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J o u r n a l

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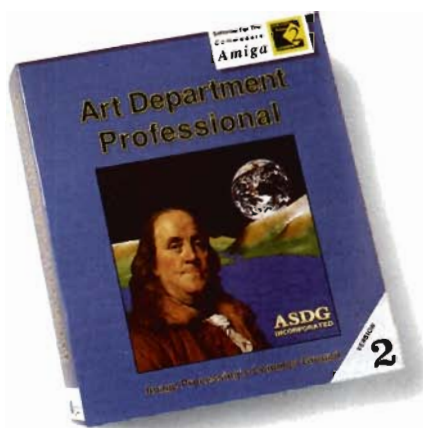
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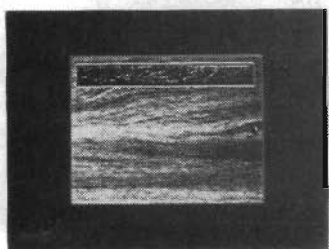
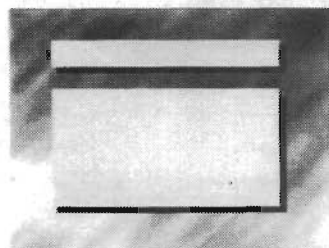
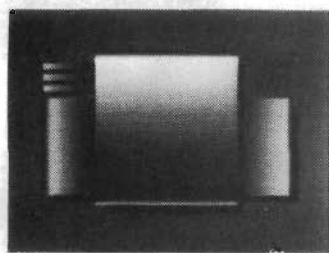
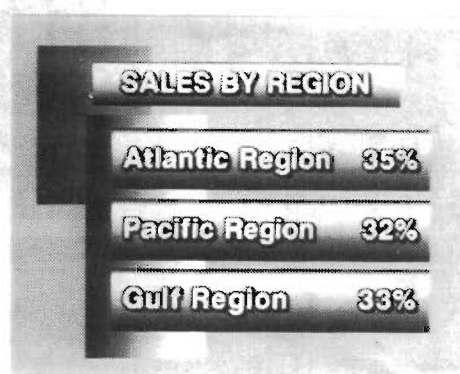
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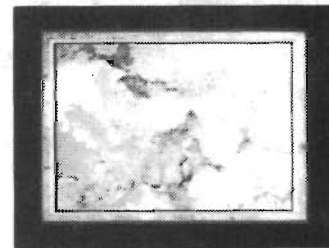
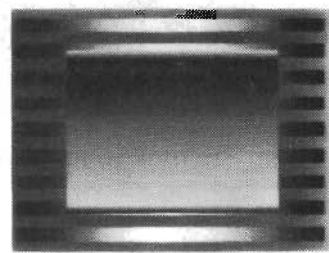


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Bars 'N' Tone

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This February issue of AVID marks the sixteenth issue we've published since beginning in April of 1990. Since that time we have grown and done our best to constantly improve the quality of the Amiga-video information we provide. I am very proud of what we've been able to accomplish so far, but I recognize there are still many areas of the magazine that could stand improvement.

We have a number of positive changes planned for the next 12 months. Some of them will occur gradually, and

be barely noticeable. Others will be much more obvious. One change that will have an immediate and positive impact on the quality of AVID's editorial product is creation of our first full-time editorial position.

Beginning with the March issue, long-time AVID columnist, David Duberman will assume the position of editor of AVID. Mr. Duberman brings to AVID a wealth of Amiga-graphic experience. He's had many articles published in almost every Amiga magazine published, and is also the author of the *Imagine Companion*. David's rare combination of technical knowledge, graphic talent and editorial expertise will be immediately evident in the improvement of AVID, *The Amiga-Video Journal*.

Welcome Aboard David!

Jim Plant-Editor/Publisher

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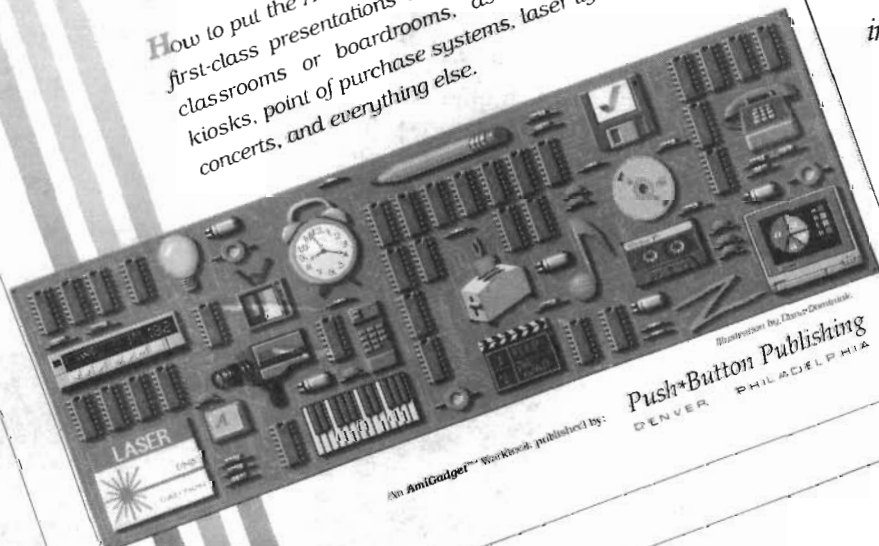
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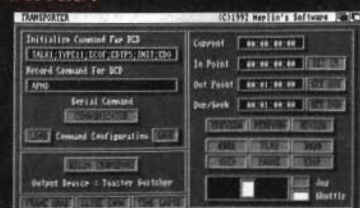
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An Interview



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LightWave 3D is considered the crowning jewel of the Video Toaster and with the 2.0 version of the Toaster software about to hit the general market, we felt it was a great time to interview the man who wrote LightWave 3D. Allen Hastings. Rather than asking Allen about the enhancements to 2.0 directly, I chose to ask Allen a bit more about his feelings toward things. As you'll see in the following result, this was an excellent idea, as Allen has many interesting things to say. D.H.

AVID: You originally created VideoScape 3D, your first 3-D animation package on the Amiga, to produce special effects for your own movies. How does it feel to be involved in a production as high-profile as *Star Trek VI*?

AH: It all started when a friend of mine, Joe Conti, got the job of producing an animation to be used as a bridge display on the Excelsior (another Federation starship). He called me up and asked if I could send him a LightWave model of the ship by the next day. I went out searching

through bookstores and eventually found some Excelsior blueprints in a gaming manual. I also rented a laser disk of *Star Trek III*, which had several shots of the ship. I worked all night on the object, finishing around nine the next morning, and then modemed it to Joe. A couple weeks later, he needed an Enterprise model, and I pulled another all-nighter. I've heard that the rotating Enterprise animation was the favorite bridge display of Nicholas Meyer, the director, and he intentionally set up shots so it could be seen. Over six months later, in December, when I saw my work up there on the big screen, it was a great feeling.

AVID: When are we going to see the first "AH Pictures" feature-length film?

AH: Good question. Unfortunately, I don't have much time to work on animation anymore, since I'm always busy improving LightWave. I spend the majority of my time programming. Hopefully, I'll get a chance to do more animation sometime soon, now that LightWave 2.0 is finished.

AVID: Do you come up with the ideas for the NewTek demo animations yourself, or are they designed by

committee?

AH: When I began work on the Revolution tape, NewTek already had a written script, and they would ask me if certain scenes could be created with LightWave (my answer was always yes). So I wasn't responsible for the basic idea of each scene, but I did design the actual layout of each animation myself - the modeling, camera moves, lighting, coloring, and so on. The animations I worked on were the opening (with the old and new worlds), the "Terminator eye view" scene of the camera, Toaster, and VCR hooking up, and the final pullback from the pyramid out into space.

AVID: Which animation are you most proud of and why?

AH: Rush Hour. I originally recorded that in 1988 using an enhanced version of VideoScape 3D. I submitted it to SIGGRAPH and it was shown in the Animation Screening Room that year. Then, after I got involved with NewTek, I refined it a bit and re-rendered it with 24-bit color. When I sent that version to SIGGRAPH in 1990, it was shown in the Screening Room, and to my surprise, it was also put on a SIGGRAPH Video

Review tape (issue 69). As far as I know it's the first and only Amiga-produced 3-D animation to appear on a SIGGRAPH tape. Best of all, people think it's funny, which is great!

AVID: *How long does it take for you to produce a single animation such as, say, the Blade Runner sequence?*

AH: That particular scene took a few weeks. Most of the time was spent modeling the pyramid and the advertising blimp. I used the Toaster to grab several frames from the laser disc, then I'd flip back and forth between them and my renderings in order to match the coloring. The most fun parts were mapping Kiki onto the blimp, adding the lightning strike, and modeling the lens flare at the end.

AVID: *Explain your involvement in NUtopia.*

AH: In October of 1990, Todd Rundgren asked me to consult with him on his "Change Myself" video. At about the same time, NewTek freed me from

my Lockheed engineering job so I could spend more time supporting Todd. I added several features to LightWave as a result of his suggestions, such as the ability to map a sequence of images onto an object. The "Change Myself" experience proved so successful that part of my current job description is to support NUtopia with LightWave advice and special new features. NUtopia in turn produces very impressive and creative videos and acts as a valuable proving ground for future NewTek products.

AVID: *Any plans for releasing 3-D objects you've created?*

AH: It's possible. NewTek has some ideas along those lines that I can't get into, but a few of mine are included in the 2.0 Phone Book. The star databases I used in the Revolution tape are included, for example. One object has over fifteen hundred accurately placed stars of varying magnitudes, and the other consists of over five thousand random stars. I've also included some sample objects that

show off all of LightWave's procedural textures, and they are meant to serve as examples showing how to obtain great looking wood, marble, orange peel, rippling chrome, etc.

AVID: *Why was the original version of LightWave missing such important items as a parent button in the file requesters?*

AH: To tell the truth, I didn't write the file requester code (other than changing its appearance to match LightWave), and I didn't fully understand how it worked. I'm less of an Amiga hacker than a specialist in animation and rendering methods. However, rest assured that LightWave 2.0's file requesters do have parent buttons, and they show many more files at once.

AVID: *Do you expect LightWave and the Toaster to eclipse the abilities of the current "high-end" graphic systems? If so, when?*

AH: That is certainly a goal of mine. LightWave already exceeds the

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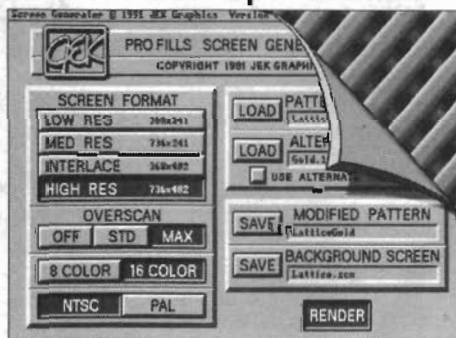
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capabilities of the high-end software in use a few years ago, like the software used to create the special effects in TRON and The Last Starfighter; partly because graphics technology has advanced since then. For example, at that time procedural solid textures hadn't been invented yet. Certainly we eclipse the current high-end software in performance for the money, and probably in ease of use as well. Also, there are several advanced features in LightWave 2.0 that I don't think any other renderer has, like the adjustable edge transparency threshold (one of Todd's ideas), and the non-Lambertian diffuse shading option for realistic planets and moons.

AVID: So, with 2.0 pretty much out of the way, what kind of new features are you looking into for 3.0?

AH: Procedural animation really interests me. Things like gravity, wind, and collision detection. The kinds of things that would let you create very realistic waterfalls, snowstorms, and fires

with very little effort. Also, I'd like to add a limited depth of field option, which would allow the "rack focus" shots I've always wanted to do. Full motion blur and adjustable soft-edged shadows would be nice too. These are just a few of the animation and rendering features I'm planning - there is also a big list of new interface ideas to make everything faster and easier to use.

AVID: I notice that the animations on the 2.0 demo tape are extremely realistic. Would you say that is due more to the higher resolution and new features, or simply lighting and so on?

AH: Those animations didn't use the new super-high-resolution option, which is mainly for print or motion picture use. Most of those were created by Ron Thornton at NUtopia. He is incredible with LightWave Modeler, and very skilled at using ToasterPaint-created images as texture maps. Watching his work makes me want to go practice mod-

eling and animation so I don't fall too far behind!

AVID: What Toaster configuration do you use yourself?

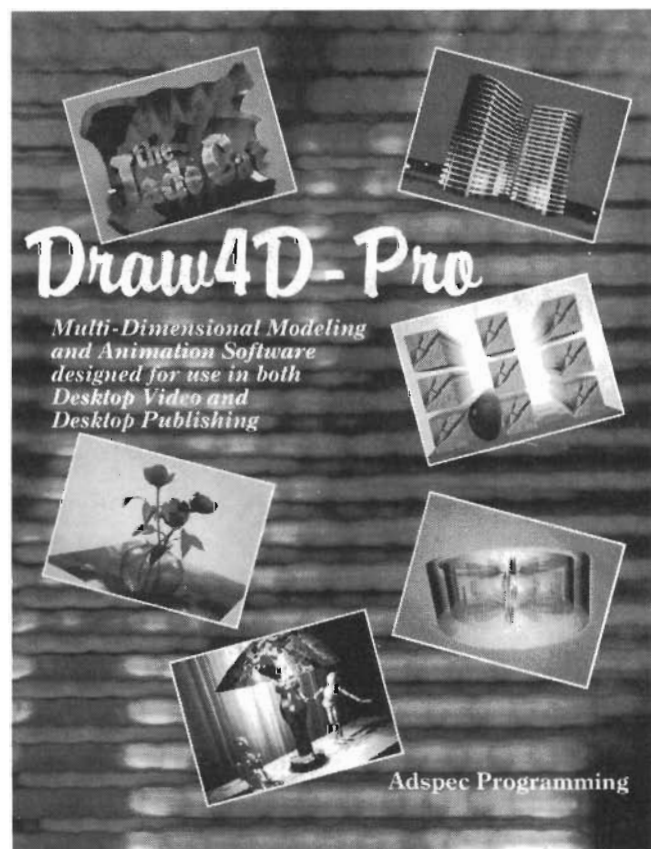
AH: I use a 2000 with a GVP 50Mhz '030 board and 20 megs of 32-bit memory. For single-frame video recording, I use a Sony VO-5850 VTR and a Lyon-Lamb MINIVAS animation controller.

AVID: Do you render straight to tape, or do you save the frames to your hard drive and transfer them later?

AH: I never go straight to tape. That wears out the VTR since it is just sitting there in pause while the next frame is being rendered.

AVID: Have you received many demo tapes from users? What do you think of them? What has impressed you most?

AH: Oh, yeah! I get quite a few and I love watching them. It seems that there is a heavy concentration of professional



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Toaster users around Orlando, Florida. I've seen some great tapes from that area. The things that have impressed me the most have been animated characters - dancing human figures and the like. It's pretty easy to make impressive realistic renderings with LightWave, but character animation is more of an art. I recently animated a walking character for NUtopia - nothing really complicated, just walking - and it's tough to produce the illusion of life like that.

AVID: *Can you give a few examples of your personal tips and tricks?*

AH: Well, I'm afraid I don't have a list of tricks written down or anything. I just take advantage of things as I need them. Let's see....

AVID: *How about a technique for producing black and white animations?*

AH: Oh, that's easy! Just set the Color Saturation value to zero in the Camera control panel. You could even use an envelope to control the saturation

and have your scenes smoothly fade from color to black and white, and back. If you wanted to simulate dirt and signs of wear on your black-and-white scene, you could create a series of frames that have "noise" on them, then use them as a sequence of foreground images with a high foreground dissolve setting.

AVID: *How about your trick for water?*

AH: Do you mean water like a swimming pool, or like an ocean?

AVID: *Both!*

AH: Well, if you're going to show an ocean up close, I think the best thing to do is to actually model a few large waves. Since you can have 16 morph targets in 2.0, you could morph those, plus add a ripple bump map to produce the smaller waves. Some of the new features in 2.0 are perfect for doing pools. For example, the new underwater procedural texture was designed to simulate the moving patterns of light you see on the bottoms of

swimming pools. And you can use the new ray tracing options to show how refraction makes partially underwater objects (like the swimming pool ladder) appear bent. There are good examples of both the underwater texture and the ripple bump map in the 2.0 Phone Book.

AVID: *Is there any chance of a stand-alone version of LightWave and Modeler in the near future?*

AH: No. I don't think that's likely. Both programs were always intended to be packaged with NewTek hardware. LightWave has a lot of "Toaster-dependent" code that just wouldn't work without the board.

AVID: *You've implemented a number of new file format loaders, but I haven't heard about an Imagine loader. You mentioned in your interview with 3D World that you'd like to have one, and there are certainly a large number of PD Imagine objects available, so what happened?*

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AH: I'm sure that there will be one available. Since that whole area of LightWave is modular now, it's possible to add new converters without requiring an entire program upgrade. John Foust is the one who actually implemented this system, and I think he'll be producing lots of new modules in the future. Currently, plans are to include converters for Sculpt, DXF (AutoCAD), 3D Studio, Swivel 3D, and Wavefront with the 2.0 upgrade.

AVID: What is your favorite new tool in 2.0?

AH: That's a tough question...it's hard to decide on just one...

AVID: Well, let's put it this way: What 2.0 tools are you experimenting with the most at the moment?

AH: Well, I used the multiple morph targets on that walking character. Also, the advanced spline controls are extremely useful...oh, the automatic image map sizing! That's a good one!

AVID: Does that work with spherical

and cylindrical maps as well?

AH: Oh, yes! One of my very first tests of the feature was loading the pop can and wrapping a label around it. It fit perfectly, and I didn't have to type in any numbers at all.

AVID: Do you get much mail from users suggesting new features? How much weight do you give them when creating new versions of LightWave?

AH: I do get a lot of mail from users asking for various things. I add them to a list I have of new feature ideas. It's a VERY long list! Most of the features I've added to 2.0 have been from user requests. Of course, NUtopia is responsible for a lot of them.

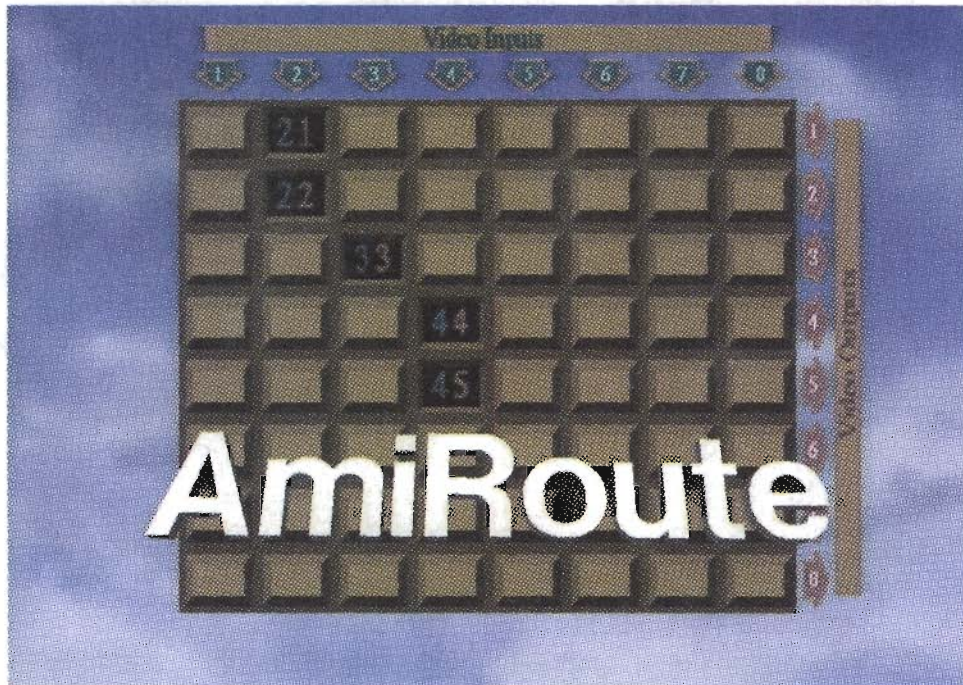
AVID: Tell me how you get your metals to look so metallic, such as the car turning a corner in one of the early demo tapes.

AH: The key to metallic surfaces is reflection mapping. The basic formula is to use a low Diffuse level, a high Specular level, and a high Reflection

Map level. Then either leave the Reflected Image set to "none" and use a gradient sky and ground backdrop, or use an interesting black and white reflection map image like the one I'm including with 2.0. To get gold or copper, make the surface color yellow or orange and turn on Color Highlights. Adding a fractal bump map that is highly compressed in one axis results in a nice brushed stainless steel effect. There are examples of all these effects in the new Phone Book.

AVID: It seems that your animations use a lot of texture maps. Do you feel it is better to use texture maps, or add more polygon detail?

AH: Texture maps are great! Just look at the Revolution scenes I did or Ron Thornton's animations on the 2.0 tape. A lot of the details in those animations are due to texture maps rather than modeling. You can make details faster in a paint program than in any modeler, and images are easier to modify also. It's important to model enough detail with points and



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polygons, but you need textures to really make things look natural, with dirt, rust, weathering, nicks and scratches, and so on.

AVID: *There are a few features that would be nice to have when working with hierarchies. Things such as the ability to do a "reverse parent rotation" and the like. An example would be the Mannequin object that is making the rounds in the PD. If you bend the legs to place him in a sitting position, you bend from the waist. When you straighten the legs to make him stand, his feet move as you lose the "naturalness." If it were possible to say, basically, "Don't move this foot, no matter what, but move the torso.", it would be much easier to animate. Is there any possibility we'll see items like that soon?*

AH: That whole area is pretty complicated. It's sometimes called "inverse kinematics", and the math involved can be very tricky. I've thought about working on it, but I don't know when that will happen.

