Working that way gives me better control. With the mouse you can spend hours doing one drawing. Drawing by hand on paper and then digitizing is much faster.

*AVID: What's the scanning process like?*

TS: I wrote an ARexx routine for the The Art Department Professional that rescales the drawing and converts it to the palette I want to use. A second ARexx program allows me to save the pictures in sequence simply by entering a number. It takes under a minute to scan the picture and do the operations. My machine is accelerated; I use a Great Valley Products 22Mhz '030 board.

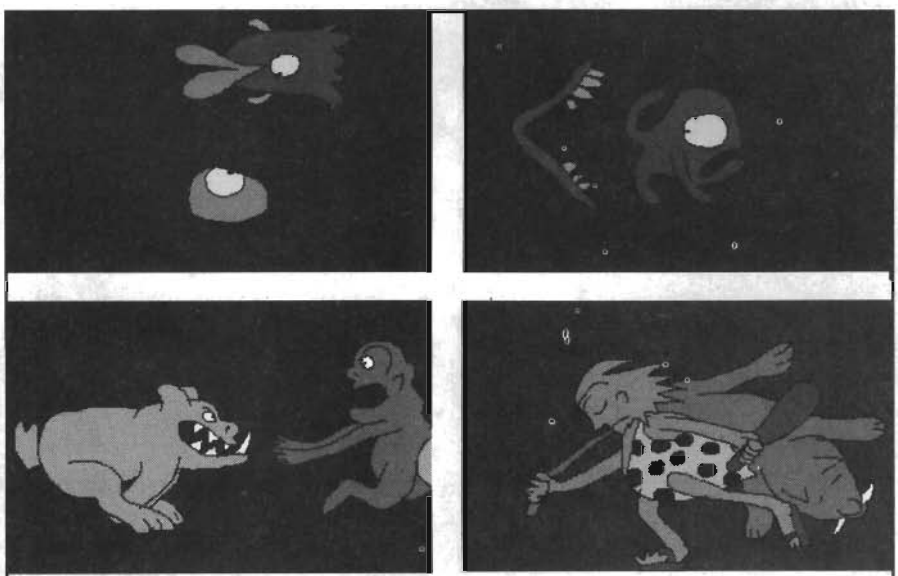
I got FRED from ASDG the other day. I've only just looked at that and I can't wait to get into it. You can composite things and do dissolves.

*AVID: How did you put your demo reel to tape?*

TS: I worked with The Control Room. It's an all Amiga video editing suite and sound studio here in San Diego. The demo tape has 15 minutes of animation. It took about six hours to put it down to 3/4" and get the sound right.

*AVID: What is it that you'd like to do in the future?*

TS: I'd really like to do a character animation short. The first step I'm on is working out the story. I'd like to do all the full traditional animation steps on the computer. I've just picked up the SunRize 12-bit board so I will be able to read SMPTE time code. With that I can have the sound track made first and then precisely mark where the notes and syllables happen. After that I'll create the characters. I'd like the whole process to go faster. It's hard to be able to work through all the pieces while doing traditional illustration to pay bills.



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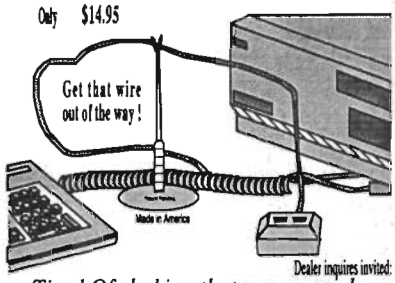


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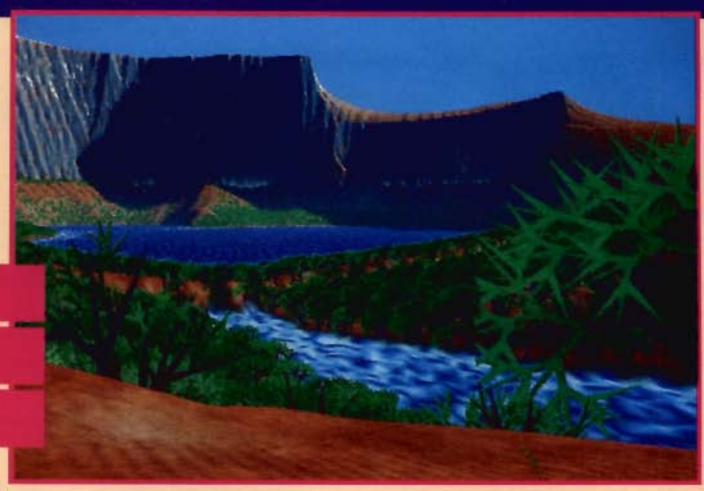

