

Amiga[®] Video/Graphics *Magazine*

A Pacific Media Publishing Magazine

Vol. #4-Issue #4

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NewTek's Toaster 4000 the Power of Possibilities...

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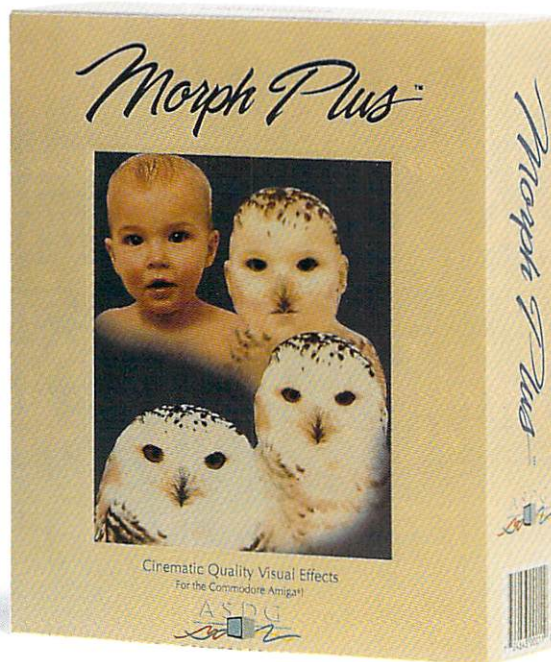
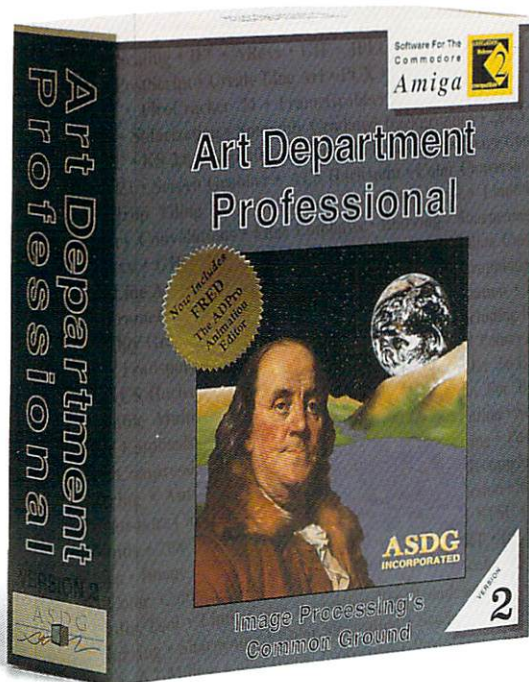


Using OpalVision • World of
Commodore • Caligari24

Regular Features:

LightenUp • 3D Perspectives • The AGA Connection

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If you're thinking about getting an Amiga® special effects or image processing product, here are some facts to consider:

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- American Software And Hardware Distributors and MicroPace Distributors (the two largest Amiga® software distributors in North America) cite ADPro and MorphPlus as the best selling products of their kind.
- ADPro placed third among ALL Amiga® software products on the MicroPace 1992 Top 50 Sellers List.
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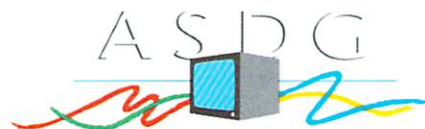


show Quantum Leap and for major motion pictures.

- Mark Swain, an AmigaWorld reviewer (and animator for Foundation Imaging, the creators of the special effects for Babylon 5), said, "MorphPlus produces the most realistic shape shifting special effects I have ever seen on a desktop."
- David Duberman, Executive Editor of Video Toaster User, said in a comparative review of Amiga®