AVID: *After much flopping back and forth, ray tracing actually made it into the 2.0 release. What was it that made this feature so difficult to add?*

AH: Actually, it turned out not to be so terribly difficult...I got it done in a weekend. One of the more complex parts was making it work properly with LightWave's generalized polygons, which are not necessarily triangular and can even be concave and have holes. Most ray tracers take the easy route and work only with triangles, or convert to triangles internally. Also, integrating the ray tracing with Z buffer rendering was a challenge. What that means is that LightWave only traces rays from the objects that need them (mirrors and refractive transparent surfaces), saving rendering time, and you can even mix reflection mapped and ray traced objects in the same frame. I'm proud of that feature since I haven't really seen it anywhere else.

AVID: *LightWave 2.0 can now load Framestores, according to the upgrade information. Is this as a backdrop only, or can they be used for mapping as well?*

AH: Both...they can even be used in image sequences.

AVID: *Could you explain the difference between pixel blending and anti-aliased image mapping, both of which are in 2.0?*

AH: Pixel blending is a feature that interpolates colors between image map pixels. It is primarily useful when image mapped objects are close to the camera. In most rendering programs, image mapped surfaces seen close up exhibit a mosaic-like effect, where each pixel in the map looks like a sharp edged rectangle on the screen. Pixel Blending gets rid of that. Texture anti-aliasing is not really the reverse, but sort of - it solves the problems that can occur when a texture mapped surface is seen from far away. You'll often get moire patterns, or a shimmering look in animations, due to a form of aliasing. It happens a lot with texture mapped grounds, especially near the horizon. LightWave 2.0's texture antialiasing option solves that for the most part. I'm proud of that feature too - it's common on high-end systems, but rare on the desktop.

AVID: *Can we hope to see any controls for moving or scaling backdrop images in the future?*

AH: You mean like super bitmaps?

AVID: *Well, that would be nice, too, but I was thinking more along the lines of being able to shrink an image down and place it so that it doesn't completely fill the background.*

AH: Hmm...OK, I'll look into that. Todd is using a giant image mapped cylinder as a sky backdrop in his latest piece. His skies look really good because he uses a lot of scanned-in air-brushed artwork. Jim Robinson used a similar technique to project exteriors around the windows of the room in his bee animation.

AVID: *The objects that are included with 2.0 look to be of substantially higher detail level than those included with 1.0. Where did they come from?*

AH: Many were submitted by users. There are a few from Ron Thornton...an entire space scene from him, including his image maps. There are also a number of very detailed objects from a company called Viewpoint.

AVID: *Were you satisfied with the*

objects which were included in both versions?

AH: Many of the original Phone Book objects were designed for speed and memory efficiency rather than detail. The Kid did most of those.

AVID: *The Kid?*

AH: Yeah, that's what we call him. He's a young guy who modeled them all without the benefit of having LightWave (he used VideoScape to render them). I then went in and edited them a bit. I also made a few of the objects in the original Phone Book myself.

AVID: *Which ones?*

AH: I made the railroad station, the pencil, the floppy disk, the palm tree, and a few others.

AVID: *Why is it that most animations just "feel" computer-generated? Is there any way around it?*

AH: Some of the more common causes of that computer-generated look are unrealistic motions, aliasing artifacts, and surfaces that are just too clean and smooth. LightWave provides tools to solve all those problems. Beyond that, there are many subtleties in the real world that most rendering programs just don't address at all. Things like indirect lighting - light bouncing off diffuse surfaces like walls onto other surfaces. Or dispersion - the fact that different wavelengths of light refract by different amounts (the cause of rainbows). One big problem is simply the tremendous complexity of the universe. Just look at any real forest or city and think of how many millions of polygons it would take to faithfully represent all that!

AVID: *It seems that LightWave is the most popular part of the Toaster. How do you feel about that?*

AH: Well, I'm very happy at the acclaim it has received, of course. As you know, the Toaster wasn't originally going to include LightWave - NewTek decided to add it to the package a few months before the first units shipped. Now, LightWave is one of the major selling points for the Toaster!

AVID: *Do I sense you are trying to avoid saying "I told them so..."?*

AH: Yes, I'm trying to avoid that! (laughs)





It's 1992, AVID readers. How long does it take you to write the correct year in your checkbook after the New Year? Well, get in practice, because this year promises to be a good one for Amiga products. I am seeing the Amiga's name pop up in the most unexpected places, in fairly esoteric video and educational trade journals, on TV, even in newspaper commentaries. It's as if the world is finally catching on. Of course there are a handful of sour folks abandoning ship as well, but they seem to be in the minority. Given the depth of the recession, the recent move by Commodore to up the prices of its product line seems to be a bit premature and ill-timed. In order to remain competitive with the Big Blue Apple, shouldn't prices be moderated even more? Oh well, Commodore's marketing "strategies" remain a mystery to the rest of the world.

Several letters made their way to my

ice enclosed Vermont mailbox in recent weeks. I would like to especially thank those who wished my family and myself holiday cheer, and would like to send best wishes back to all of you. Remember, this column was generated in part to deal with your concerns, so if you have Amiga specific questions, please drop me a line:

R. Shamms Mortier
15 Rockydale
Bristol, Vermont 05443

"Independence Day"

That's the name of a beautiful book by

Peter Green and Alan J. Brightman, PhD., sent to me by Deborah Sakuma. Ms. Sakuma, as you may remember, is a person who is involved with a California organization called the "Disabled Children's Computer Group" (415-841-3224). It's a book put out by Apple Computer, and is well worth any Amiga person's purchase (ISBN: 1-55924-352-X. Price: \$12.00). The book relates methods and suggests alternatives that developers should be aware of as far as developing helpware for the differently abled. There must be some AVID readers out there who might be interested in developing Amiga software that could be used in this area. Contact Deborah for more specific advice and suggestions. Thanks for the book, Debbie.

Cries Answered

Two issues ago, I reported a Toaster problem being experienced by a fellow Amiga video person ("Burned Toast"), and suggested that any of you out there in the big unknown might want to offer some suggestions to him. The problem concerns jittery grabs from the Toaster, so even though this letter is one possible solution, others may also send in comments. The letter is from Martin Diaz Munoz of Tuscon, Arizona, and is reprinted here:

"I have a solution to the Burned Toast problems that the NewTek Video Toaster has been causing. I have been working with a Toaster for about five months. I recently experienced the same problem described in your column. All of the pictures that I was trying to FrameGrab seemed to be out of sync. There was a strange vibration in the image and lines going through it. Hoping that it was a software error, I reloaded the Toaster into my hard drive, but the problem was still there. I replaced all the cables, but no luck. I checked all of the connections. While

looking at the Toaster after removing the cover, I noticed a small screw which was located just above the "T" on the word "Toaster" written vertically on the card. I used a small screwdriver and turned it, and corrected the sync problem. It appears the Toaster loses sync once in a while, and the screw can be turned until the lines across the image are gone and the vibrations stop."

[Editor's Note: NewTek does not recommend that this adjustment be made by the end user. Qualified video technicians with appropriate signal testing equipment should be consulted.]

Thanks, Martin! If this works, you will have made an Amiga peer very happy (I'll report on the results next issue).

Wedding Bells

Having reviewed Patrik Beck's "Wedding Series" of animations two issues ago, he updates my information by stating that brand new additions are on

the way. He also has a great demo disk for interested Amiga wedding videographers. Contact him at: Electric Crayon Studios, 3624 North 64th Street, Milwaukee, WI 53216, or call (414) 444-9981.

A Pro

Otto VonRuggins has one of the most interesting business cards this reporter has ever tucked in a wallet, announcing him as the Master of the Arcane. I don't know about that, but I do know that his work can be seen on volume one and two of the Amiga World Animation Videos ("The Oliver Twist" and "Distant Star"). He also is a master MIDI artist, and combines both sound and video in his work. He lists DPaint, The Director, the A-squared Live package, and Elan Performer 2.0 as his favorite software packages. For hardware he uses three Canon A1 HiBand 8mm recorders, a SuperGen encoder, and a Sony EVO 9700 HiBand 8mm editing deck among other equip-

ment. He says that "while I am only scratching the surface, my Amiga video exploits to date have certainly done much with minimal resources...". To contact him, write:

Otto VonRuggins, 6618 Ovington Court, Brooklyn, NY 11204.

Presentation Master

In a future issue of AVID, I will be taking a long look at Oxix's "Presentation Master Software", and will probably accompany that with an interview of its creator, the respected Gary Bonham (who invented the ANIM animation format among a host of other Amiga products and processes). Presentation Master is a very serious product which has been in development for over three years, and addresses the needs of Amiga DTP and DTV users, especially in the business presentation community. It's an astounding piece of software (and comes on 13 disks!). I had a long and informative

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conversation with Mr. Bonham, and found him to be a most knowledgeable and gracious person, and was happy to know that his Amiga adventures continue. One thing I can tell you is that there will be a new version of ANIMagic in the future (summer of '92?). I am always amazed by how often peoples' names seem to be intertwined with their vocational pursuits. BON-HAM...BON means "good" and HAM (of course) relates to the Amiga's HAM mode. With a name like that, how could he help but become one of the Amiga's top developers? [Editor's Note: What's your read on the name PLANT?]

PROFILLS

I received and tested the JEK Graphics package "ProFills" Volume 1 in the recent weeks. I used in conjunction with the DCTV Paint program from Digital Creations, and was most pleased by the results. ProFills presents you with a WB 2.0-like screen, full of appropriate loading, resolution, and modification gadgets that are all used to help you create very sharp and colorful IFF backdrops. The software works in both NTSC and PAL, and also supports maximum overscan. The fills use color registers 10 to 15, so that ColorFonts (which usually use registers 1 to 9 in Hi-Res) can be placed over the backgrounds. Screens are generated in two seconds or less! This is software that all Amiga Video users will want to have permanently installed on their hard drives. Contact:

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Price: \$49.95

Dear Doctor

Another missive received in the mail was a postcard from Ed Schaefer of Irvine, California. He writes...

"I look forward to an in-depth review of REAL-3D Pro 1.4 as promised in AVID a couple of months ago. It's more powerful than Draw-4D Pro (ADSPEC Programming), and will still be so when the 2.0 version of that software comes out in July. I like DCTV but it should offer RGB too...watch for ColorBurst (the de-

funct M.A.S.T. corporation) successor "OpalVision" with 800 x 1024 resolution, realtime animation, 24-bit RGB and more...coming from Centaur Software at a cost of about \$700.00."

Well, Ed, there's no doubt that I, like you, have my favorite Amiga software packages. I think it is very unproductive, however, to say this or that package is better than another, especially considering the group you call to our attention. No creative person should buy Amiga 3-D software because of its power, or even its comparative features, but only because they feel that package will help them in their creative work. I have seen 2-D animations done with software that is no longer available that moved me, and I have seen very boring "so what" creations made with high-end 3-D packages. I rue the day when creativity is so tied to the "power" of a tool that the story becomes neglected. The software you mentioned is wonderful Amigaware, and I trust you and others are using your favorite package to share your creative efforts with others. As to comparisons, why don't those charts that pretend to compare products ever have categories like "ease of use", "clear instructions in the manual", "service orientation of company", "user suggestions taken seriously", and a host of other categories. Use the Amiga software that will do the job for you. More than likely, if you are an experienced Amiga-video creator, you will own and use many more than one of these top-of-the-line products, and read all of the reviews that reflect upon their strengths and weaknesses.

As for Centaur Software's impending release of OpalVision, I called them and spoke to Abe Moub (213-542-2226). He said that OpalVision was going to be an upgrade and fix for only the units (about 95) bought through Centaur, and had no idea of how or if the new package would be targeted to other ColorBurst users (like myself) who purchased the product directly from M.A.S.T. That's really too bad, because everyone deserves access to getting their money's worth.

Questions

I will, in the near future, send a list of interesting questions to about 50 top

Amiga developers, and report the answers in columns spread through the AVID year. Here are the ones I have so far. Write me if you want to see any altered, revised, or added to:

1. How will the merger of IBM/Apple effect your work?
2. Should Commodore do anything to address this merger?
3. What are your general thoughts on that merger?
4. What is the Amiga configuration you work with?
5. What is your deepest Amiga hardware fantasy?
6. What should the Amiga 4000 look like?
7. What other software (besides your own) are you most impressed with (Amiga only)?
8. What software products on other platforms would you like to see made available for the Amiga?
9. What about Commodore being bought out by another company?
10. What video formats do you address with your Amiga gear?
11. What problems have you had in addressing video with the Amiga?
12. How important is the Toaster to your operation and to Amiga marketing in general?
13. With what Amiga software do you find the Toaster incompatible?
14. With what other hardware is the Toaster incompatible?
15. What is your opinion of the following: DCTV? HAM-E? ColorBurst?
16. Do you see future 24-bit boards being more integrated with the Amiga operating system (which ones and why?)?
17. Should the Amiga community continue to rely on third party developers for 24-bit graphics and 16-bit sound?
18. Should there be a standard file format for Object Files?
19. What are your thoughts concerning a new Font format with built in anti-aliasing for all Amiga Paint and DTP software?
20. What should be done to make the stock Amiga faster?
21. How important is it that Amiga software stick to the standards set out?
22. What additional input devices



would you like to see for the Amiga?

23. How should the Amiga's sound capabilities be enhanced?

24. How should the multi-media capabilities of the Amiga be promoted further?

25. What products (hardware and software) are missing from the Amiga's multi-media approach?

Other Stuff

If you are interested in issues of computing and health (as you should be), then send for a pamphlet called "Computers and Health" from University Computing Services, Department of Risk Management, University of Vermont, Burlington, Vt. 05405. Send an SASE.

Books! Video books of all kinds. The Video Bookshelf, Knowledge Industry Publications, Inc., 701 Westchester Ave., White Plains, NY 10604. Free Catalog.

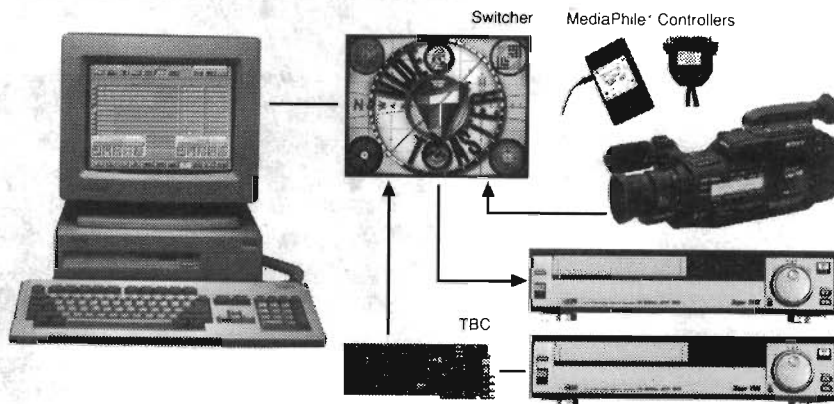
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New features in Quarterback 5.0: Integrated Streaming tape backup, Compression (Hooray!), WB 2.0 support, Full ARexx port, and more. Upgrade price not announced, but new it's \$75.00. Central Coast Software, Division of New Horizons Software, PO Box 164287, Austin, TX 78716. (512) 328-6650 or FAX: (512) 328-1925. And speaking about New Horizons Software, their popular ProWrite 3.2, Flow 3.0, DesignWorks, and ProFonts will soon be appearing on a CD-ROM disk for the Commodore CDTV unit. No word yet on cost, but this should be most well received.

ASDG did release its "Charityware" in time for the holidays. It's free to ASDG customers, but any donations you might want to send are targeted to the American Cancer Society, The American Red Cross, or the MDA.

That's all for now. See you in ROMulan space. ENJOY (and write)!

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Doug's

Deluxe Paint IV

Tips#4

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Welcome to Doug's Deluxe Paint IV Tips. This time, we'll look at Deluxe Paint IV's Palette requester and its cousin, the Ranger. The Palette requester has changed a lot since DPaint III, but once you know how to use it, you'll find some definite advantages.

The Palette Requester

The Palette Requester, or the Mixer as it's now called, is a passive requester, meaning it doesn't shut out the rest of the program while it's open. To open the Mixer, you can click on the background/foreground color swatch in the lower right of the screen, or press "p". Even though the Mixer is on the screen, you can still move to the drawing area and paint with all the tools. Deluxe Paint never lets you paint on an area that you cannot see, so trying to paint under the Mixer is moot. To turn off the mixer, click on the OK button found in the lower right corner. Another way to get rid of the Mixer is to press "p" again. There are subtle differences between these two methods, as I'll describe later.

Across the top of the Mixer are thirty two color registers. The registers normally show you the current colors in your picture, but this is not always the case. When Deluxe Paint went from III to IV and HAM was added, Electronic Arts had a problem with the palette requester. There seemed no easy way to give the user access to all 4096 colors the Amiga has to offer. So they decided upon adopting the 8-bit (256 color) method from Deluxe Paint II enhanced on the IBM. Electronic Arts added 256 color registers, or "inkwells", to the palette requester. This works fine in HAM, since you can choose any register, make a color in it, then paint with it. But in any other screen mode, DPaint limits you to certain registers and colors. If you are not in HAM mode, the Mixer requester will only let you paint with a small fraction of the entire 256 color palette. Confused? If you are, you're not alone.

Let's try to think of it another way, but keep in mind that this description is for when you are not in HAM mode.

Remember those paint-by-number kits you kept around for a rainy day? They were kind of like coloring books, except they told you what color to use. The kits had a bunch of outlined areas, each with a number in them. The kits came with a separate piece of paper that told you what color each number represented. By simply painting inside the numbered areas with the right colors, you could create a masterpiece. Deluxe Paint is a lot like those kits. A DPaint picture is simply a bunch of numbered areas. The Mixer is the sheet of paper that tells DPaint what colors to use in those areas. But in DPaint, the Mixer has 256 colors, while the actual painting has only 2, 4, 8, 16, or 32 colors. So, DeluxePaint takes the first 2, 4, 8, 16, or 32 colors in the Mixer and uses them in the painting. DPaint does not care what the colors are, it only fills the numbered areas with the first colors it finds in the Mixer. Let's say the first color in the Mixer is blue, and the second color is red. If we switch blue with red in the Mixer, everything that was red will turn to blue,

and vice versa. This is because DPaint paints by numbers, not color. Blue was color number 1. So DPaint filled every section labeled 1 with blue. When we changed color 1 to red, DPaint filled every area labeled 1 with red.

HAM mode works a little differently. HAM is a special case that allows you to paint in as many colors as you can mix. The key is that HAM is not a paint-by-numbers situation like the other modes. HAM actually mixes colors to get all the shades. Because of this design, you cannot modify any color in the Mixer and expect to see it updated on the picture. Only the first 16 colors in the Mixer will work this way. The DPaint manual does a nice job of explaining how and why this works.

The Mixer requester allows you to mix custom colors for use in your pictures. To change a color, simply click on one of the colors in the mixer to select it, then move the R, G, and B sliders to the new color. The sliders represent how much Red, Green, and Blue gets mixed into the color. Red, Green, and Blue are primary colors in the additive color mixing system; you can create any other colors by mixing these three. When mixing with RGB, we are mixing colors using the additive mixing system. The RGB additive system is how computers and TVs normally calculate color. Mixing light (additive mixing) is quite different than mixing paint (subtractive mixing). But Deluxe PaintIV can simulate mixing paint as well. When using traditional paints, cyan, magenta, and yellow are used to mix colors. Try this:

1. Enter HAM mode, by selecting Screen Format from the Picture menu, then selecting the HAM button, then OK.
2. Call up the Mixer (The "p" key), and choose a color register that is NOT one of the first 16.
3. Use the RGB sliders to change that color to cyan (R:0,G:15,B:15), and paint a large spot on your screen.
4. Do the same as above with yellow (R:15,G:15,B:0), and Magenta (R:15,G:0,B:15), putting the spots of color so that they form a triangle, with yellow at the top, magenta at the lower left, and cyan at the lower right, making them all touch at the middle.

5. Pick yellow from the splotch by using the pick option (the , key), and select Mix from the Mode menu. Mix yellow on the edge of the two adjacent colors (cyan and magenta) thoroughly. Then pick cyan and mix the final edge. The three mixed edges will be Red, Green and Blue.

6. Mix all of the colors together in the middle. You should get black, or very close to it.

As you can see, when using the Mix mode we can use cyan, magenta, and yellow to get Red, Green and Blue. The Mix mode uses subtractive color mixing. Using the RGB sliders, yellow can be mixed from Red and Blue, cyan can be mixed from Blue and Green, and magenta can be mixed from Red and Blue. The RGB sliders use additive color mixing. This is why, when trying to mix colors in the little "Mixer" area of the mixer, the results are not as normally expected. It is easier to mix colors using light, hybrids of cyan, magenta, and yellow.

Clicking on the RGB button to the left of the sliders changes the button to HSV. The HSV button actually changes how the sliders work. When in HSV mode, the sliders change the current color's Hue, Saturation, and Value. The Hue represents the angle on the color wheel. That angle runs from 0° to 360°, although 360° is technically the same thing as 0°. The next slider is S, and means Saturation. This slider changes the Saturation and runs from 0% to 100%. The final slider, V, means Value, and changes the colors Value from 0% to 100%. DPaint rounds off on all the slider values, so not every notch on the slider represents an actual change in color.