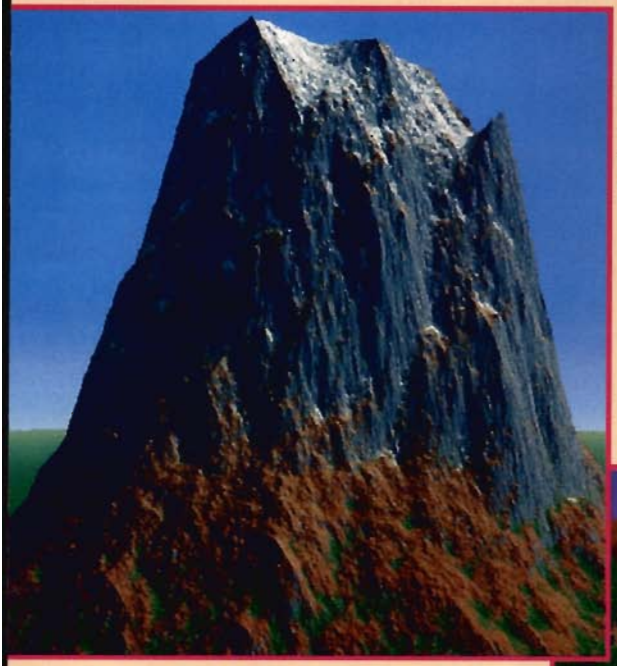

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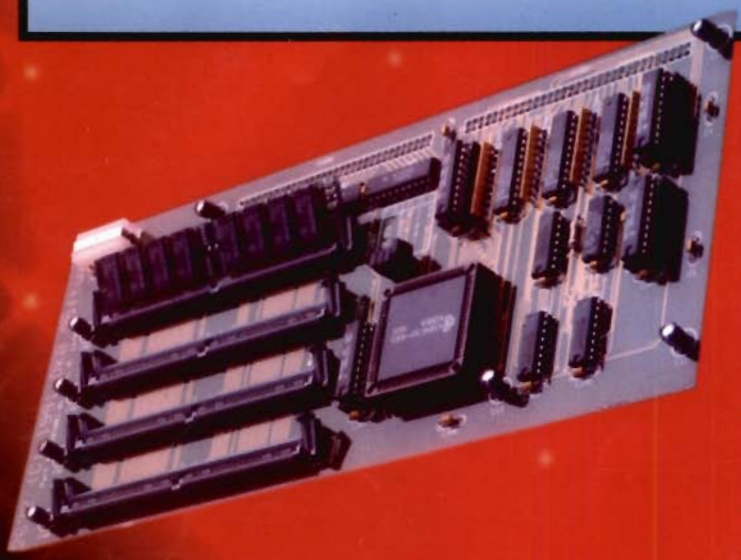

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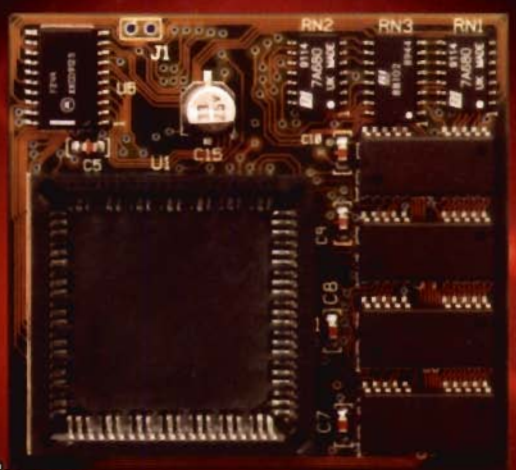


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