The Hue slider is a great slider to use when re-coloring a non-HAM image. When the Hue slider is moved, the color slides through the color-wheel, moving down the spectrum. Let's say we have a picture of a car parked on the side of a dark alley. (The important part to remember about the Hue slider is that the actual luminance value will not change. This means a dark red will change to other dark colors, and light tones will stay light as the slider moves through the color wheel.) If we wanted to change the color

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of the car, while maintaining the dark tones that make the car look like its sitting in a shadow, the hue slider is the perfect choice. Don't let yellows fool you, true yellow (R:15, G:15, B:0) is a saturated color, and changing the hue can produce deep blues.

The Saturation and Value slider are great to lighten and darken colors. If you have a pure red (R:15,G:0,B:0), say, for an apple, and you needed a nice highlight color for it, using the saturation slider on a copy of that red will be perfect. Say you needed a shadow to be cast over that apple; using the Value slider on another copy of that red will work great. Remember that when using the Saturation slider on a color with a low Value, the results can look quite muddy. Experimentation with both sliders is needed to get satisfactory results.

The Ranger

The Ranger is a spin-off of the Range

button in Deluxe Paint III. The Ranger allows for creation of smooth gradations of color. Let's review what makes up the Ranger.

The Color registers, running horizontally across the bottom of the screen, should be familiar to you by now. They work just like the other registers in the Mixer.

The Color necklace, as I call it, is a horizontal necklace-looking line with 32 beads on it. Any color can be picked from the color registers and be placed on a bead. This creates color ranges.

The sliders, laying across the bottom of the screen, control the dither amount and random factor of the resulting ranges.

If you are a user of Deluxe Paint III, and the Ranger seems needlessly complicated, then here's how to create ranges that work exactly like the ones in DPaint III:

1. Find a range you won't mind

overwriting by sliding the range slider (on the left edge of the Ranger). The keyboard equivalents to moving through the ranges is alt [and alt]. Press the Ranger's clear button to wipe out the existing range.

2. Click on your first color to pick it up in your mouse. Lay it in the first bead on the necklace. Make sure that the range starts in the first bead of the necklace. If it doesn't, DPaint can lockup while using the shade mode (and possibly other modes), and you'll lose your image.

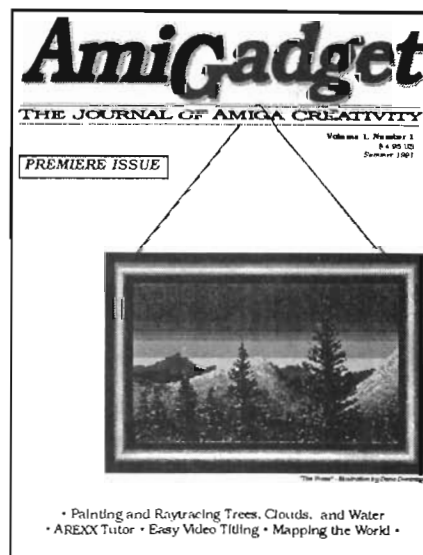
3. Press the "[" key (for left), or the "]" key (for right) to move through the color registers. When you do this, your mouse pointer will change into another block of color. Slap that block of color down right next to the first. Make sure there's no empty bead on the necklace, or DPaint will try to fill it with its own chosen color when you go to use the range.

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4. Repeat process number 3 until you've laid down every color you want in the range. Now that you have that done, you can use this range like a normal DPaint III range.

Some people want to make a spread from one color to another in the Mixer. They take the first color in the spread and stick it in the beginning of the range, and stick the second color on the end, and expect DPaint to use all the colors in between; but that just won't work. It seems that when DPaint calculates spreads through the Ranger, it uses an RGB spread, which tends to go from one color directly to another. But, the Mixer creates HSV spreads, which like to pass through other colors of the color wheel. In 32 color lores, with the default palette, try this:

Create a spread in the mixer over the existing shades of grey that are in the default palette, with true green

(R:0,G:15,B:0) on one end, and true blue (R:0,G:0,B:15) on the other. Once done, you'll see that the spread will run not from green to blue, but from green to cyan to blue.

After making the spread, move into the Ranger (Ctrl-r), and clear out the range. Then put the true green on one end, and the true blue on the other. Click on the Show button. You'll notice that below the color necklace, in the gradient preview box, the colors will not run from green to cyan to blue, but from green to what looks like a dark teal, but is actually a dark cyan, to blue. The actual preview above the Ranger will have a total of four colors in it. Only two of those four colors are in the spread we created in the Mixer.

I think you'll agree that results don't make sense. But all is not lost. If you really want the spread of colors you made in the Mixer to show up in the Ranger,

you can use the technique described above for creating DPaint III-type ranges. If you want the colors used in the gradient preview box to be in your palette, you can use the pick option (the ";" key) to pick colors out of the gradient preview box for placement in the palette.

I think I learned more about the Mixer and Ranger requesters than I wanted to! But if you want to know more about the Mixer and Ranger, Vol. 2, Issue #6 (October 1991), Vol. 2, Issue #7 (November 1991), and Vol 2, Issue #8, (December 1991) of AVID have other installments of Doug's DPaint IV Tips with assorted palette tricks. They are available as back issues.

I'll be back with more detailed information on other sections of DPaint IV in a future issue, so, in the meantime, keep on DPainting!



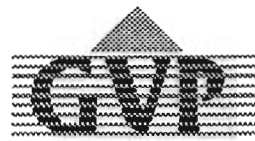
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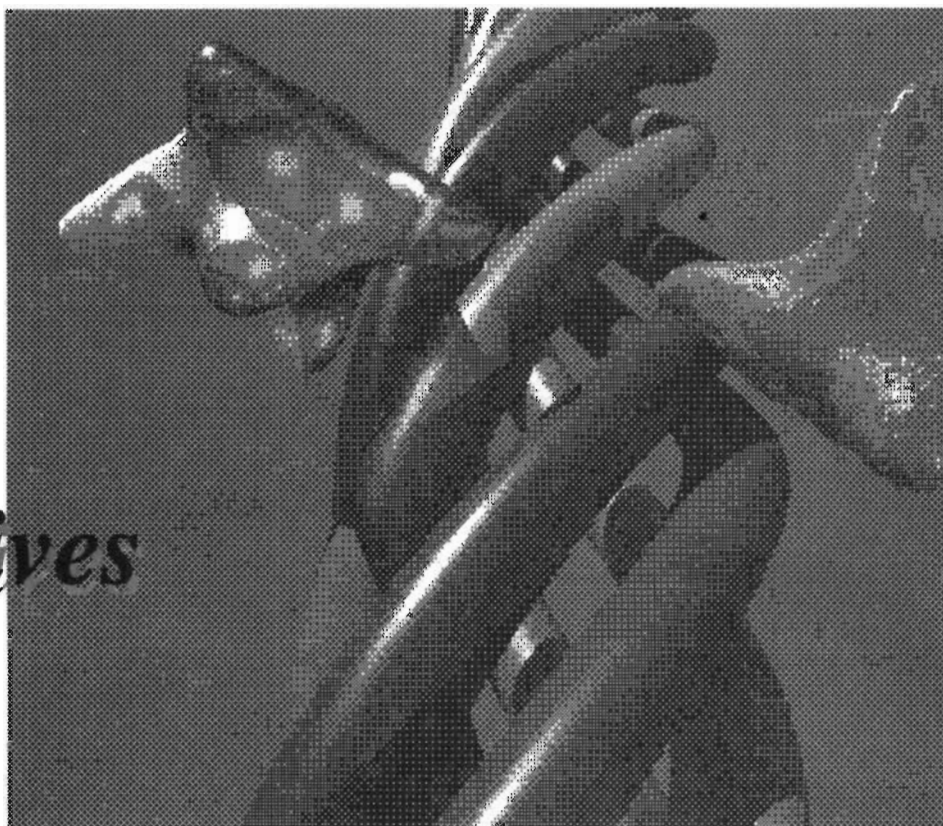
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3D *Perspectives*



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Welcome to the second edition of AVID's new 3D Perspectives column. This column is for Amiga videographers who use three-dimensional software to create computer animations, whether for commercial or artistic purposes. This exciting and vibrant new art form is breaking new ground in graphic expression, and if you get involved now you can help define the visual language of the medium. But you can't master the medium until you learn the tools, and the primary function of this column is to help you do so. If you have any questions regarding the Amiga, 3-D graphics, and video, please address them to me at:

David Duberman
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I'll do my best to respond to all queries, whether by mail or via this column.

A Strange Problem

There's been a virtual torrent of new 3-D-related products in recent weeks, but

before I get to that I'd like to recount an interesting experience I recently went through. As I mentioned in last month's column, I use LightWave 3D, the Video Toaster's rendering program, to create animations; but because the Toaster can't display animation (yet) and I don't have a single-frame VTR (yet) I use DCTV to display and record 24-bit animations. The Amiga's standard RGB port isn't connected to a monitor because I use ICD's Flicker-Free Video (FFV) with a VGA monitor, so I leave DCTV only plugged into the RGB port. Incidentally, the aforementioned is an inexpensive combination I highly recommend for Toaster users, as the Toaster occupies the special video slot that would normally be occupied by a flicker fixer card. FFV installs instead in a chip socket. LightWave 2.0's interface is now in interlace, so it's important to get rid of that flicker to avoid eyestrain during long work sessions. As mentioned in Sheldon Leemon's great review of FFV and the Commodore flicker fixer, the 2320, in a recent AmigaWorld, FFV isn't quite as sharp as its competition, but it's certainly adequate.

I noticed in many cases that frame buffer images generated by LightWave contained visual anomalies, that is strange colors in parts of gradients. For example, if in LightWave's background section you set the zenith, sky, ground, and nadir to four different colors and render that, you get two vertical gradients; one on the top half of the screen and one on the bottom half. With a blue sky gradient and a brown ground gradient, the default settings in LightWave 2.0, I would often get a strange irregular horizontal green band just above the horizon and a purple one just below the horizon. These only appeared in images rendered to or loaded into the frame buffer; images saved as IFF24, what LightWave calls RGB, were always fine.

The problem was intermittent even though DCTV was always plugged in. Yes, you guessed it; after attempting several other fixes and determining that the Toaster wasn't defective, I tried unplugging DCTV and the problem went away. The specific point of the story is that if you're getting strange-colored bands in your LightWave images, try

unplugging your DCTV. The general point is that if you're experiencing strange intermittent glitches in anything you're doing with a computer, try removing possible culprits, especially things plugged into the computer's ports, one at a time.

The New Products

The products we'll cover in this month's column are *Imagine 2.0*, *LightWave 2.0*, *Male & Female Objects*, *Vertex*, and *Animatrix Modeler*. The first two are updates of existing modeling/rendering programs and the latter two are new modeling-only programs by maverick 3-D mavens who feel their products can better fulfill specialized modeling needs than the more general-purpose programs.

First a brief look at *Imagine 2.0*, which is currently going out to registered owners who sent in the \$100 upgrade fee, and is expected in stores shortly. It's a major revision with numerous improvements, and the manual is far more complete, written in Impulse chief Mike Halvorson's inimitable chatty style. The first change you notice about the interface is the attractive gold 3-D-style button gadgets. The next thing you notice is the annoying drop shadows for menu text that make it hard to read.

Most improved is the Forms editor, which lets you select several cross sections of an object for alteration, interpolating between these. This and other changes make the Forms editor a mighty modeling tool, the likes of which can be found nowhere else. Also worthy of mention is the new built-in configuration section called *Preferences*. This ingeniously-designed interface lets you customize many aspects of the program such as the new user gadgets. These are user-configurable buttons that you can set to perform any commonly-used function—onscreen function keys for avid mousers.

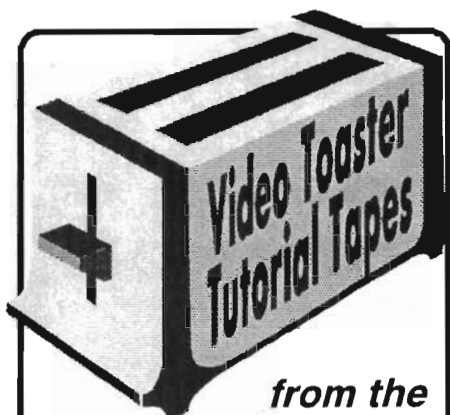
A couple more gripes: First, and admittedly minor is the fact that the program still doesn't run if the title-screen picture *Imagine.pic* or an identically-spec'd image file isn't present. Incidentally, the format is 704 by 480 pixels in high resolution with 16 colors. If you create a one-color image of that format in a paint program and save it as *Imagine.pic*

in *Imagine's* directory you'll save valuable seconds every time you load the program. Second and more significant is the continued lack of an interactive camera view in the Stage editor. Whenever you move, rotate or scale an object in, you must exit from that mode before you can see the change in the camera view.

All in all, though *Imagine 2.0* is a terrific program and well worth the price, which is \$450 list. That may seem like a lot to some, but 3-D software with far less power sells for thousands of dollars on other computer platforms. The Amiga market is lucky to have people like Mike providing such great software, and we should support them to our best ability.

A set of human-shaped 3-D objects called *Male & Female* is available from Earthquake Productions in *Sculpt VideoScape* in five formats, including *Draw4D*, *Draw4D Pro*, *Sculpt*, *Turbo Silver/Imagine*, and *VideoScape*, which can be loaded by *LightWave*. Each figure is present on the disk in parts and in whole. As befits the more complex sex, the female has 23 parts, and the male only 19 including thumbs and ears. If you're into gender-bending the corresponding parts such as left upper leg of either sex have the same structure for morphing. While they're not the most elegant-looking of objects and you're required to create the hierarchical setup, the price is right and this product can save you a significant amount of modeling time. Coming soon from Earthquake Productions are three new object sets; *Space Craft*, *Desert*, and *Interior*.

Animatrix Modeler is a new wireframe editor from Dubois Animation which offers "hands-on modeling" and to a great extent lives up to its claim. When the program starts you're presented with a perspective view of a ground plane with the four sides labeled N, E, S, and W for reference. You use the arrow keys and four keys on the numeric keypad to adjust the view. The rest of the commands are available from button gadgets arranged in a single row at the bottom of the screen. Clicking on the Disk button displays buttons to load an object, save an object, delete an object file, and select the format. Object file formats which can be



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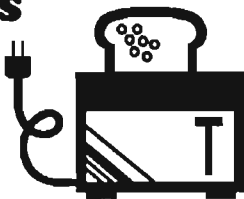
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loaded and saved are Animatrix and Sculpt, and the program can also save in Turbo Silver (not Imagine) format. While Imagine can normally load Turbo Silver objects, for some reason it can't load objects saved in this format from Animatrix Modeler; they must be loaded into Turbo Silver and then saved again. You can also use good old Pixel 3D 2.0 to convert the objects.

The Options menu lets you set various display options, and the Select menu lets you select objects, faces which are then shaded, and/or points, and combine objects. Points can be selected by clicking or by drawing a rectangle. Then you can effect interactive transformations such as scaling, rotation, and translation. This is where the program's interactivity shines; you really do get a hands-on feeling with lightning-fast response, but don't expect miracles with complex objects if you don't have a fast accelerator. Editing commands include the ability to join points, build triangular faces, subdivide edges or faces, and extrusion. Other commands let you delete objects, faces, and points, and determine the maximum number of faces permitted by your computer's memory configuration.

The \$99.95 list price would be a good deal if it included a free upgrade to the next version, which will no doubt add some much-needed polish to this otherwise fine modeler. Try to get a demonstration at your local dealer if they stock it; if not, ask them to order it from their distributor, and give them the phone number listed below for the distributor to call. Contact Dubois Animation or check your local BBS or PD collection for a demo version.

I recently downloaded a demo version of the shareware object modeler **Vertex** by Alexander Deburie. All modeling functions are intact but you can't save objects. The full working version with documentation costs \$30, or \$50 including eight free upgrades. This mathematically inclined modeler features a well-designed multi-input interface with plenty of interactive features. You can load and save objects in a variety of formats including Sculpt, Turbo Silver/Imagine, LightWave, Wavefront, and

GEO. The program converts all polygons to triangles upon loading, and the manual includes an interesting discussion on the difficulty of doing this in special cases.

There is but a single full-screen view of your workspace in Vertex, but you can easily rotate and move this interactively. You can work on your objects in a perspective view or in any of the three standard orthogonal views; top, front, and side.

Because the author was frustrated by the difficulty of selecting and deselecting specific vertices in other programs, he has implemented a variety of ways of doing it here. You can select or deselect by vertex, with a drag box, swapping selected for deselected and vice-versa, from a menu of named sets of vertices, all except a named set of vertices, all, and by any binary on-off pattern. This last method is totally unique and can be used for some very interesting effects. Also unique is that saved objects' vertices retain their selected or deselected states.

Once vertices are selected they can be scaled, rotated, and translated as in other programs. You can also apply bezier curves and the Multiply function, which is best described by Mr. Deburie in his manual:

"It enables you to plot any mathematical formula to your 3-D objects. Multiply includes full support for trig functions, a random number generator, scaling by axis, and much more. This gives Vertex an open end approach to curved surface generation."

The more standard object-generation techniques are also here, including lathe, extrude, duplicate, and more. Built-in shapes consist of cube, pointed star, ring or torus, grid, and sphere. You can also add faces three points at a time. The interface looks good and handles well. Mouse-based operation is intuitive and the menu pops up at your pointer anywhere on the screen, not just at the top. All commands are available from the keyboard, or even via remote control, as Vertex is ARexx compatible. If you're interested, contact Mr. Deburie at the address listed at the end of this article.

LightWave 2.0

As I write this on January 22, last-minute tweaking of LightWave 3D and Modeler is ongoing. I've been beta-testing both and can honestly vouch for the fact that the eager anticipation with which these programs have been awaited by Toasterites is well justified. LightWave does a great job of ray-tracing, and you can turn reflections and refraction (as well as shadows) on and off independently. If you've loaded several objects and changed their surfaces, you can save them all back to the original files with one command. And you can load a scene's objects into a new scene. Objects can now have as many as sixteen metamorph targets, but all targets must be in memory simultaneously, which can limit object complexity.

Surfaces can now be saved and loaded as separate files, a major improvement. Also new in the Surfaces section is the Sharp Terminator option which eliminates the gradual fall-off of reflected light from a curved surface for more realistic lighting of planet objects. There's a new procedural texture called Underwater which animates very well. And for imported objects—supported formats now include Sculpt, AutoCAD, 3DStudio, Wavefront, and Pict as well as the standard LightWave, GEO and BGEO formats—with problem inward-facing polygons, you can simply double the surface which actually doesn't add all that much to the rendering time.

That's not all by a long shot, but Modeler has improved significantly as well. Incidentally, Stuart Ferguson, who designed and programmed Modeler, has recently joined Allen Hastings as a full-time Newtek employee, which is great news for the Amiga 3-D community. I'm really looking forward to Modeler 3.0.

Not to slight 2.0, which now has such advanced object-modification tools as a variable-size magnet, twist, shear, bend, and two kinds of taper, all of which are interactive and amazingly fast. Skin and Morph are powerful new object creation tools. Skin joins two or more polygons with a single segment between each, and Morph joins two polygons with a user-specified number of segments for

a gradual change.

New object editing commands include Add Point, Remove Point, Split, Merge, Triple and Align. A terrific new lasso select feature, Stuart added just last week, lets you draw a freehand loop around points or polygons you wish to select. It just keeps getting better and better! We'll be covering these and other new features in months to come, with lots of tutorials, so watch this space...

So long for now!

Products mentioned:

Imagine 2.0

\$450 or \$100 for upgrade

Impulse, Inc.

6870 Shingle Creek Pkwy #112

Minneapolis, MN 55430

(612) 566-0221

Animatrix Modeler

\$99.95

Dubois Animation

1012 N. Chartrand Ave. #F

Edmond, OK 73034

Vertex

\$30 or \$50

Alexander D. Deburie

4189 Nickolas

Sterling Heights, MI 48310

Male and Female

\$34.95

Earthquake Productions
and Publishing

13351 Foothill Blvd.

Fontana, CA 92335

(714) 899-1800

Video Toaster/LightWave

\$2495

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- Dr. Mortier, Avid 1/92

"...the fonts look great when rendered."

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Well, it's a new year and it's time for a new byline. Welcome to the new tips column! I believe introductions are in order: My name is John F. Gross and I have the pleasure of being the resident graphic video artist for Alpha Video in Minneapolis, MN. I was disappointed, as I'm sure many of you were, when I discovered that James Hebert would no longer be writing a monthly Toaster tips column for AVID. It was a source of a lot of helpful information. I hope to fill his shoes (and they're big shoes!) as best I can.

As a daily user of the Video Toaster, I am constantly delighted by this amazing tool. Its ease of use and versatility has opened an exciting door for me into the world of video.

Whether you are looking to embark on a new career for yourself, planning to use the Toaster to make your existing job easier, or just plain using it for fun, I hope to present you with tricks, tips and techniques in this column that will make you a happier and more proficient user.

For this first article, I am going to offer a grab bag of hints and tips that I have found which cover a number of different features of the Toaster. I urge you to write and let me know what specific topics you would like to see covered in future columns or to share some tips of your own.

Hopefully, by the time you read this,

System 2.0 will be readily available and many of you will have upgraded or acquired new systems. If you haven't purchased 2.0 yet, I urge you to do so. I know you've heard it before...but it really is so much more than just a 'standard upgrade'.

We've all read about the great new features of 2.0, but I'd like to show you how you can easily incorporate these new tools into your everyday use of the Toaster.

Of course I'll also talk about System 1.0, as many of these tips are useful on any Toaster system. So, without further ado...on to the good stuff...

ToasterPaint

1) Ever need to cut a whole image out as a brush? Most people will choose the scissors and the rectangle tool and then try to get up into the upper left hand corner and draw out a large rectangle that encompasses the whole screen. This works and it's even easier if you turn the coordinates on (click on the button that tells you which mode you are currently in) but it definitely is not the easiest way. The best and quickest way is to click on the scissors tool and then press the w key on the keyboard (make sure it's a small w). After a few seconds, you will have a copy of the whole screen attached to your cursor as a brush (assuming you have enough memory - if you don't, the screen will just flash). The small w is the keyboard equivalent for 'whole screen' and by pressing this key, you are instructing

ToasterPaint to take your current mode, color and transparency settings and apply them to the whole screen as if you drew out a large rectangle. This is a great way for doing full screen range fills, colorizing the whole screen or darkening/lightening the entire image.

2) Where is the center of ToasterPaint's screen? If you're running 1.0, it's 368x by 240y (full image is 736 x 480). If you are running 2.0, you're looking at 376x by 240y (full image is 752 x 480). Sometime ago, I had to complete an assignment where I had to stamp approximately 50 different large text brushes exactly in the center of 50 different frames. Of course I did it the hard way by lining up my coordinates and then stamping it down in the center of each frame.

Long after completing this assignment (Isn't this always the way it happens?), I was reading the ToasterPaint manual and discovered that I could customize the keyboard equivalents that ToasterPaint uses. In looking over the commands you can assign to different keys, I noticed there was a command for stamping the cursor down at any given location. A simple text modification to a script file is all that is needed to enable the press of a key to automatically stamp a brush down in the middle of the screen. Any text editor will work for this task.

For those of you not familiar with

text editors I will give step by step instructions for making this modification:

a. The first thing to know is the name of the file you wish to edit. It is called \Bkeyboard.txt\b and is found in the ToasterPaint_Startup drawer located in your Toaster directory.

b. You need to open a CLI or Shell window on the Workbench to type in commands. You can get to the workbench from Toaster preferences by exiting the Toaster Software. If you are a Video Toaster workstation owner, you may need to look in the WB drawer on your hard drive to find the icon for CLI.

c. Double-click to open your shell or CLI window and type the following at the prompt:

CD Toaster/ToasterPaint_Startup and then hit the return key. If you get an error message, you either made a typing error or your Toaster drawer is located on another hard drive partition. If this is the case, first CD to that partition (CD stands for Change Directory). For example, if your toaster drawer is located on a partition called John, first type **CD John:** (don't forget the colon). From here you may continue with the above command.

d. Before you make any modifications to the Keyboard.txt file, it would be wise to make a backup copy just in case you make some mistakes and can't fix them. Type: **Copy keyboard.txt to keyboard.txtBACKUP** then hit the return key.

e. Now type **ED keyboard.txt** and press return. A new window will open up with the keyboard.txt file displayed for editing.

f. Use the down arrow to scroll the text until you come to a line that begins with a k. There will be nothing on this line except for the k. All the letters on the left correspond to the keys on the keyboard. To the right of the letters after a space are the commands associated with the key. You want to edit the line with the k because it does not have any commands associated with it right now.

g. Use the arrow keys to position your cursor to the right of the k. Make sure to leave a space. Type: **Pend 376 240** (if you are using Toaster 1.0, use 368 instead of 376). Make sure that Pend

starts with a capital P and that there is a space between the two numbers. This text will instruct ToasterPaint to put its "Pen Down" at the coordinates you typed in whenever you press the small k key. Since you used the center coordinates, that's where your brush will stamp down!

h. Once the text is entered correctly, you need to save the changes: hit the Escape key followed by the x key and then Return. You will then be returned to your shell window. To exit out of the shell type: **endcli** and hit return.

i. That's all there is to it! Go into the switcher, start Toaster Paint, cut out some type of brush and then hit the k key on your keyboard. Your brush should automatically stamp down in the middle of the screen.

3) Speaking of keyboard equivalents, it would definitely be in your best interest to learn as many as you can. They are a big time saver. A couple of good ones to know are: b (stands for brush - turns the scissors on) and j (stands for jump to spare - switches between two images loaded). The F4 key is the Undo key, while F5 is the redo key. Hitting the F10 key is the same as choosing the clashboard to render your page out to program.

4) This trick I found in the ToasterPaint manual. It has made my painting much easier: If, while you are painting with the left mouse button pressed down, you press the left shift key, the image will be 'attached' to your cursor. You can now move the screen around so it is easier to paint upon. When you let up on the shift key, you can resume painting from the same spot on the screen. This comes in very handy when you are painting near an edge and need to give yourself a little 'breathing space'.

CG

1) One of the best parts of 2.0 CG is the ability to load in a paint image to use as a background for text. Here's how to do this correctly:

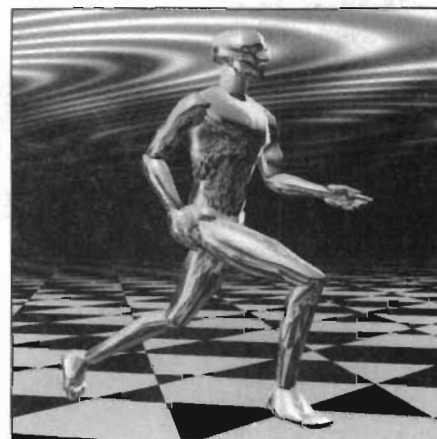
a. First go into Paint and load the frame you want to use as your background. Once it is loaded, return to the switcher leaving Paint loaded into memory.

b. Once you are back to the switcher,

enter CG and choose a framestore page type by hitting F1 and then F4.

c. Now you have to tell the CG to use the Paint background. This is done by choosing Alt-F3 to change background colors. When this menu appears cycle through background modes by hitting F2 until the icon changes to the paintbrush. Now press return.

d. You should now be returned to the normal icons and you can go ahead and type away on the screen. You won't actually see the text on the background image until you render this page out to the buffer. After you have rendered it out, you may need to move lines of text around to 'fit into' the background.



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2) Another great feature of the new CG is buffered pages. A buffered page is a key or a framestore page that is saved directly from the CG. When loaded from the switcher, a buffered page loads in as little time as it takes to load a normal framestore (which, by the way, is faster with 2.0)! The thing to remember about buffered pages is that they are saved into the current project that is loaded. This means that whatever project you have loaded when you save a buffered page is the same project you need to have loaded when you call the page back up from the switcher. If you create some buffered pages and some normal pages in the same book and then wish to save the project (and thus the book) you have to resave over the project that is currently loaded. If you type in a new project number/name and save it, the pages will save to the new project, but they will no longer be buffered and will have to be rendered out like any normal CG page. You can tell if the page is buffered by the little lightning bolt that appears next to its name in the name box. If you want to have a particular project that contains buffered pages, you should load or create that project before you save any buffered pages from the CG and then resave the project after saving the buffered pages.

"So How do I save a buffered page from the CG?" you ask. Simple - just press Alt-F9 and it will be saved into a drawer called Pages in your current framestore directory. Once it's saved, a lightning bolt appears in the menu strip to show you that it is a buffered page. You can only buffer framestore and key pages. If your key page only has one or two lines of text in it, you probably won't notice much of a speed increase by buffering it. If it contains a lot of text, however, you will definitely notice a difference.

3) If you have a lot of fonts in your Toaster fonts directory like I do, you have probably noticed how long it takes to scroll from the top of the list to the bottom while choosing new fonts to put in your book (I have over 400 fonts and it takes about 45 seconds!). You can now hold the shift key down while you are scrolling and the cursor will jump ten fonts at a time - very nice.

4) How many times have you been choosing a different font by pressing F2 and you pass the font you wanted? I do it all the time. Now with 2.0, if you hold the control key down while pressing F2 you go backwards through your font list!

LightWave

1) Of course the big news is that LightWave now supports raytracing. The options are found in the camera menu. You can trace shadows, reflection or refraction (or all three). It works great. If you are going to trace reflections, make sure you set a value for reflection map in the surfaces menu otherwise your surface will not reflect other objects.

2) Speaking of surfaces, I talk to a lot of people that have problems saving surfaces when they save their scene. The reason for this is that *surfaces aren't saved in the scene file*. When you save a scene, you are saving which objects are loaded, their motions, the number, color and position of lights and the position and motion of the camera. You also save the first/last frame, camera resolution and background colors. You *do not* save the surface values of the objects. To save surface values you must save the object from the object panel. It is a good idea to adjust your surfaces, save each object, and then save the scene. In 2.0, saving a large number of objects is made simpler by having a 'Save all objects' button. This will save all the objects using their current names.

3) The layout now uses keyboard commands for most of its functions. This is a tremendous time saver! You can select your view mode by pressing F1-F5. Edit items are chosen by pressing the first letter of the item you wish to edit: o for object, c for camera, l for light or v for view). You can cycle through the mouse functions (move, rotate, scale, stretch) by hitting the spacebar. You can cycle through frames by pressing the left and right arrow keys and cycle through different objects or lights by pressing the up and down arrow keys. Key creation is made super fast by hitting enter (or return), typing in the frame number and then hitting enter again. Finally, n brings up the numeric requester, s brings up the spline control requester and G brings up

the go to frame requester. By the way, you can use lowercase or uppercase letters for all these keyboard shortcuts.

4) Whenever you bring up any type of requester in LightWave (1.0 or 2.0) the cursor appears before the numeric values. You do not have to delete the old values before typing in new ones. All you need to do is type in your new values and hit return. LightWave will automatically clear the old values for you.

5) No longer do you have to know the size of a surface upon which you wish to wrap a texture. 2.0 has an 'Automatic Sizing' button that calculates the dimensions of your surface. The button only appears when you are doing an image map onto a surface. If you are using any of the built-in textures (wood, ripples, dots, etc.) the button does not appear. What I do is first choose an image map and select 'Automatic Sizing'. From here you can choose any of the other textures and the sizing values will be remembered. You will most often want to adjust the values down from the total size of the surface, but you will have a great reference point from which to start.

Modeler

1) Press the help key while in Modeler and you will get a listing of the keyboard commands. Every one of these is a time saver. Notice the j (for jump) and the w (for statistics - s was already used). If you have a point or points selected and place your cursor where you want to move them to and then press the j key, they will automatically jump to your cursor location (no need to select move).

I use the w key a lot for selecting similar polygons. Choose the Polygon Select button and press w. You will see a requester labeled Polygon Statistics. There are a whole bunch of different ways to select polygons here. It is very handy to toggle through the surface names at the bottom and then choose the '+' button next to the line that says 'with surface:'. This will select all the polygons using the name you chose. You can deselect polygons in the same manner by choosing the '-' button.

2) There are some great new tools in 2.0 Modeler. I'm going to share with you how to use some of the ones whose usage



perhaps is not apparent at first:

a. The Add Pnt and Rem Pnt buttons in the Polygon menu enable you to add or remove points from existing polygons. For these tools to function properly, you have to have both polygons and points selected. For example, let's add a point to an existing polygon: The first step is to make a point next to an existing polygon. You now have to choose select Polygon and choose the polygon, then choose select Point and make sure the point is also selected. Now choose Add Pnt and your cursor will change to a little arrow with the word 'to' attached. All you need do now is point the arrow at the edge of the polygon where you wish to add the point and click the left mouse button. The polygon will extend its edge to include the new point. Rem point works the same way. Make sure you have the polygon and the point(s) selected then choose Rem Pnt. Flash! your point is now no longer a part of the polygon. The difference between Remove Point and Cut is that Cut deletes the point while Remove just takes it out of the polygon.

b. In the Modify menu, we now have a magnet tool. Here's how to use it: Select magnet and place your cursor in one of the three views. You should see a crosshair surrounded by a box. This box represents the area of influence of the magnet. All points inside the box will be affected by the magnet's pull. If you don't see a box, your area of influence is probably too large. Use the numeric requester to resize it. Once you have your box placed in the three views the way you like, hold down the *right* mouse button and drag the mouse. You should see your object stretching out towards the cursor.

3) With 2.0, you can select points and/or polygons from the perspective view. You will notice that you can no longer rotate the object by holding down the left mouse button and moving it around. If you try that now, you will select points or polygons on the object. If you go to the modify menu and select move you can rotate the object around, but an easier way is by just holding the Alternate key down while you drag the mouse.

4) Here's a great tip I discovered by

accident: For about a year, I was making points by placing my cursor with the left mouse button and then hitting the return key to actually make the point. If you place your cursor where you wish the point to be and then hit the *right* mouse button, you will automatically make the point at that location. This really speeds up object creation.

Switcher

1) Program slices can be unloaded from memory by holding down the shift key and clicking on the slice you wish to unload. ChromaFX can also be unloaded, freeing up some more memory. By the way, this is how you unload modeler and/or LightWave.

2) If you have certain speeds that you always use for different effects, choose the speeds you use and then save the project. With both 1.0 and 2.0 Toaster, the speeds of effects are saved with projects.

3) There are four positionable effects on the 2.0 project. Their use is covered well in the manual but it's important to remember that the setups for these effects are also saved when you save a project.

4) You say that four positionable effects aren't enough? If you load the 1.0 Default project (which, by the way has all of the old effects), grids E and F are covered with positionable effects, all of which can be saved in a different position!

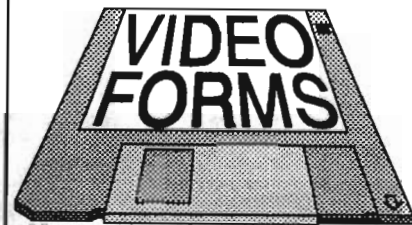
5) Effects can be executed automatically by clicking on them a second time after they have been 'loaded' by clicking on them once.

Well, I've pretty much used up my allotted space as well as my available typing skills.

I hope that I've given you a few tricks that will come in handy. If you have any tips or suggestions or have questions about using certain features of the Toaster, please write to me at the following address:

John Gross
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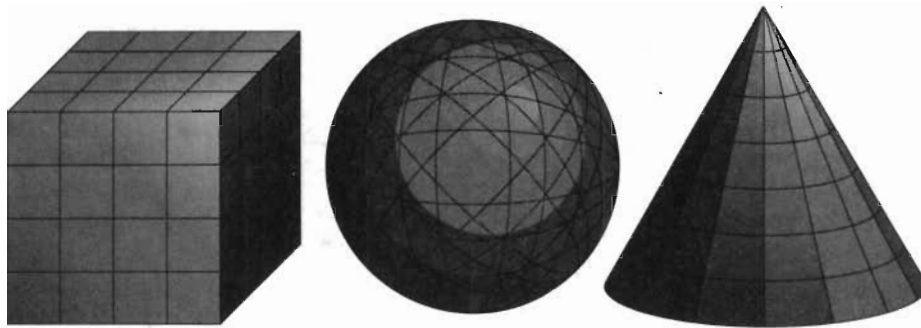
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OBJECT • LESSONS

3D Modeling Concepts

Part 3

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The previous two articles in this short series on object design discussed strategies for building three dimensional objects using any of the common 3D modellers for the Amiga. This final article concerns itself with an aspect of object design which is just as important as designing the geometry: defining the surface appearance of that model.

Surprisingly, the best models aren't necessarily the most complex. A good model design will use many tricks to add detail to itself without adding extra polygons. A complexly detailed model can have surprisingly few faces defining it. The trick is to intelligently use object attributes, algorithmic textures, and brushmaps to add character to your model.

Whenever you design a model, the last step is traditionally to assign the model colors, transparencies, and all of the so called "attributes" of the object. All renderers support assigning your objects a color, and nearly all let you define diverse parameters controlling the translucency, reflectiveness, shininess,

and index of refraction for the object. Many even let you assign different attributes for different parts of your model.

Another way of changing the surface of an object is called "brushmapping," where an image projected onto the surface of your model. These images can be anything from hand drawn figures done in DPaint IV to detailed photographs digitized on a scanner. It is easy to make something like a roadway sign. You just draw the sign in a paint program like DPaint, then map it onto a flat polygon of the right shape. These mapped images are sometimes called "Texture maps" in the professional world, which is somewhat confusing, since the word "textures" also refers to algorithmic textures.

Algorithmic textures are rules for the computer to follow to color an object. One of the "classic" textures is called "Checks" and applies a checkerboard coloration to the object. The computer doesn't need a brushmap or an explicit description of how to apply the checks, it just follows the built-in algorithm for

determining the appearance of the object. With the "Checks" example, the renderer just compares each position on the object with a latticework of cubes. If the location is in one of the "odd" cubes, the location is colored one shade, otherwise it is made a second color. Algorithmic textures can even make complex surfaces like wood and marble, or simple ones like a gridwork of straight lines.

These textures have user-controlled parameters (like the size of the checks, or color of the wood), but are still not as customizable as a brushmap. They still have many advantages over brushmaps, since they usually take VERY little memory and are continuous no matter how large your object. Brushmaps usually take a LOT of RAM (a 24-bit picture at high resolution takes up about a megabyte!) and there will be sharp discontinuities at the edges of the brush. Textures take only a few kilobytes at most, and go on forever.

The different ways for defining the surface of an object might be somewhat

confusing, but they provide a lot of power that can help you make truly stunning images. It is important to know not just HOW to use them, but WHEN.

Geometry Versus Appearance

Surface appearance can dramatically affect the rendered image of a model. For many models, the geometry (the points, edges, and faces that make up the mode) is surprisingly uncorrelated with the complexity of its rendered image. A space station made up of a torus with radial spokes might be able to be built in five minutes or less in almost any 3D modeller. With the addition of some high quality brushmaps, it can be turned into a breathtakingly realistic model. It does take skill and practice to learn how to add brushmaps and textures to an object, but these skills are just as important as the basic modelling and manipulation skills.

Although many models can be greatly enhanced (or defined!) by additional attribute assignments, many models really do require extra polygons to define small details. A very high quality model of a sailing ship might have ropes and pulleys that can't be faked with a brushmap or texture. Sometimes this calls for your own judgment. Should you build an airlock with an extruded outline, or can you make an altitude brushmap that will fake the appearance of a complex airlock?

This judgment is often made by thinking about how you will be using your model. If you are going to make an animation of a spacesuited man entering an airlock, it is pretty obvious that you'll want to build the airlock with polygons so you get a true perspective view when your camera comes in close to it. If you want the space station as a backdrop to a space battle, it might be a lot easier to just make a brushmap of the outside of the airlock. Since it is almost always easier to make a brushmap of something like a doorway than it is to model it with polygons, you can really benefit by using them as often as you can to save a lot of design work.

In fact, some appearances can't be made by any other method except brushmaps and textures. No matter how many polygons you added, you would never be able to get a realistic appearance

of woodgrain onto an object.

Brushmaps

Deciding how to make a brushmap for an object obviously greatly depends on your particular application. Luckily, most programs allow you to use brushmaps in many versatile ways. The hardest part comes not in drawing or finding the image to map onto your object, but in actually placing it in the position you want it to be on your object. Many modellers let you choose among a variety of mapping methods. The most common is called "flat" but some give you the choice of cylindrical or spherical mappings. One program, a script-based raytracer called RayDance, will even tie brushmaps to extruded objects so the brush follows the curved contours of these specific objects.

Spherical and cylindrical brushmapping are the two less common methods of applying brushmaps. These methods attempt to encircle the entire object with a brush. Spherical mapping is like stretching a map of the world around a sphere to form a globe. Cylindrical mapping only curves the brushmap in one direction, like a label going around a soda can. Both of these maps are used mostly for exactly those two types of mapping: globes and soda cans. The most useful (and controllable) type of brushmap is flat mapping.

Flat brushmaps are easy to understand; they project themselves directly onto your object's surface without any fancy curling or stretching. It is very similar to taking a slide projector and shining the image onto a 3-D object; the image will cover the region that the projector is pointed at, but the image doesn't stretch to follow the contours like you were actually pressing a piece of paper over the surface.

This makes flat brushmaps very easy to control. Most of the time, the surface you want to apply a brushmap is flat to begin with, anyway! To add the letters on a roadway sign, just make the sign in a program like DPaint and map away.

The toughest part of making a brushmap is in lining up small details so they will appear in the right place on the final model. Though you can almost al-

Modelling and rendering images on your Amiga is a wonderful experience. Imagine, by Impulse, is one of the most powerful and versatile rendering programs available. Unfortunately, most users never use anywhere near all of the features Imagine offers. The sheer complexity of the program can make new users abandon the program in frustration, and even experienced users ignore functions whose purpose is a mystery. A solution for this problem is finally here.

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ways scale and rotate the brushmap when you are applying it, sometimes keeping the individual elements in a single brushmap aligned the way you want is difficult. For example, you might have a large space station brushmap that includes the image of an airlock door, some portholes, and some access panels. Though lining up the airlock on your model might be easy, sometimes the other parts of the image (like the portholes) might map into empty space, or at a location you didn't expect. If you scale your brushmap to move parts of the image closer or further apart, the size of your airlock is going to start to change size and shape.

My trick for dealing with flat maps (especially large ones) really works well. You want to build your brushmap with a template that shows the true geometry of your object, and use that guide for determining where to place the different parts of the image. For the side of the space station, all you need is an outline that indicates what areas are "safe" (will map onto your object) and what areas aren't (the map will go into space, or a part you don't want).

I once made a 767 model and wanted to make a large brushmap to add the windows and doors (as well as the logo) to the side of the airplane's body. Even if I measured the length and height of the model, I would still have problems keeping the individual elements in the proper sizes and relative locations.

The solution is really quite straightforward. In your modeller, zoom in on a flat (not perspective) view of your model. In my case, I used a side view of the tubular 767 body. Now use a screen grabber (like ADPro's, or the freely distributable ScreenX by Steve Tibbetts) to grab the modeller's screen as an image. In a program like DPaint, you can erase the extra details like the modelling gadgets and leave just the outline of your object. You can now use this outline to decide how to color your object. With a side view of the proper shape and scale, adding the windshield, windows, and logo to the 767 was easy. Since the flat perspective of the modeller's view is a straight projection, you can map the painted image right back onto your model with no

distortion.

Most people wonder why they can't just take a paintbrush and paint your object. With this method, you can!

This method is particularly effective when you are hand digitizing a real model, as described in the previous articles in this series. Most plastic model kits come with sets of color decals ready to transfer onto the final plastic model. These are PERFECT for digitizing and using as brushmaps! They are all in scale with each other, and are flat so they are easy to scan or point a camera at. Some models come with side/top/front views of your model, and you can digitize these figures and use them as brushmaps just like the outline grabbed from the modeller. There's no such thing as cheating in 3-D modelling, so go ahead and use the brushmaps that have already been made for you. Of course, be careful of copyrights.

Brushmap Packages

The versatility of brushmaps has made an entire software subindustry in providing premade brushmaps for mapping onto objects. Companies photograph images and scan them, converting them to usable IFF images. These images can be used directly as brushes, or you can preprocess them in a program like ADPro (an image manipulation program by ASDG) to use only a small region or change its color or contrast. These packages are very handy to have around, especially if you can't digitize your own images.

One such package of images is from MicroSearch. They have three packages of maps, divided into "Woods," "Stone," and "Tile." These packages have about 15 images in each set. They are in HAM format and work splendidly. The "Wood" package in particular is well done. "Tile" is interesting, because it gives you actual floor (and ceramic) tile images that are very realistic.

The best images come from a company known as TextureCity. Their images are in full 24 bit, and are of truly high quality. They have many different types of images, including woods, textiles, stone and rock, scenery, animal skins, metal, and earth. The quality of these images is

impeccable. Unfortunately, you pay for the quality (depending on the package, sometimes over \$5 an image) but if you have a large budget, their images are absolutely terrific.

I was particularly impressed with the quality of the scenery pictures from Texture City. Why would you want scenery? Mapping a landscape onto a space station just isn't that useful. Besides the obvious application of using the image as a backdrop to an entire scene, in some renderers you are able to make a "reflection map" that all of the objects in your scene reflect. If you use a realistic landscape as a reflection map, metal and shiny objects will appear to be reflecting that high quality image, adding an extra touch of realism to your scene.

Although not really billed as a set of images, Map Master, by Louis Markoya of Computer Imagery, includes many useful brushmaps. Map Master is really designed to show how to place brushmaps in Imagine and LightWave, and the hi-res grey pictures that are included are used as illustrations. I find these images to be especially effective with altitude mapping.

Other Brushmap Sources

Prepackaged brushmap packages are very convenient, but they will never be a replacement for custom brushes you make specifically for a certain object. Depending on your object, you might be mapping line drawings, a scanned image, or even another raytrace onto your object.

The tool of choice for making these brushmaps is of course a paint program. Deluxe Paint IV is certainly adequate for almost any manipulation you want to perform, and it allows you to create and edit most types of images. One feature of Deluxe Paint that most people never use is the ability to edit images larger than the screen. When you want to add fine details to your object, you want to use as large an image as possible. Deluxe Paint will allow you to pan around your image and edit a screens-worth at a time. You are limited only by RAM; I once edited a 3500 by 1200 brushmap!

Another paint program I use complements the features of Deluxe Paint. When I am dealing with many-colored images (like scanned pictures) I find that



DCTV Paint is a terrific tool. Its images allow much smoother gradients with more colors, and the tools it provides for manipulating the images are terrific. It doesn't handle fine detail like line drawings very well, but that is where Deluxe Paint shines. Even ToasterPaint and Light 24 (the paint program for the Firecracker 24) can't match the ease of use of DCTV Paint. The largest drawback of DCTV Paint is that you cannot easily edit images larger than one screen.

If you don't have DCTV Paint, there is a trick I used for editing images with many colors using plain DPaint. The problem with DPaint is it is limited to a fixed number of colors (or to just HAM) whereas 24 bit or DCTV have an enormously larger color palette. The trick I used is simply to use ADPro to scale the image up to double or triple its original size. Each pixel in the original image becomes represented by 4 or 9 new pixels. ADPro's dithering will represent the color of the original pixel with high accuracy since it can use all 4 or 9 of the new pixels to represent the exact shade. After you edit the image, you can load it back into ADPro and shrink it to its original dimensions. An added benefit is that anti-aliasing is automatically performed by the scaling back down, so diagonal lines are smoothed and free of jaggies.

This trick requires a lot of RAM (ADPro is memory-greedy) but it allows you to edit 24-bit files with DPaint! If you don't have DCTV or a 24-bit paint program, this might be your only choice with some images.

Algorithmic Textures

The use of algorithmic textures isn't as widespread as brushmaps, since the textures aren't as customizable and each renderer has its own set of textures. However, they can be powerful tools, and most people don't use them nearly as much as they should.

Algorithmic textures are not limited to simple checks. LightWave 2.0 has powerful fractal noise textures as well as a new underwater caustic (those flickering bands of light you see on the bottom of a pool with a rippling surface) algorithm. Imagine 2.0 has a whole set of textures, including a lot of "utility" tex-

tures like a linear color fade. These utility textures might seem pretty tame, but they are actually the most useful!

The trick in using textures is using them intelligently, and in combination with brushmaps and other textures. A linear fade texture might seem pretty boring, but you can make some terrific effects like "fading" in a brushmapped image onto an object; or just giving an object subtle variations over its surface so that it doesn't look like a perfect object, a characteristic far too common in computer images.

Also remember that many textures can be animated. Can you imagine a doll carved out of wood, where the wood grain becomes "alive," twisting and shimmering with time? The possibilities are amazing.

Conclusion

Though object design is really a skill best learned by practice, I hope this set of articles has provided some help in object modelling. There is no mystical secret, there is only experience. The best advice is not to rush forward and start modelling, it is to plan your strategy carefully and understand your tools before trying to create your masterpiece. A terrific animation or scene requires high quality objects, and once you master the skills of model creation, the possibilities are only limited by your imagination.

Steve Worley is a well known Amiga artist and regular contributor to AVID. He has just written the book Understanding Imagine 2.0 available from Apex Software Publishing.

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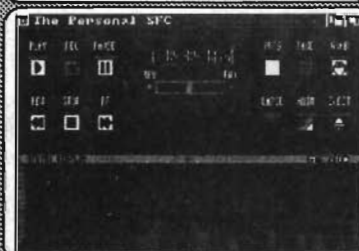
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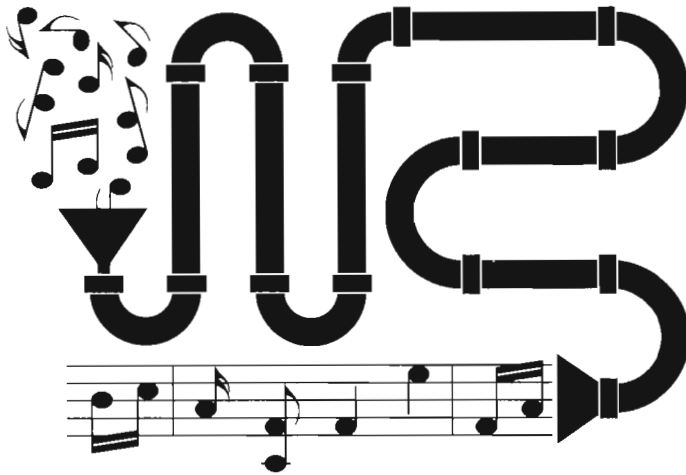
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Bars & Pipes Professional



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It is rare to find a software package that is suited to the needs of audio and video professionals, but that is flexible enough at the same time to be utilized by beginners. Bars and Pipes Professional is just such a package. The program contains almost all of the functions found in other music sequencing programs, with the addition of a unique system of tools and accessories which are used to create and modify your music. Bars and Pipes Professional is almost entirely icon-oriented, although most major operations are also accomplished with keystrokes, or with the use of a MIDI keyboard, via remote control. The program is in fact a combination of music sequencer, algorithmic composition software, and musical notation printing software.

Bars and Pipes Professional is the logical successor to Blue Ribbon SoundWork's popular and powerful Bars and Pipes. (And, fortunately, for users of the original Bars and Pipes program, all of the tools, accessories, and sounds are compatible with both programs.) Bars and Pipes Professional has a new look, with movable and re-sizable windows

and controls. Other improvements include the ability to print a musical score directly from within the program, and multiple memory locations for cue points. (Particularly handy for scoring for video!)

The first step toward making the most of this exceptional software is the understanding of the basic elements used within the program. The program's operational environment consists of six essential parts: the PipeLine, the Transport Controls, the Toolbox, the Sequencer, the Editor, and the Accessories. First, we'll look at the PipeLine, located in the Tracks window...

Essentially, the PipeLine consists of two parts: the input side of the PipeLine, which directs the flow of MIDI data into the Sequencer for recording, and the output side, which takes the recorded (or live) MIDI information and sends it to the MIDI output (or internal voices). It's called the PipeLine because it's structured like a system of pipes that can be connected using valves and tools. The flow of music data may be directed to any number of Sequencer tracks, each having the ability to record and control a separate voice or

MIDI channel.

The Transport Controls window contains the controls for the recording and playback of tracks and sequences. The Transport Controls feature buttons labelled Record, Play, Stop, Rewind, and Fast Forward, which function in much the same way as their counterparts do in a conventional tape recorder. However, since the Sequencer deals with digital information rather than reels of tape, many things can be done that a normal tape deck cannot do. The tempo can be accelerated or slowed without affecting the pitch of the music. Any position within a sequence can be accessed instantly. With its system of Auto-Locate Registers, up to four precise cue points may be marked and immediately located at any time. The Transport Controls make reference to a song's position in both measures, beats, and MIDI clocks, as well as in SMPTE time, i.e., hours, minutes, seconds, and frames, rather than in an arbitrary system of counter numbers or inches. (By the way, SMPTE stands for the Society of Motion Picture and Television Engineers. It is a set of universal standards developed by that organization which is used in the production of film and video.)

The Toolbox window contains the numerous modules, called tools, which are used in conjunction with the PipeLine to modify MIDI information as it flows through the PipeLine. Each tool has its own set of functions and controls; all of them serve to enhance your music by manipulating the MIDI data in a wide variety of ways. These tools serve as the valves and connectors used in directing musical and rhythmic information between tracks. A generous selection of tools is included with B&P Pro, including modules for quantization (or rhythmic auto-correction), as well as tools for the creation of echoes, melodies, chords and other musical elements. Additional modules designed for specific applications (such as controlling external tape decks or addressing additional serial ports) are also available as add-on packages. (We'll have a complete listing of all the additional packages with their tools and accessories in the continuation of this article in next month's AVID.)

Even an absolute beginner can create some very interesting and useful music by using the tools which are available within the program. Many of these tools constrain the resulting musical information to conform to the key and scale chosen by the user, thereby making it virtually impossible to play "wrong" notes. (The program automatically defaults to the key of C Major, i.e., all white notes on the keyboard, so, even the complete novice user can create music which remains in the proper key.) We'll get into the detailed workings of some of the tools in a moment...

The Sequencer is located in the middle of the (main) Tracks window, dividing the input and output sides of each PipeLine. MIDI data flows into the input side of the PipeLines where it is processed by the active tools. The Sequencer then records the resulting musical information. The input data can be merged with recorded tracks, and this MIDI information is then out sent through the output side of the PipeLine. There, additional tools may be used (non-destructively) to further embellish your music.

Basically, the Sequencer functions much like a multi-track tape recorder with a number of important differences. Notably, the tools may be applied to the tracks, creating automated harmonies, transposition, chords, and echoes. Sequencer tracks may be mixed, cut, copied, and pasted, giving a virtually endless number of available tracks. Individual tracks may be recorded in either song-time mode (which is determined by the song's tempo), or in real-time mode, allowing precise placement of notes or sounds according to the SMPTE time (and therefore independent of changes in the tempo). The MIDI receive channel for each track can be set independently, so, several tracks may be recorded simultaneously, allowing the use of guitar controllers or other types of devices which transmit on more than one MIDI channel. The types of MIDI data recorded (i.e., aftertouch, pitchbend, etc.) are selectable. A graphic display indicating the contents of each track is also visible.

Bars and Pipes Professional's Editor



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offers no less than four types of editing. For those who are familiar with written music, bass and treble staves and standard musical notation are available, as is another hybridized version of that system. In the hybrid notation, vertical bars placed on a music staff represent music notes; the size of the lines represent the duration of the notes. Music can also be viewed and edited in a "piano-roll" type of format, as well as in an event list form, in which notes and MIDI data are given in text form. With all of these different editing forms, notes may be added, erased, moved, or changed, and tools may be used to add variety to specific musical segments. These changes can be drawn with the mouse, typed in text form, or entered from a MIDI keyboard or other type of controller. With the use of the Editor window, notes may be entered without the use of an external MIDI keyboard.

Accessories are included with B&P Pro which allow communication between other AREXX compatible programs. Direct control of Dr. T's Phantom SMPTE/MIDI interface is also supported for precise, frame-accurate synchronization with video. (Reportedly, an accessory is being produced which will directly support Sunrise Industries' AD1016 Hard Disk recording system for the Amiga. This will allow multi-channel digital recording WITH SMPTE synchronization from WITHIN Bars and Pipes Professional.) Screen colors can be adjusted with the True Colors Accessory, and simple lyric and chord lead sheets can also be printed with the accessory called Follow The Leader. Conversion of standard MIDI Files is handled by an accessory called Muffy, allowing the importing and exporting of songs to and from a wide variety of music programs. (More on that next month...)

The following is a brief description of the tools which come with Bars and Pipes Professional:

Accompany B - Creates a rhythmic accompaniment by generating a chord for every beat in the rhythm.

Articulator - Specifies the duration of all notes passing through it.

Branch Out - Sends a duplicate of all

events passing through it to another track.

CounterPoint Tool - Creates a countermelody based on the Key and Scale Mode and sends it down the PipeLine or to another track.

Delay - Delays the notes that enter by a specified amount of time.

Doctor of Velocity - Sets the velocity of all notes.

Echo - Creates echoes. Delay time between repetitions, note durations, number of repeats, and echo volume is user selectable.

Feedback In/Out - Sends all notes to another PipeLine.

Flip - Flips all notes over a specified axis.

Harmony Generator - Creates two harmonies for every note it receives.

Inverter - Forces all notes into a preset range by shifting the octaves of all notes that are too high or low.

Keyboard Splitter - Allows any MIDI keyboard to be divided and sent to two separate PipeLine.

Loop - Creates a loop between two edit flags. In record mode, it layers new notes on top of previously recorded ones. Three modes are available for playback: In Riff mode, incoming notes trigger looped segments. In Trigger mode, only a specified note starts the loop. In Free-Run mode, the looped section starts at a specified time, and repeats a user selected number of times. Two transpose modes are also available: Transpose mode shifts the looped section up or down in pitch, while adhering to the specified key and scale. Modulate mode shifts the pitch by a constant amount, ignoring the key and scale restrictions.

Merge In - Operates as the receiving end in conjunction with any other branching tool.

MIDI In/Out - Addresses the Amiga's MIDI (Serial) port in sending and receiving MIDI data.

Modulator - Shifts all note values by a uniform amount, regardless of the key and scale.

Note Filter - Allows only notes within a preset range to pass through it.

Phrase Shaper - Applies a dynamics curve to each note.

Plug - Discards everything which enters it.

Quantize - Conforms the timing of notes to a specified resolution. Used to clean up rhythmic mistakes.

Reverser - Makes a segment play backwards.

Subdivider - Divides a note into shorter notes.

Transpose - Shifts the notes by a preset interval within the chosen key.

Triad - Creates a chord by playing two notes above any notes that enter.

UnQuantize - Alters the timing of notes by a random amount, making quantized music sound less mechanical.

In conjunction with the tools which are included with the program, Macro Tools can be assembled in the Toolpad window. Foreexample, a Macro Tool could be constructed which would echo only specified notes which were played. Each successive echo could be transposed by a certain specified scale degree, and every note would still remain in the correct key. These Macro Tools can be saved for future use or modified at any time. In fact, some of the tools included with B&P Pro are Macro Tools. The tools themselves which comprise these Macro Tools can also be modified.

Also included in the B&P Pro system is Mix Master, a real-time mixing control. Mix Master is used in much the same way an automated mixing console is utilized in conjunction with a multi-track tape recorder. Each Sequencer track has a corresponding set of controls for MIDI volume, stereo pan, or any other Control Change information (such as aftertouch or breath control). The Sequencer tracks may be controlled individually or locked together and manipulated as a group. The Mix Master settings are recorded and the changes become an integral part of the mix.

As I mentioned, it's entirely possible for a person with no experience to write some very interesting music with this program. With the combination of a few tools on the input side of the PipeLine, melodies, chords, and rhythms can be produced with a single finger. Here's a step-by-step description of the production of a musical logo...

When the program is loaded, double-click on the Toolbox icon to load a few tools into the Toolbox. This process actually adds the tools that you chose to the default list of active tools which are available. These tools will still remain in the Toolbox when the program is run in the future (unless you chose to delete them). As many tools as you like can be placed in the Toolbox, as each occupies only a small amount of RAM. The real practical limitation to the number of tools is the difficulty in finding the desired tool in a loaded toolbox. (Just like real life!)

We'll start by dragging the CounterPoint tool onto the input PipeLine of track one. This will create a second note within the proper key as a countermelody to any note played on the keyboard. Next, place the Merge In tool on track two. Click once on the CounterPoint tool on track one, then select "connect" from the Tools menu, and click on the Merge In tool on track two. Whenever a note is played, the countermelody is sent to track two, where a different MIDI channel can be assigned in the Output PipeLine. Add an Echo to track one. By double clicking on the Echo tool icon, the Echo controls requestor will appear. Here you are given the opportunity to set the delay time, number of repeats, and volume slope for the echoes. All of the time settings are calculated in measures, beats, and MIDI clocks, thus, are always "in time" with the music's tempo. Place the Harmony tool on track two, just after the Merge In tool. Now, whenever a note is played on the keyboard, that note is echoed on track one, a countermelody is sent to track two, and that countermelody generates a three-note chord. In order to record the resulting music, BOTH tracks must be set to record.

Next month we'll examine some advanced techniques and tips on scoring and synchronization for video using Bars and Pipes Professional. We'll look at the Add-On Series including the Internal Sounds Kit. And we'll also take a look at SuperJAM!, the new composition software from Blue Ribbon SoundWorks, designed for fast, easy production of original (royalty-free!) songs and soundtracks by non-musicians.



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Vista Pro 2.0

Next Generation Scenery Animation Software

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The next time you put titles on an outdoorsy video, consider creating the background with a 3-D scenery generator. If you've got sufficient memory and storage space on your machine, you might consider animating the scene's light source so that as your titles scroll over the background scenery, the light and shadows melt and blend, creating a warm, live scene full of visual appeal. If, when the titles have run, you want to really get fancy, dissolve the animated background into a real-life video view of the same scene.

I've used VistaPro, a powerful three-dimensional landscape generator and fractal modeler from Virtual Reality Laboratories, to create a hang-gliding animation set in the Big Sur Wilderness area on the California coast. The animation is viewed through the pilot's eyes. He visually sweeps the landing area three thousand feet below before his eyes slowly scan the ridge he plans to fly along. At the appropriate moment, the mountaintop rushes beneath his feet as he runs to

launch his hang glider; and then he's up and away, drifting smoothly along the high ridge, sweeping his eyes from left to right as he views the magnificence of the Big Sur Wilderness from above and soars slowly along the ridge. The pilot feels so good that he puts the glider in a dive. He picks up speed and pushes the bar completely out, forcing the nose of his glider (and his viewpoint) to rise steeply as he goes up, and up, and up and over in a loop - which quickly cuts to a "real" video shot, looking up from the landing area, of the hang glider going over the top of the loop and spiraling down to a smooth landing. The camcorder zooms in to a closeup of the pilot's grinning face, partially obscured by helmet and sunglasses and framed against the colorful hang glider, as an animated thought balloon streams out of the pilot's helmet - "HEY, MOM; NOW DO YOU UNDERSTAND WHY I DO IT?"

It was a family video, and it won't be my last use of 3-D scenery generators.

VistaPro is undergoing a major

facelift; and Virtual Reality Laboratories promises us a sexy, beautiful, major upgrade by Valentine's Day.

The upgrade is due. Although VistaPro has remained the most powerful of the Amiga scene generators and animators, it has recently faced some very tough competition from Scenery Animator, by Natural Graphics. Scenery Animator's ease-of-use, point-and-click animation path creation, support of DCTV display and animation mode, and lesser list price have undoubtedly cut into VistaPro sales.

Virtual Reality's release of Terraform and MakePath, two VistaPro utilities that allow modification of landscapes and script generation of complex animation paths, considerably beefed up VistaPro's capabilities, and this major upgrade scheduled for a February 14th release adds support for DCTV, HAM-E and Impulse's Firecracker 24-bit board. The wind has not been knocked out of Scenery Animator's sails, however. Scenery Animator's ability to generate beautiful

fractal cloud animations for use in video, particularly as backdrops for title screens, assures its value and continued market support. VistaPro 2.0 does not implement a cloud function.

I've been using a late Beta copy of the upgrade to which the HAM-E support has not yet been added. Also, many of the script capabilities and ARex support have not been implemented in this floating point version. But I've never used Beta software which was more solid. Without the benefit of documentation, I have been unable to crash this program.

Here's a short list of the new capabilities:

1. Support for DCTV, Ham-E, Firecracker 24 - As I mentioned, the HAM-E support is not included in the version I've been using; but the Firecracker and DCTV support is complete. More than complete, actually, because VistaPro 2.0 includes some new image format processing functions which make it unnecessary to go outside the program to convert from one format to another. I found it very easy to move among the high resolution, DCTV, and Firecracker formats with the same picture which had originally been digitized in DCTV.

2. VistaPro 2.0 now supports contiguous landscapes through its expanded capabilities of loading more than one landscape at a time. All the VistaDEM files are being restructured to remove the landscape overlap which was originally included on the landscapes to prevent prominent geographic features being split.

3. Two new landscape modes have been added - large mode, with up to four contiguous landscapes loaded to create large animations, or to concentrate on features (such as Half Dome in Yosemite) which otherwise fall very close to the edge of a landscape. To utilize Large Mode, you'll need 4.5 megabytes of RAM in your Amiga, and rendering times will increase by at least a factor of two. Huge Mode allows the loading of sixteen contiguous, or non-contiguous for that matter, landscapes. Your Amiga will need approximately eight megabytes of RAM to enter Huge mode. My six-megabyte A3000 couldn't access this mode, so I didn't have a chance to measure the in-

crease in rendering times, which will be significant since each frame will contain over two million polygons!

4. A new texturizing function using fractal math that breaks large polygons into small ones, adding texture to flat planes. Four different settings are possible, [O]ff, [L]ow, [M]edium and [H]igh. Texturizing works very nicely on closeup shots which do not utilize Gourand shading. Rendering times increase significantly as one progresses from OFF to HIGH texturizing.

5. Fractalized trees replace the simple triangular ones of VistaPro, and this feature alone justifies the use of the word 'major' in 'major upgrade'. The new tree function creates incredible detail in trees. Clint Woeltjen, Virtual's engineering vice-president, sent me a 24-bit rendering of the Grand Canyon of the Tuolumnes (in Yosemite) that features use of the new tree function. The trees looked real, and there were thousands of them. I displayed the file with DCTV Paint, and even under 2x magnification the trees looked real.

6. The artist can now pick from a variety of trees - pine, oak, palm, & Sagurra cactus, before choosing the Tree function. By compositing renderings using two new functions discussed later on in this article, it is possible to mix the types of trees. For example, a desert scene bounded by mountains can have the cactus in the desert, moving to oak in the foothills and pine amongst the peaks.

7. TreDns is a new Tree Density function. A setting of 200 will put a tree at every intersection of polygons, while settings from 50-100 are more reasonable values.

8. I always found it unfortunate that, while Scenery Animator could load VistaDEM files, Vista and VistaPro could not load Scenery Animator landscapes. That has changed. VistaPro 2.0 treats Scenery Animator landscapes as if they are VistaDEM files.

9. A new item in the "Load Landscape" menu (DEM Region) furnishes direct support for USGS files. This allows the animator and graphic artist to purchase useable digital topographic data directly from the U.S.G.S. in those cases

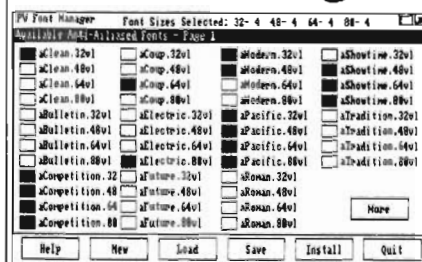
where specific data is not otherwise available. The U.S.G.S. charges only \$7.00 for each file, but there is a \$90.00 minimum charge for each order.

10. The new Stretch function increases fractal detail in the loaded landscape. Stretch exaggerates the lows and highs of the features so that the landscape contains more three-dimensional contrast.

11. BFCull is a button which turns off the rendering of hills and mountains which cannot be seen by the camera, thereby reducing rendering time considerably without loss of picture detail. This function is often quite valuable, but experimentation is necessary to determine when it's more likely to work effectively.

12. Enlarge allows the artist to enlarge a specified portion of the landscape. This is an effective way to 'zoom in' on a portion of the landscape. When this function is used, a requester appears which gives the user the options of "Interpolate" or "Duplicate". Interpolate fills in addi-

Pro Video Font Manager



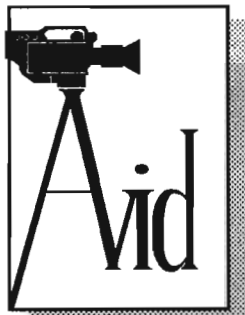
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tional data points by averaging between existing data points. This assures that detail is not lost in the rendered image. Duplicate simply duplicates data points, so that accuracy is not sacrificed.

13. A new Property menu has been added in the main menu bar. Roads and treeless areas can be created in your tree-covered landscapes. "IFF>Color" changes the landscape into a lo-res, 32-color picture that can be manipulated in DPaint. Import it back into VistaPro by "Load", then select Col>IFF. Similarly, Alt>IFF changes the landscape elevations into an IFF file based with color density proportional to altitude. This map is manipulable in DPaint, and choose IFF>Alt to take it back into VistaPro 2.0.

These aren't nearly all the new functions, but they're enough to convince any reasonable person that this is a MAJOR UPGRADE, and is a required purchase for all VistaPro fans and anyone interested in three-dimensional landscape generation.

Two new functions in VistaPro 2.0, "Background" and "Foreground", allow the importation of 24-bit files. VistaPro 2.0 will 'render around' the 24-bit files.

If you make sure that the Sky, Horizon, and Stars buttons are deselected on the VistaPro 2.0 screen, your rendered picture will contain a black sky. By selecting "Background" from the Display menu in the main menu bar prior to selecting the "Render" button, the user is allowed to set the path for the 24-bit file that is to be used as the picture to show through the black sky (color "0" portion) of the VistaPro 2.0 rendering. If the background picture is an accurate view of the night sky from the camera viewpoint set in VistaPro 2.0, the rendered graphic will contain an accurate night sky.

Pretty nifty, huh? The Foreground function is equally powerful. It is the opposite (of course) of the Background function. A Foreground picture is placed over the VistaPro 2.0 rendering, so that only through the Foreground color "0" areas does the VistaPro rendering show through. Previously rendered scenes can be placed over the current scene while at the same time, with the use of the Background function, an accurate night sky is imported.

Between the Target and Camera buttons is a small square button with a "P" on it. This is the wireframe preview button, and is quite useful for determining placement of target and camera coordinates, as well as Lens focal length. Selecting "P" changes the landscape window into a perspective view, in black and white wire, from the camera's viewpoint. Two white lines act as crosshairs, with the vertex representing the vanishing point. The Heading and Pitch of the Camera are manipulated by placing the cursor on the preview screen and clicking the left mouse button. Click above the horizontal line and the camera's pitch is increased. Click left of the vertical line and the heading swings left. If you click at the top of the vertical line several times, your camera will roll over onto its back; and you'll be viewing the landscape which is behind you - but upside down!

Virtual Reality Laboratories is quite cooperative and flexible in their support of customers. Should you have need for landscape data that is not purchaseable at your local Amiga dealer, Virtual Reality will transform the data (if they have it) into VistaDEM files and get it out to you quickly. For example, when a train derailed last summer and fell into the Shasta River near Dunsmuir, California, imperilling the town's residents and threatening Lake Shasta with catastrophic pollution, Virtual Realities, at the request of an Amiga-using local resident, sent the resident the DEM data so that the local news soon had an animation of the poison travelling down the river into Lake Shasta, from the poison's point of view.

Virtual Reality has a bulletin board for modem users, and the number is (805) 237-2312. The bulletin board can serve as an environmental network, if there is interest.

MAJOR UPGRADE - REQUIRED PURCHASE. Support this company. We need them.

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Accurate Lighting And Night Sky Techniques Using Educational Astronomy Software

VistaPro 2.0, like its predecessor, supports custom lighting. With the help of another Virtual Realities product, Distant Suns 4.0 (originally Galileo, but the author was forced by the Inquisition to recant the name), it is possible to set accurate daytime lighting for anytime at anyplace on Earth. Distant Suns is capable of specifying the angle and direction of sunlight from a viewpoint anywhere in the Solar System. Unfortunately, Local Mode is only available for Earth locations. Distant Suns will not directly specify the angle and direction of the sun from a specific point on Mars, for example. This is too bad, because VistaPro comes supplied with Mars landscapes. The capability to render Martian landscapes (and other planets) with accurate lighting could be useful for science fiction authors and scriptwriters, where accuracy is a plus. Or for anyone who wants to see what Mars actually looks like from the bottom of the Olympus Mons crater.

To ascertain the sun's coordinates for your rendering or animation, start up Distant Suns and note the Control Panel bearing the entries "ra: 0:00 dec: 90.0". Select "Local Mode" from the main menu bar and notice that the Control Panel's display changes, so that you can enter data for "alt" ("altitude" - elevation above horizon in degrees) and "az" ("azimuth" - compass heading with North equalling 0°). "Az" in Distant Suns corresponds to VistaPro's "Azimuth" and "Alt" corresponds to "Declin". From the main menu bar of Distant Suns, select "Settings/environment"; and an "environment" box will appear. In this box you will input the coordinates for the place of your animation and the date, time zone and time of day. Distant Suns' manual contains a listing of latitude and longitude coordinates for all major cities in the world, as well as their time zones. Look up this information and enter it, along with the time and date selected for your VistaPro picture, in the environment box by using the right mouse button to decrease values and the left mouse button to increase the coordinate and time values. Close the box after selecting the "Use" button. Now select "Display/Search/...Sun" from the main menu bar, and the

proper coordinates for the sun as seen from your chosen place and time of day will appear in the Control Panel. Write these down and exit the program.

Open VistaPro and select the "Light" button in the bottom right third of the button menu. The Light button menu will appear and you'll see buttons labeled "Azimuth" and "Declin" where you are to enter your coordinates as found in Distant Suns. Press Return after entering the values, and return to the Main button menu by selecting "Main".

That's all there is to it. This is a wonderful technique which will bring much greater accuracy and realism to your VistaPro renderings.

Voyager, an astronomy instruction program recently ported from the Mac world, offers a simpler way to ascertain altitude and azimuth of the sun at a particular time and place. When selecting the "Location" button on the main screen, you are presented with a map of the earth on which you can request that major cities be displayed. The globe can be magnified by a factor of 4, allowing precise selection (by pointing and clicking) of the setting for your animation. Exit this requester, and select the "Local Time" button from the main screen and enter the date and time for your animation. Exit this requester, then look around on the starfield for the big yellow dot that represents the sun. Place the cursor on it and click the left mouse button. A box will appear containing information about the sun, including the Altitude and Azimuth angles from your specified place, date and time. Write these down and exit the program. "Altitude" corresponds to VistaPro's "Declin" box, and "Azimuth" corresponds to "Azimuth".

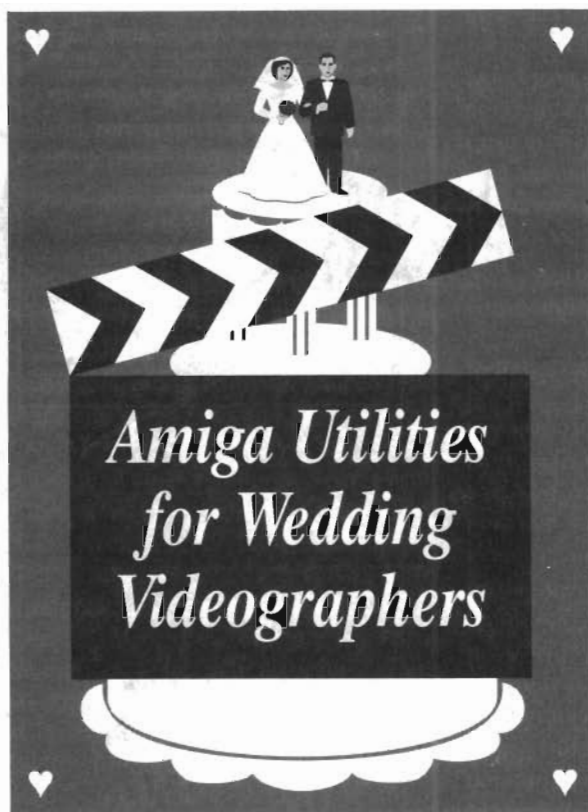
Voyager is quite a neat little program. It loads into one megabyte of memory and is simpler to learn and operate than Distant Suns. My preference for Voyager as an elementary instructional astronomy program is completely subjective and is based on its excellent interface and ease of use.

The nighttime equivalent of accurate daytime light is, of course, accurate star placement. It's now possible to render a VistaPro landscape incorporating an accurate Distant

Suns sky scene. Select "Save to IFF" from the Tools menu item after you've created your desired Distant Suns display. The picture is saved as a 640x200, 16-color file. Convert this picture to a 24-bit file of the dimensions you intend to use in your VistaPro rendering, and save it again. Art Department Professional 2.0 works quite well for this, as does DCTV. Or you can convert by using VistaPro 2.0 itself. If you have DCTV and are in Display/DCTV mode, use the Project/Load/IFF menu selection to load the sky scene into VistaPro; then select Project/Save/Full 24 to save the graphic as a full 24-bit file. Select Project/Load IFF24, and when the picture is loaded, select the VIEW button at the bottom right of the screen. You'll see that the graphic now loads and displays as if it were a 24-bit graphic. Similarly, you can now load the file as a Background or Foreground, and it will be rendered as such.

Voyager has a real drawback as a desktop video, graphics and animation utility, however, but nothing that can't be worked around if you insist on having the simple interface. You can save screens with Voyager as 640x400, 16-color IFF files. These pictures, however, contain the main menu and surrounding sky border and gadgets. Distant Suns allows saving a clean nighttime sky scene, sans menus, sans titlebar, sans everything but stars and sky. It would be necessary to save two contiguous sky screens with Voyager, load them into a paint program such as DPaint, pick up a brush of one of the night skies and combine it with the other in order to create a full-screen graphic of the night sky for a particular time, date and place. More trouble, but it can be done. I've talked to the people at Carina Software, and they are a flexible bunch who listen to customers' suggestions. There may shortly be plans to add three or four new functions to Voyager, including: SaveIFF with no title bars; overscan support; establishment of a customizable picture database, so that when you click the mouse on Saturn, for example, a specific picture you've loaded for Saturn appears. These changes will go a long way toward making Voyager a valuable desktop video utility. K.C.





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For those videographers who tape weddings and also use the Amiga, several excellent packages are available for generating images and animations with a wedding theme. While some offer full-screen images and animations, others are designed to work with a genlock, with some area or areas of the screen Color 0, so that footage from a video camera or VCR can show through. The footage can be from the ceremony, reception, or even an opening montage of videotaped photographs of the bride and groom before they were married.

Animattes: Weddings Series from Electric Crayon Studio is a set of three disks with three or four different IFF images and animations per disk. Each disk comes with its own player program. The first disk contains three very nice animations. The first is of two white wedding bells moving across a black (Color 0) square surrounded by a white textured border. The second animation starts with an embossed background of small wedding bells and then has a Color

0 heart fly out from the center of the screen to reveal video footage underneath. The third animation has two champagne glasses moving toward each other over a textured background of smaller champagne bottles and glasses. As the two glasses touch, a splash effect occurs that fills the screen with Color 0.

The other two disks contain nice animations and some ornate still images as well. The second disk has a beautiful wedding album with gold lettering and corners that opens to reveal a Color 0 square in the center of the screen. The motion of the album opening is very smooth, with each of the 25 frames looking like they were digitized. There is even a shadow as the album opens. On the third

disk is a cartoon-like animation of a bride and groom walking towards each other. When they meet a wedding cake appears under them. The bride and groom end up being the figures on top of a wedding cake.

All of the animations and still images are standard IFF files overscanned for video in high or medium interlaced resolution with 4 to 32 colors. Some of the still images and animations can be dissolved (not a true video dissolve but a pixel dissolve) both on or off screen. Some standard wipe patterns (diagonal, curtain and zipper effects) are included as well. Transitions are controlled manually using the keyboard, making it very easy to time each effect with a video editing system. Because the images and animations are standard IFF files, they can be easily loaded into DPaint or a similar program for adding titles, etc. While half a megabyte of memory will run most of the animations, a full megabyte is preferred.

Video Visions from CV Designs is a

series of disks relating to various topics including weddings. The Wedding Set Plus is actually Volumes 4 and 8 of the series plus two animation disks and a religious symbols disk for a total of nine disks. A separate program such as DPaint III or IV is required to play back the images, brushes, animations and animbrushes. All of the images and animations are high resolution, overscanned 704 by 480 pixels standard IFF files with eight or sixteen colors. The assorted contents of the disks allows the user to mix and match images, animations and brushes from all nine disks as well incorporate their own custom images as well. Both Christian and some Jewish (Star of David, etc) symbols are included.

The Producer-1 disk contains images of religious symbols such as the Bible, a holy cup, crucifix, as well as weddings rings and roses with wedding rings. Half of the ten images on the disk are solid screens intended as backgrounds. The rest have perhaps twenty-five to fifty percent of their area as Color 0, to be used as overlays with live footage from a VCR or video camera. The artwork is reasonably good, with care taken to use colors that work well with video.

One of the two animation disks contains animations, the other animbrushes. The Animated Intros disk contains animations useful as a videotape's opening segment, such as a bridal couple walking out of the church, embracing and kissing while a large heart flies out. A second animation has a man and a woman's arms touching their champagne glasses together. Some animated effects such as rippling gold blinds that are very suitable for a title screen are also included. The Animated Spots disk contains seven animbrushes which can be displayed using DPaint. The horse and buggy with the bridal couple aboard is very nice. Other animbrushes include a spinning wedding cake, tumbling wedding presents, ringing church bells, and two triangles flying together to form the Star of David.

The remainder of the set is comprised of Volumes 4 and 8 of the Video Visions series. Each volume has three disks, and each disk contains either solid

background images or frames (with a Color 0 center). Most of the disks have approximately ten images. Examples are frames with red hearts, wedding rings, vines and small red hearts, brass or blue scrollwork frames, white lace, and pearls with leaves. Full-screen images include a wedding album, a green background with roses, an elaborate Star of David, a large heart-shaped wedding cake, a silver serving set, and five beautiful stained glass windows. A few of the images appear to be digitized, with mostly good effect considering the limited number of colors available to work with. Finally, a few objects or brushes are provided such as wedding rings, doves, a tall wedding cake, a line of women catching the bouquet, and a bride feeding the groom cake. With so many images, animations, animbrushes and objects available to choose from, it is easy to create some very nice graphics using this package.

The Our Wedding series from Digital Graphics Library contains seven disks with three or four still images (no animations are included) per disk for a total of twenty-five images. The images are standard IFF-24 files with 736 by 480 pixels. The disks are compatible with any Amiga frame buffer that can display 24-bit images such as the Toaster, Firecracker 24, IV 24, DCTV, etc. Primarily intended as backgrounds or video wallpaper, once the image has been loaded into a 24-bit paint or presentation program the user can add their own titles or even rework the images for a custom look. A HAM version of the set with the exact same images is also available at a slightly lower cost.

The Our Wedding images can be grouped into three categories, (1) gold-bordered frames surrounding embossed or etched squares resting on a black background, (2) gold or silver wedding symbols over a black background, and (3) white pastel backgrounds with delicate images of a wedding bouquet, bride, etc. All of the images are very nicely done with beautiful artwork and attention paid to image composition. While some of the same objects are used repeatedly (the interlinked gold wedding bands are used with nine different images) each image is

distinct, with no obvious repetition from one image to the next.

The eleven gold-bordered squares include two images of a bridal couple at the altar, a couple standing under a tree, and a couple driving away in a decorated car, as well as a wedding cake, roses or interlinked gold wedding bands with a cross, and a pair of roses with the Star of David. Each image looks as if it were etched in stone. Underneath each of the etched images is a gold bar perfect for placing the date of the wedding or perhaps the names of the wedding couple. Finally, there is a simple gold frame with a black interior ideal for creating a title screen.

The eight gold or silver wedding symbol images depict a pair of silver wedding bells with ribbons, the full screen title "Our Wedding" done in an ornate gold script, and several images of a pair of interlinked gold wedding bands with red roses and green stems, gold cross or gold Star of David. Because the images are high resolution 24-bit files, everything looks real or three dimensional, with highlights on the rings, bells and gold script, and subtle detail on the rose petals.

Finally, there are six pastel backgrounds with a rose, two images with a pair of silver bells, a bouquet, a bride looking at her bouquet, and a beautiful church steeple framed by the limbs of a shade tree. Because each of the objects in each image occupies perhaps a third of the screen area, with each object placed at the top, bottom or to one side of the screen, plenty of space is available for titles or credits.

Not received in time to review for this article, the Fairy Tale Wedding Opening from InSync Digital Corporation is a twelve-disk set containing high-resolution, overscanned 16-color animations. The Fairy Tale Wedding opening is actually on six separate disks, the idea being to record each of the segments to videotape in chunks. The final frames of each segment and the first frames of the next segment overlap to allow for seamless edits. The animation depicts cupid, a prince and a princess. A player is included with the disks that can also control the playback speed. One and a half mega-

bytes of RAM is required to run each animation segment with the Workbench opened. The other six disks contain animations suitable for weddings including a movie marquee suitable for writing the bridal couple's name, a theater curtain that opens, and champagne glasses that touch and then transition to exploding fireworks.

Three other packages with still images and animations that relate to weddings are also available from InSync. They include the Honeymoon and Animation Titling set, the Fireworks Construction Kit, and the Title Fonts and Graphics Kit. Images and animations include an animated sunset with a man and a woman kissing, 28 still images of various honeymoon locations, and a large collection of fonts and firework animbrushes.

All of these different packages offer a wealth of images and animations for the wedding videographer. Perhaps the wisest thing to do would be to buy all four packages. Good luck and enjoy.

Animattes: Wedding Series by Electric Crayon Studio 3624 N. 64th Street Milwaukee, WI 53216 (414) 444-9981 \$39.95

The Wedding Set from the Video Visions series by CV Designs, 61 Clewley Road Medford, MA 02155 (617) 391-9224, \$39.95 for Volumes 4 and 8 \$69.95 for Volumes 4 and 8, plus the Producer and Animation disks

Our Wedding by Digital Graphics Library, Inc 1382 Third Avenue, Suite 333 New York, New York 10021 (212) 978-8508 \$89.95 for the IFF-24 images set \$69.95 for the HAM images set

Fairy Tale Wedding Opening by InSync Digital Corporation PO Box 309 Oceanside, NY 11572 (516) 678-9624 \$149.99

Honeymoon Animation and Titling, Fireworks Construction Kit, and Title Fonts and Graphics Kit, by InSync Digital Corporation PO Box 309 Oceanside, NY 11572 (516) 678-9624 \$49.99 each



An Interview



with Tony Dispoto

© 1992 by Stephen Jacobs

A circuit board flies through the air to a central post where others wait to meet it. The name of the manufacturer is mapped on the chips, electrons race around the path of the circuit board as ball lightning crackles through the air.

In a living room, a large, potted green plant sits under an intricate art deco mirror. Outside a large window, the New York city skyline at night is visible. Another "city at night" scene shows a helicopter passing the Chrysler building, lit in all its art deco glory.

These are the visions of Tony Dispoto; artist, modeler and animator extraordinaire. He is interested exclusively in producing broadcast quality, single frame recorded, 3-D animation. These scenes are part of his latest demo reel, all of them painstakingly created in Imagine, saved to hard drive and laid down, single frame, to laser disc. Tony doesn't take short cuts and he doesn't compromise. Most of his animations require multiple passes to build. The electrons racing around the circuit board took three days to animate in Deluxe Paint III. The city skyline is not genlocked or digitized. Like everything else that Tony does, the city is exquisitely modeled.

AVID: How do you get such a realistic look? Is it the ray tracer?

TD: "I can't ray trace the stuff I'm doing without four or five times more speed than I'm getting out of either of my machines. I generally use scan line and rely on better modeling and lighting to make things look good. Some

people think they're producing 3-D work because they have three things that shine off each other with speckled balls or mirrors. To me, that's like doing stand-up and telling drug jokes. It's like a cheap out, you know what I mean? Rather than work hard at something and create a singular, different piece; you can get away with some slick rendering. My work comes from models, lighting and animation quality and that's why my work stands out."

AVID: How did you get involved in animation?

TD: "All my life I wanted to make cartoons. I've been involved in art and comics since I was a teenager. I've been a consultant to Marvel and DC comics. I was the editor of Creepy's Vampirella. I was one of the people that started the original comic art market in America. In fact, I'm involved now in establishing a magazine specifically for the very vertical market of original comic art and animation cell collecting."

AVID: What was the first computer animation system you saw?

TD: "I went and visited the Computer Graphic Lab, the commercial arm of the New York Institute of Technology, and saw the "Images" system. I found out it cost \$125,000, which was a little beyond my price level. When I asked them if I could get training on it they told me it only came with the machine. At that time I gave up because it was clear I couldn't penetrate

the market at that level. However, the visit did allow me to sell a paper to Marvel comics a few months later called "Video Applications of Comic Book Media" which is still, bizarrely enough, one of the more progressive papers written in the technical end of comics to this day."

"So I waited, saw "The Jugler" like a million other guys and bought an Amiga. I bought a 1000, played with it, shoved it under the bed because it couldn't do what I wanted it to and bought a 2000 when they came out."

AVID: What was it like in the early days of 3-D on the Amiga?

TD: "Most people who've just gotten into this in the past year don't know how much trouble there has been in getting accurate single framing on the Amiga. We had major problems using stuff like Transport Controller because Mike Berro never tested it beyond 100 frames. Once we went beyond that we had problems. There were problems with V-LANs that were always "burping" and missing frames."

AVID: What other kinds of problems did you run into?

TD: "There's been a great deal of misinformation in the Amiga video market, from the most popular companies all the way down. It's one of the reasons I opted to teach classes at the AmiEXPOs to try and clear up some of the questions. I really felt a lot of sympathy for the people who were being hung up by companies that misinformed customers or didn't support their product."

"For example, a lot of people were burned by CSA on the original '020 boards which were supposed to be supported and upgraded and never were. When they switched products, their support consisted of "You shouldn't be interested in that, you should buy our new product." In a field

that relies primarily on its inside to grow, I find that kind of behavior is reprehensible."

AVID: How does economics affect Amiga products?

TD: "Imagine is \$350, LightWave is an "add-on" for the Toaster as opposed to the tens of thousands of dollars for some professional packages on other products. Since we're dealing with software that's so very inexpensive, not any one package does everything. In addition, while software's getting better and better, most of it is not made for artists and the people who make it don't understand how artists work. You have technical people still deciding how people should create and it doesn't work that way."

"That's why major companies like Symbolics have the best professional artists on payroll and as consultants to help them to develop the software. Naturally, the Amiga developers can't afford to do that. Don't get me wrong, some of the software, like Imagine is very good but I'd like to see a lot more openness to creative people giving input into the development of the software. A good example of an Amiga problem is the Toaster and LightWave. It's a very good program and Allen Hastings has done some very good work, but it's so boxed in by the formats and controls of the Toaster that I personally find it a real hassle to use the product."

AVID: What types of problems in software design do you feel artist input could improve?

TD: "For example, the problem with motion proofing in Imagine is that every time it writes a frame, wireframe or in the other rendering modes, it has to go and load the objects from hard drive instead of throwing them into RAM and reading them from there. So you're faced with a full set of disk access for every frame you write. This one is 570 frames, so that's a lot of access. It also doesn't have anything to control the speed in a real sense. You've got a slider that goes from slow to fast, but what you need to know is how many frames per second you're actually, accurately seeing. Otherwise it's only good for relative motion."

AVID: What do you have in your

studio and what's the process you use to create your tapes?

TD: "I've got an old 2000 that I just upgraded with the Progressive '040 board. I'm having some problems with it because it's one of the original German 2000s and the mother board is really old. I don't know yet how far I'll have to go to get the board to work at its optimum. Even so, the stock 3000 I have now seems really slow to me because of the '040 machine's speed. There's 12 megs of RAM in one machine, 16 in the other. I've got a couple of Syquest drives that are used on both machines."

"When you put a lot of stuff into these machines, even these speeds seem really slow. Right now the piece that I'm working on is about 570 frames and it's slow going. I need at least two machines because the going is so slow. Usually, if I'm in a rendering mode, I'll have the '040 machine rendering while I'm doing other work on the 3000."

"I use the 3000 for any painting work because of the custom chips in it. It's handling files easier because of the problems I'm having with the weird combination of old stuff and the '040 board. My hard drive controller is so old that it has actually slowed down access now that the '040 is in there. I just bought a new GVP controller because I have like the oldest one. I'll be making a lot of changes once I finish the project I'm working on now."

"The animations are saved to hard drive, tweaked, painted and polished or redone from scratch until they're perfect. Then they are displayed, frame by frame, and recorded."

"I use the Firecracker board which I'm very happy with and is probably the most reasonably priced true 24-bit board on any system. I've been using Active Circuits' Raster Link, a very reliable product. There are two good image moving products on the market, Raster Link and ASDG's Art Department Professional. They both work differently however, and you should know just what you want to do with them before you make your decision. If you want to single frame through a Firecracker board or TARGA, Raster Link is the product. If you want to do other kinds of manipula-

tion of the image, Art Department is very good."

"The problem I have single framing with Art Department is that it must load the image entirely into RAM to manipulate it. There are reasons for that and I understand why it needs to do that. Rasterlink works on a line-by-line basis, so you can manipulate a 6 meg picture without a lot of extra memory. You might need twice as much memory, 12 or 14 megs, to work with that same picture in the Art Department. Also, while ASDG's products are always good, and held to the highest technical standards, they really need to work with some artists on the interface. It has improved, but it's still more like pushing computer buttons than working intuitively or artistically. Now you have to look at it for a while until you can really absorb how it works."

"I go through Rasterlink and the Firecracker to an encoder. It is important

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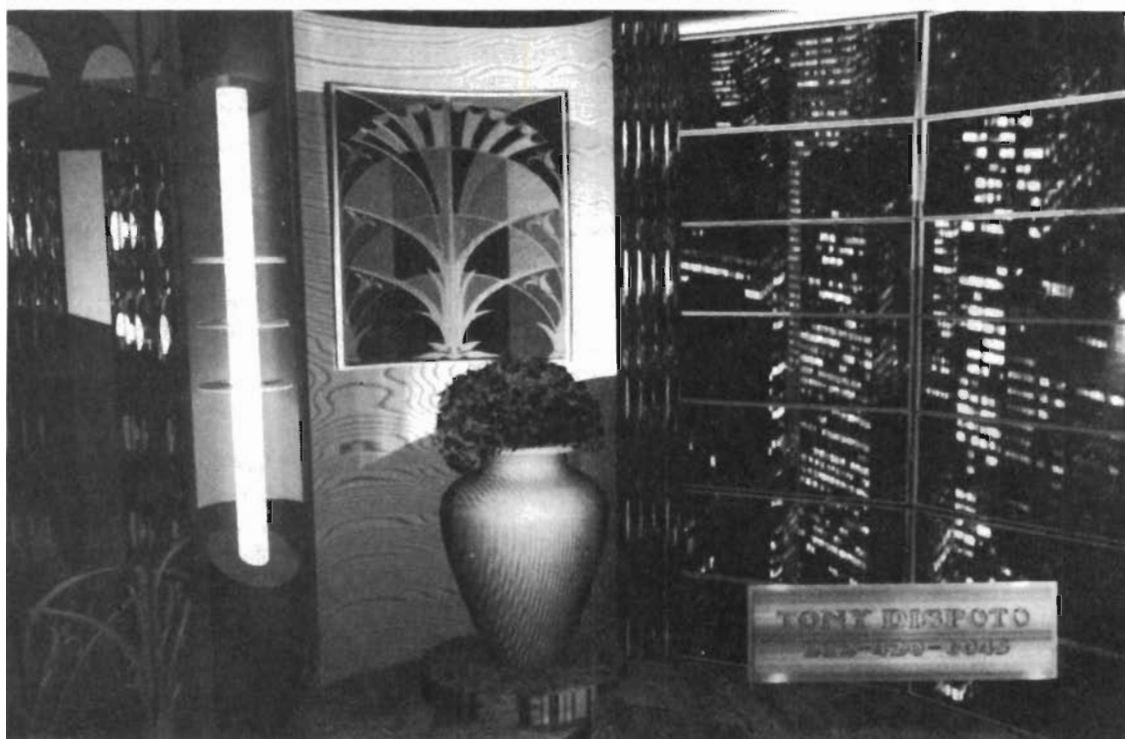
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tion media. It's made to be recorded and played at 30 frames per second. Tape, in general, is not made for single framing. Most tape decks under \$5,000, even if they will record single frame, don't have the heavy duty transport mechanisms required to function as a primarily single frame machine. Even with 3/4" decks and tape made specifically for single frame, the

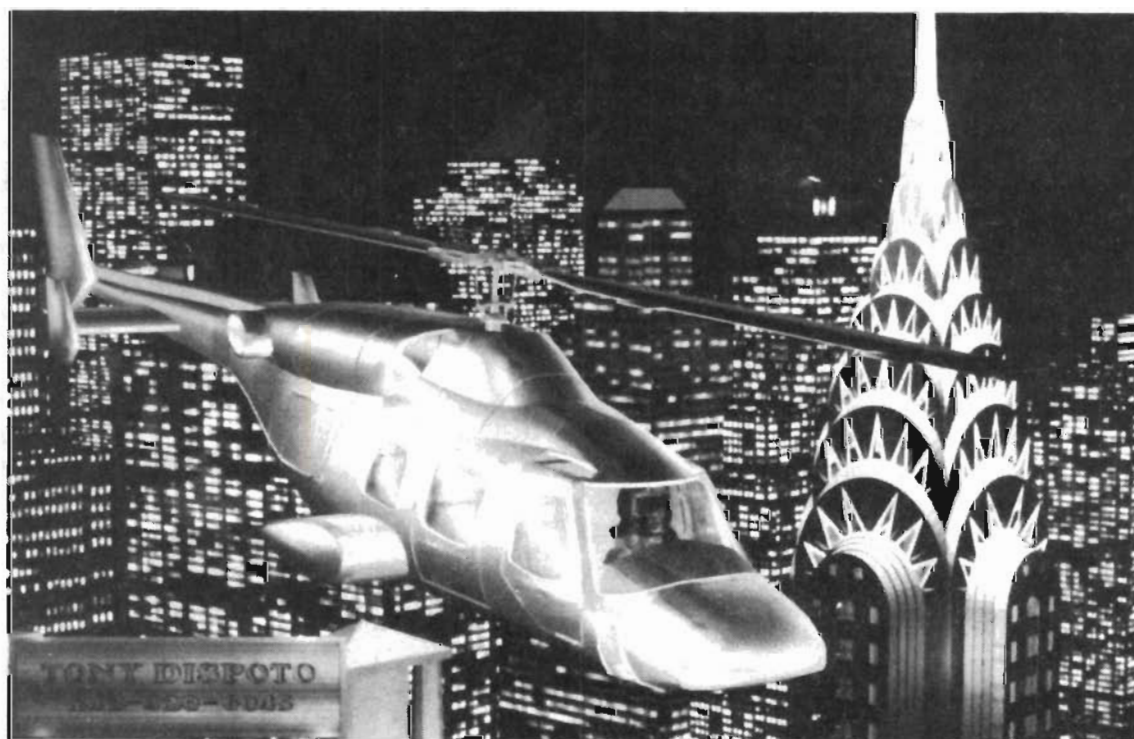
to know that the Firecracker is an RGB board, not NTSC. It puts out a much higher quality standard than NTSC video, which will allow you to go to media that have higher standards, like Betacam or M2; but it also means you have to convert the signal if you want to record NTSC."

"I use an A T & T Truevision encoder box. It's a transcoder which will go from RGB to component to composite. It's probably about ready to be replaced because technology and cost are coming down and I expect that for the same price I should be able to get something 2 to 3 times as good. I also bought used. Original retail price on it was about \$1,000 but

I got it for around \$400. That's the range I suggest looking to buy them at because now they're at the lower end of technology, and the products coming out now should be much better in quality."

"I've gotten out of going to tape on my first pass because videotape is a mo-

commercial user will judiciously use one tape for tests and a new tape for the master. This is because the shuttling back and forth just beats the hell out of the tape. Of course, if you've got the money, you can get a great one inch machine that will do all kinds of stuff. I've gone to



laser disk because laser is the only true single frame medium outside of a damn photograph. There's no comparison in working with the two. I'm using a Panasonic recordable laser disk. It's a few years old now. It cost about \$40,000 or \$50,000 new but I bought it used for around \$7,000. It records in NTSC only."

AVID: *Is it a problem going to NTSC?*

TD: "If you go out to tape in NTSC and you want to go to more than one layer, or transcode up to component, you just lose signal quality from there. Even though I'm only getting composite quality video out of my laser disk, because it stays digital I'm able to reprocess it cleanly in a major studio when I dump. If the final job needs to be put down on Beta SP or a component media like M2 I can dump to a professional single frame tape situation from the Amiga. I know from the laser disk version that it has been proofed and the motion is exactly perfect. If it isn't perfect when it has been single framed to tape, we know the problem is in the single frame system and not a bug in the animation."

"I record everything to hard disk first then bring up each individual frame in Raster Link, and record the single frame on the laser disk. It's that simple. I haven't automated the process yet. At the time I started with this recorder there weren't any Amiga drivers for it. I understand that there are several now and that ShowMaker works with this deck. In the next couple of weeks I'll either start using that or have some friends write some AREXX scripts for me."

Tony has a cautionary thought he'd like to leave with our readers.

"I'm hearing that we're not getting what we should be out of these machines. At one time we were all very proud to say how far ahead we were of everybody else. At this point in time, we have no lead. Due to the lack of interest at Commodore in marketing and development, and the subsequent lack of money for the other developers, we're facing a coming deficit. I think anyone who wants to do more than "play" with their Amiga, or do simple wedding video titling, has to be concerned about that."

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RayDance



Script-Based 3-D Animation Program

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RayDance is both a utility and a stand-alone 3-D ray-tracing/animation program. As the latter, it is a very complex script driven Amiga graphics generator, and as the former, it will import Imagine, LightWave, and VideoScape 3-D files. It outputs to standard 24bit IFF, RAW files, and its own proprietary format. It is exacting in its rendering capabilities, but fairly slow. Of course, all true ray tracing software is slow when it comes to maximizing the depth at which light sources are tracked into objects that reflect and refract light.

I don't think this software would be the first 3-D raytracing/animation software the normal Amiga fanatic would purchase, but it might well be chosen to augment an Amiga obsessives pack of goodies. My reasoning for saying that is that most Amiga artists and animators I know prefer graphical object generation and manipulation, and are not overly attracted to script based raytracing. But make no mistake, if you enjoy script-based graphics or are interested in experimenting with a really fat script-based program, this might just be your cup of tea.

The manual is very thick, and stuffed with tutorials, script language syntax definitions, and a walk through the main user interface screen. On that interface screen you can set the file load/save paths and determine all of the resolution and option parameters needed before you render your scene. There is a whole extra disk full of object render scripts which you can load and render, or investigate and revise, so learning the script language is not immediately necessary. Back to the interface screen, the degree of anti-aliasing

"depth" is what really adds time to your raytrace, as well as selecting none, "weighted" (minimum), or "adaptive" (maximum). The range is from 0 to 4, and the 4 setting makes even a 68030 crawl along (especially when the scene has complex objects and lights). You do have very fine control over all of the parameters, however. You can set the screen size, distance to the scene, F-stop and zoom of the camera, Phong shading (toggle), shadows (toggle), haze (toggle), and "Color" (24-bit color or 8-bit grayscale, just right for Art Department Pro manipulations). Scripts and paths are addressed from this requester as well. The scripts themselves, should you want to generate your own, can be created on any text editor. The ones on the disk can also be revised and saved anew. Once rendering is turned on, you can also bring up a message window or the preview window.

The latter allows you to see a HAM version of the rendering in progress. At any time, you can jump from one of these windows to another without affecting the progress of the rendering. All of the fields on the main interface screen can be changed and saved to a new setup file that will be the default when the program loads. Wireframes can also be generated and previewed for global object positioning. Though the program is complex, every possible step has been taken to aid you in the generation of raytraced pictures, including a point-and-click on-line help utility. Only software that has been in development for a long time shows this level of care and feeding of the user.

The script language has about everything an Amiga 3-D render fanatic and animator could hope for, including bump mapping and 24-bit texture wrapping capability. But be warned, these capabilities are to be purchased at a price, mainly your studious time. Users of the Amiga program, "The Director" (a very fine script based utility program), will probably take to this software faster than other more graphical users. Those of you who possess some programming skills may also enjoy this environment. Everyone wishing to generate their own 3-D

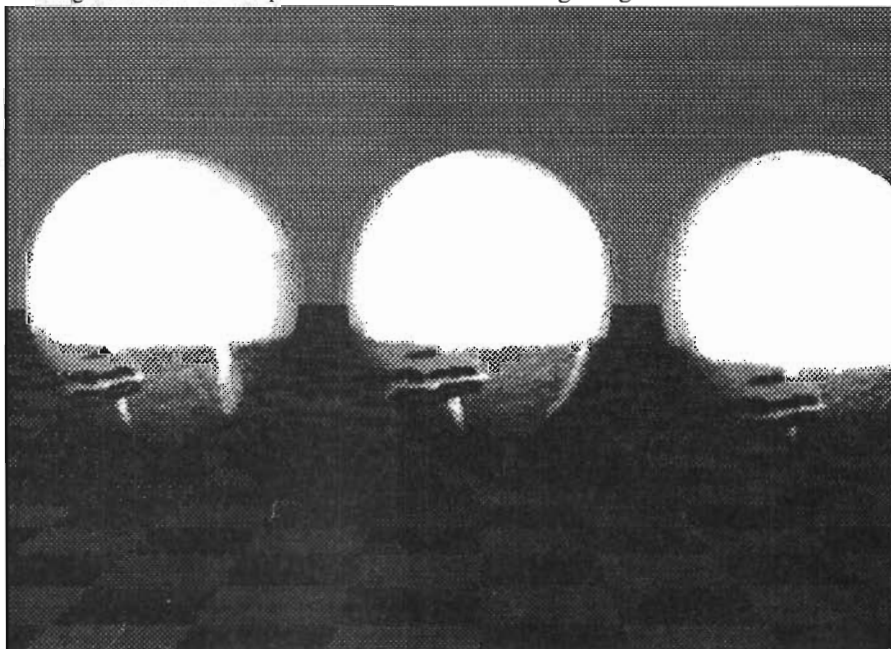


Figure 1



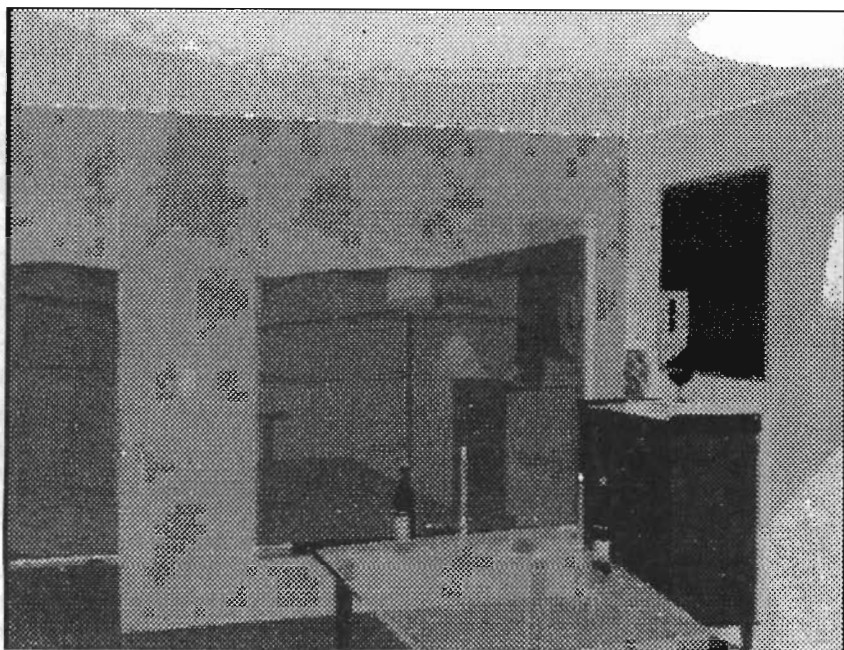


Figure 2

scenes and animations with this software is advised to work out their graphics beforehand with a pencil and some graph paper, in order to figure out scripted coordinates, object positions, and other scene boundaries. The positive side of all of this, however, is that this software might be wonderful in a learning environment, especially one in which it is desired that learners work with the basics of computer graphics (and get some programming skills to boot). All too often, the programming aspect of generating images is skipped over in art classes that use high level software. This software could be used to help a class appreciate the finer aspects of computer graphics.

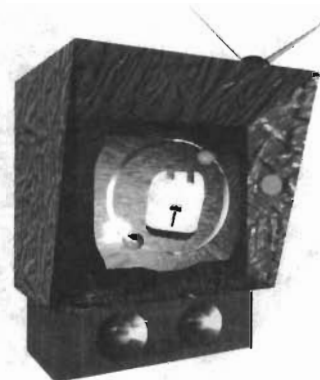
It should be stated that with the script files already on disk, you may never feel the need to use this software to generate your own images. You might just spend your time generating and learning from what's already there. Figure 1 shows a series of three texture mapped globes rendered in 3-D, and Figure 2 shows a table with objects on it. These are from scripts already saved on the release disks. These paintings were imported as 24-bit files into Digital Creations' DCTV paint for viewing, and saved out as DCTV images.

This software may have as many uses as a 3-D editing utility then as a raytrace generator alone. Because it addresses the VideoScape, Imagine, and

LightWave formats, it could find heavy use from the Toaster, Impulse, and other communities. It is especially useful to programs that generate their objects in a more graphical way (ADSPEC Programming's Draw4D-Pro, Activa's REAL-3-D, and Octree's Caligari 2). All of these programs also can export/import other file formats, so that bridges are already built for utilizing various packages to do various tasks. One negative is that the program assumes that the file that you are saving has no duplicate. Not checking for this causes unnecessary writing over already saved artwork, without asking the user if it's OK to do so.

Many of the scripts included with the software generate some spectacular 3-D plots, and studying their syntax assiduously can shorten your learning curve of the scripting language. Some involve landscape and tree creation, projective and bump mapping, and full animations of various types. Other scripts and modules are available by modem, and the software is in continuous development. If you are in a 3-D raytrace scripting mood, invest in this software. It has been created with high Amiga standards in mind.

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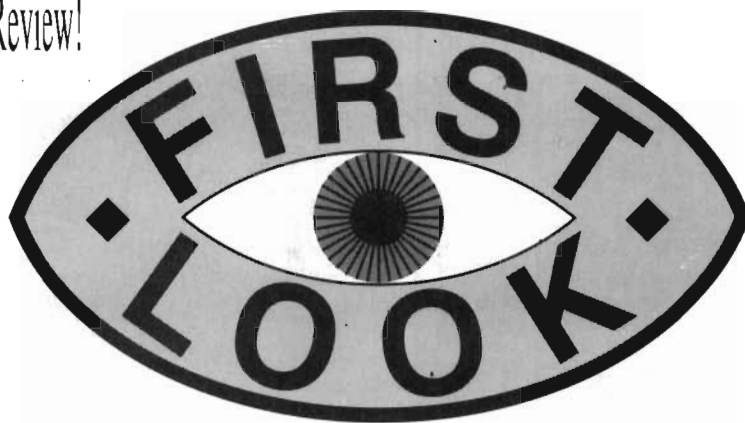
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Sony's V-Box

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Sony Computer Peripherals is now shipping its CI-1000 Vbox (pronounced "vee-box") computer/video interface which allows a computer to communicate with and control any of the installed base of over ten million video camcorders, VCRs, video selectors and monitors.

Software developers are working hard to incorporate Sony's VISCA ([V]ideo [S]ystem [C]ontrol [A]rchitecture). VISCA is a command set which can control various functions of video devices containing a LANC or Control-L port, a 5-pin REMOTE port (a form of Control-L), or a Control-S port. Control-S is Sony's hardwired version of the Sony infrared remote.

VISCA is important to AVID readers because it offers the potential of frame accurate editing in consumer and prosumer video equipment. Sony will shortly be releasing its Vdeck, a Hi-8mm editing deck designed to be controlled only through a computer, and advertised as frame accurate. Tests I ran of Sony's Vbox on an Amiga, using Gold Disk's Video Director as the software, indicate an accuracy of (+-)1 frame when utilizing a source deck incorporating Sony's RC (Rewritable Consumer) time code. Non-RC-equipped equipment was controlled at an accuracy of (+-)4 frames.

The Vbox is a small (4.2" x 1.6" x

6.5") beige box shipped with a cable that plugs into a Macintosh serial port. That won't do you much good with your Amiga, of course, so purchase a cross-type DB25 RS-232C/8-pin Mini-DIN cable. These are available from Redmond Cable [(206)882-2009]. I wouldn't recommend building your own cable or adapter unless you have quite a bit of experience at such things. The cost of a Redmond cable is much less than catastrophe insurance on your Amiga, camcorder, and Vbox. Remember to specify "cross-type" when you order your cable.

The Macintosh cable is only one of several cables shipped with the Vbox. Also included is a Control-S cable with miniplug for controlling the inputs/outputs on selected Sony monitors and AV selectors. Control-S is Sony's hardwired version of its infrared remote control bus used in monitors and AV selectors. Interestingly enough, the Control-S output on a single Vbox can be used to control an indefinite number of Control-S monitors, in classrooms or conference rooms, for example. It is simply necessary to connect the Control-S-out of the first monitor to the Control-S-in of the second monitor, and so on, and the Vbox will simultaneously pass the same commands to all the monitors connected.

Also included with the Vbox is a

LANC 5-pin mini DIN to 5-pin mini DIN cable, for connecting the Vbox to those camcorders which have a 5-pin REMOTE port, such as the CCD V-9; a VISCA cable, 8-pin mini DIN to 8-pin mini DIN, for daisy-chaining Vboxes (up to seven can be daisy-chained for control of multiple video peripherals); and a LANC cable, 5-pin mini DIN to 3-component 2.5mm sub-mini pin for connecting most LANC video devices to the Vbox. An AC power adapter comes with the unit, as well as a thin manual which contains diagrams for various setups.

Sony makes no claim that the Vbox will work with any but Sony devices, although VISCA is an open protocol available to anyone wanting to develop software or license the technology for hardware implementation. The VISCA command list is given to developers upon request, and hardware manufacturers may license VISCA for incorporation into their products.

There appear to be few, if any, barriers to VISCA becoming a de facto standard of edit control in consumer video. Selectra's VUPOINT in combination with Panasonic's AG-1960 is the only other game in town, and this single-machine technology shows no potential for standardization. If Sony keeps the price of a VISCA license reasonable to the point where VISCA-equipped products from other manufacturers remain competitive with Sony equipment, we should see a widespread adoption of VISCA in the coming two years. It has been suggested, of course, that Sony would be nuts to give away their proprietary technology in order to help their competitors sell more product. Widespread adoption of VISCA, however, would mean more software products and more hardware peripherals available to consumers, a growing recognition among video consumers of the importance of edit control, and a revival of camcorder sales in a saturated market.

So far there are only a few computer programs incorporating VISCA that are shipping. Among these are MediaMaker CV, by MacroMind. This

is a truncated MediaMaker graphics and sound sequencing program bundled with a Sony Vbox. It is available directly from any Sony Computer Peripherals dealer. HSC Software offers VideoWare for DOS machines, and the Amiga is presently graced with Gold Disk's Video Director, which has previously been reviewed in this magazine in conjunction with Selectra's VUPORT.

Even though the Vbox can control a camcorder or VCR used as either a source deck or record deck, the software listed above has various capabilities, and some of it does not support the use of the Vbox controlling a source deck. True edit control is not possible in that case, and only a less versatile 'print to video' recording capability is utilized. Designed for video editing (as opposed to M*U*L*T*I*M*E*D*I*A*T*I*N*G), Video Director comes closest to the traditional look, feel and functionality of an edit controller, providing for edit decision lists, event definitions, and the control of transport mechanisms in both the source and recording decks. Video Director does not currently support animation-on-video overlay.

The Vbox concept closely resembles that of the VUPORT, the major external difference being that the Vbox is used to control camcorders and VCRs bearing LANC (Control-L) ports; and the VUPORT works with the Panasonic 5-pin connection on Panasonic AG-1960 VCRs. Both interfaces are platform independent, connected to a computer's serial port, and require independent software. I have heard of, but not seen, an A/B-roll editing system utilizing VUPORTs, an Amiga, and AG-1960's. VUPORT's temporary lead in applications technology may not last long, however. I know of at least one, and rumors say two, software developers working on VISCA A/B-roll setups.

There are several other makes of camcorders which utilize a LANC, Control-L or 5-pin REMOTE port, a sure sign that a camcorder will at least be able to accept VISCA signals from a Vbox. Whether the software manufacturer has written a specific driver which will take advantage of various camcorders' abilities

ties to communicate through the Vbox is another question. Also, the implementation in a particular camcorder of the VISCA controls might not be thorough enough to use the camcorder as an accurate video editing source.

A camcorder used as a videotape source deck needs the Frame Forward function, in addition to Play, Play Pause, Fast Forward and Rewind, in order to utilize the V-Box's precision edit control capabilities. Without the ability to advance a tape frame-by-frame, the editor cannot precisely calibrate a tape or position the start point of an edit event.

Then, unless every editing or presentation session begins with the source videotape cued to the very beginning of the tape, some means must be found to precisely position the videotape on the tape heads before the source deck is put into Play/Pause. Otherwise, playback of cuts or edit events will start early or late, or never at all. Additionally, frame accuracy on consumer videotape players that do not utilize time code is cumulative; that is, if a machine has ± 4 frame accuracy (the machine's transport control can stop the tape on the video heads within 4 frames one way or the other of a particular frame), then the first edit is accurate to within 4 frames, the second edit is accurate to within 8 frames, etc. Although in practice much of this accumulation of frame error cancels out (three frames early one cut, four frames late the next) when a master tape is being assembled, an edit point must be calibrated every few edits in order to keep the accuracy of the source machine within reasonable limits. And without a frame advance function, an edit point cannot be accurately calibrated.

To my knowledge, Sony publishes the only list of LANC-compatible equipment. Of the Sony equipment listed, the F33 and F34 camcorders are the only LANC-equipped Sony camcorders which do not have a Frame Forward function. Sony's relatively new CCD-V801 contains the most thorough implementation of LANC control, capable of single-frame reverse, and 1/10, 1/5 and 2x play. I therefore requested of Sony, and received the next day, a well-used V801 for use in

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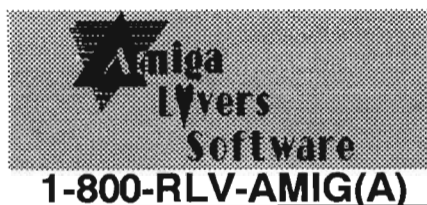
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Vbox accuracy tests.

Video Director comes with its own serial interface hardware, and one would think that this makes the use of the V-Box superfluous. There are a couple of small problems with the Video Director serial interface. If your camcorder battery runs down in the middle of an edit session and the camcorder shuts off, the computer screen will freeze and put an abrupt end to your editing session. The Vbox seems to 'buffer' the computer/camcorder connection so that this doesn't happen. When assembling a tape using the Video Director interface with a source tape that contains unrecorded videotape mixed in amongst the clips, the edit session is often ended prematurely. Again, the Vbox seems to buffer this, because I never had this happen when using the Sony device with the same equipment and videotape.

Even though the Video Director program is accurate to within (+-)1 frame (there are 30 frames of video in one second), when searching for a clip so the editor can view it prior to assembling a tape, the Vbox driver in Video Director is only accurate to (+-)1 second. That's 30 frames! The Vbox pauses the tape when the tape counter reads the rounded second prior to where the clip actually begins. This seeming flaw actually speeds up clip preview, however; and when actually assembling a tape, the Vbox's accuracy returns to normal; i.e., (+-)1 frame of the limits of the machine being controlled.

I used a (non-drop-frame) window dub of time code to compare the accuracy of the Vbox serial interface to the accuracy of the Video Director serial interface using Video Director as the software, an Amiga 3000 as the computer, a Sony CCD-V9 as one source deck and a Sony CCD-V801 as a source deck on a second round of tests. A Panasonic AG-1960 was the recording deck and was in all tests controlled by Video Director's infrared joystick interface which, it turns out, is excellent.

My tests with Video Director confirmed its claimed (+-)1-frame accuracy. The CCD-V9 showed a (+-)4-frame accuracy as a source deck, and the CCD-V801, using RC time code, showed it to be at least as accurate as the software, i.e.,

(+/-)1 frame. The combination of Video Director and a source deck utilizing Sony's RC time code may be frame accurate. My use of a non-drop-frame window dub may have made a difference, even though I kept my edits short.

These numbers didn't come out of a hat, and they also weren't arrived at on my first test sequence of each setup. I found it necessary to 'massage' the clip by trimming it off a couple of frames when using the V801. The more I massaged the clip, the more accurate the edit control, up to my consistent best accuracy of (+-)1 frame. Once a clip was trimmed and the source deck preroll was set in Video Director, I copied the clip four times and instructed the program to assemble a tape.

The assembled videotape always showed one problem, whether the Vbox or Video Director interface was used. The edit-in point of the first clip in the sequence of five was always early with respect to the other edit-in points. For example, when the second through fifth clips would consistently be one or two frames late, the first clip of the sequence would be two or three frames early. This appeared in every single test. The results of one test on the V801 showed (+-)1-frame accuracy for four out of the five clips. The edit-in point of the first clip, however, was five frames early. I was very careful to leave at least five seconds of recorded tape before the start of the clip. Since the same trend appeared while using both the V9 and V801 camcorders, I suspect that the problem might be with the Video Director program itself. Since I use the program often, I have learned to compensate by removing a couple of frames from the edit-in point of the first clip of an assembly session.

My experience with Sony's Vbox interface shows it to be accurate and reliable. It makes Gold Disk's Video Director program shine, and I'd recommend that anyone purchasing Video Director seriously consider the simultaneous purchase of a Vbox. Further information concerning the Vbox is available from Sony Computer Peripherals at Sony info: 1(800)352-7669.



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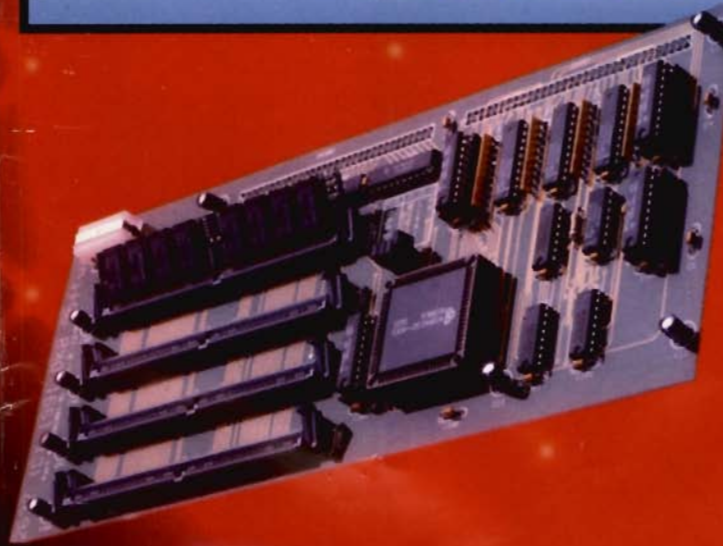
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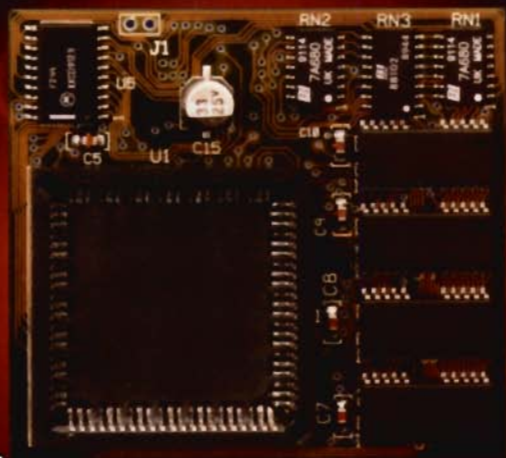
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If you use your Amiga for Desktop Video, 3D Rendering & Animation, Multimedia or Desktop Publishing - Then you need the MegAChip 2000. Doubles the amount of memory accessible to the custom chips. Uses the 2 Megabyte Agnus that's in the Amiga A3000. Greatly enhances Graphics capabilities. Fully compatible with Workbench 1.2, 1.3, 2.0, and the ECS Denise chip. Fully compatible with the Video Toaster and other genlocks and framebuffers. Fully compatible with GVP's and Commodore's 68030 accelerators. Why upgrade to 1Meg of Chip RAM when you can have 2Megs of Chip RAM like the A3000?



DKB Software

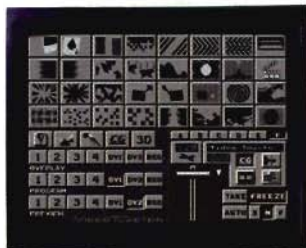
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50240 W. Pontiac Trail
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Sales (313) 960-8750
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Dealer inquiries welcome.

Video Toaster™ System 2.0: 9 essential tools you need if you're using your Amiga for video or graphics.

4 Input Production Switcher



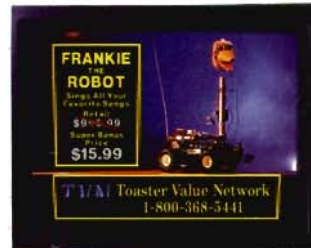
Toaster System 2.0 includes organic switcher transitions like fire, smoke, clouds, pouring liquid and breaking glass. Powerful positionable effects for over-the-shoulder insets, soft-edge wipes and wild "KikiFX" like you've never imagined.

Digital Video Effects



Real-time digital video effects on live video at 60 fps. From flip, spin and tumble all the way to amazing perspective warping effects and even incredible sphere and cube mapping in real-time.

35ns Character Generator



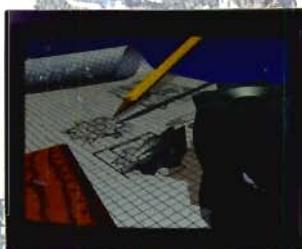
16 million color 35ns broadcast text with over 100 high-quality, anti-aliased type-faces. System 2.0 also features faster loading of pages, framestores for backgrounds, improved keying and text file import.

24-bit Broadcast Paint



ToasterPaint is the only true broadcast-quality NTSC paint system for the Amiga. System 2.0 brings new features including improved auto-scrolling and direct import of images from the Toaster's frame grabber.

3D-Animation



LightWave 3D 2.0 offers over 150 new features including blazing rendering speed, multiple morph targets, 3008 x 1920 resolution and *true ray-tracing*. 2.0 makes modeling a joy with new tools like bend, twist, taper, skin and magnet.

Dual Frame Buffers



Hold two high-resolution 16 million color video frames in perfect YIQ-encoded RS-170A network quality. System 2.0 brings you enhanced hue matching, even faster loading, and framestore file compression to save disk space.

Luminance Key



Much more than just simple weatherman over a map, Toaster™ keying lets you do luminance fade transitions, or combine two live sources using a third source as a key and even key-based digital trails.

Color Processing



Control of color effects from the switcher and 20 new default effects make ChromaFX faster and more powerful. Now combine effects and color cycle with new organic switcher transitions for incredible new possibilities.

Still Store/Frame Grabber



Freeze flawless broadcast resolution images instantly from any color camera, laserdisc or even cable TV with better color reproduction, faster loading, and powerful new field and frame saving options.

Free Toaster™ Video Tape

We can't show you the power and quality of the new Video Toaster in a magazine ad. So we've decided to prove it with a free VHS tape about the Toaster *produced entirely with the Toaster*. This award-winning demo-within-a-demo starring NewTek's Kiki Stockhammer is aptly titled "REVOLUTION". Call today to find out about the most successful Amiga product of all time.

Call 800-765-3406

Toaster 1.0 users call your dealer or 800-843-8834 to upgrade today.

Outside North America call 612-882-1662 for your free demo tape. Demo also available on S-VHS, Hi8, 3/4", MII, Betacam, 1", LaserDisc and D2 at nominal cost. Next-day delivery available. Price and specifications subject to change. Amiga is a registered trademark of Commodore Amiga Inc. Video Toaster, LightWave 3D, ChromaFX and ToasterPaint are trademarks of NewTek, Inc. © NewTek, Inc.

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