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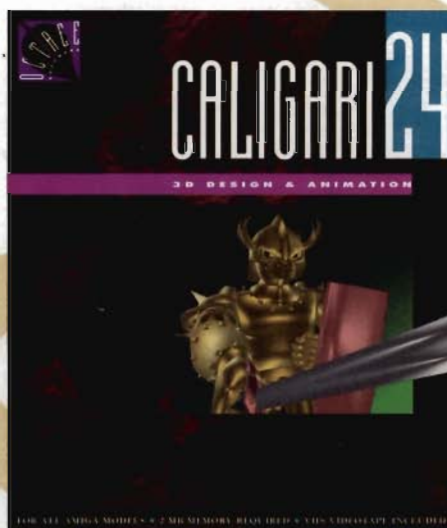
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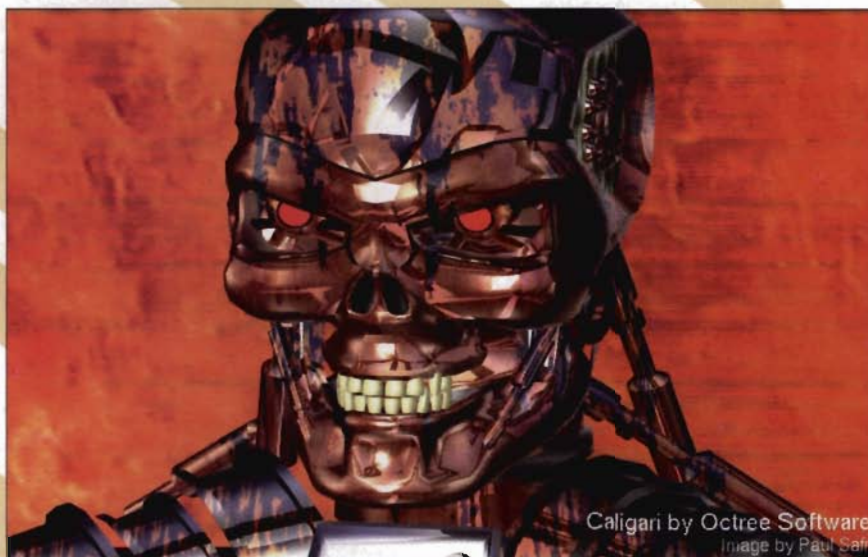
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NewTek plans to sell the Video Toaster 4000 which will be priced lower than the current Video Toaster system and will use the AGA chip set to bring 24 Bit color animations to the masses. (Photo by Jeff Bender.)

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May 1993, Volume 4, Issue 4 Amiga Video/Graphics is published monthly by Pacific Media Publishing, 365 Victor Street Suite "H", Salinas, Ca 93907. Subscription rates are \$36 for 12 issues and \$68 for 24 issues. Foreign orders must be prepaid in U.S. funds with additional postage. Add \$8 per year for postage for Canada and Mexico subscribers. Add \$40 per year for foreign postage to all other countries. Second-class postage pending at Salinas, California. Postmaster: Send address changes to Pacific Media Publishing, 365 Victor St. Suite "H", Salinas, Ca. 93907, (408) 758-9386. Printed in the U.S.A.

Publishers Notes...

Spunk

As I walked through the halls of Pier 88 in New York City, I was astonished by the number of people holding boxes of newly purchased OpalVision cards. When you walked onto the Pier, you were struck by a powerful presentation from the people at Centaur Development. After talking to leaders at Centaur Development I could see why so many people wanted to buy an OpalVision at the show. The new modules that will soon ship will provide a complete artistic work station on a desktop.

Why do I make mention of this in my publisher notes? Well, beyond the power of OpalVision there is something that my grandfather use to call "spunk." This enthusiasm of continuing to improve products and applications is propelling the ability of Amiga artists to create some of the most dynamic and stunning computer art ever. I have recently seen some astonishing 2D, 3D and photo manipulation work that just makes one stop and admire. I hope to start our Gallery Section soon to show off this work to inspire others to create.

I would also like to mention a situation brought-up by a reader concerning the Amiga 4000. We discussed some problems he encountered while using the Amiga 4000. One problem is that when using an Amiga 4000 with Commodore's 1960 monitor, the Workbench™ screen seem dim. Commodore has acknowledged this problem and is about to release a new line of monitor and an upgrade to O/S 3.1, which should alleviate most of these problems. Another area of discussion was concerning the ability to play back 24 Bit animation's at 30 frames per second. In this issue Douglas Fusco discusses how to achieve this long sought out goal of having real-time play back on the Amiga 4000.

Turning to something different, I know some people have noticed that this issue is a tad late. This is due to some late breaking announcement of NewTek's Video Toaster 4000. As AVG is not in the inner circle of NewTek's fold, we had to take more time to scrape out information on the Toaster 4000. However, as you read on in AVG you will see that it is well worth the wait. The Toaster 4000 is a great improvement and takes full advantage of the 4000's AGA chip set. So sit back and enjoy this issue and we'll see you next month.

Tony Moschella

Publisher

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Editor's

CORNER

By
Gabriel Pan © 1993

HI THERE! My name is Gabriel Pan, and for the last couple of months, you've known me as the Production Coordinator of the *Amiga Video/Graphics Magazine*. As of a few weeks ago, I've put on a new hat, becoming the full-time Managing Editor. This will give Fred a chance to handle some of the larger issues at hand, while I clean up the details.

We have received many letters over the last month, directing themselves in part to the question of quality control. I appreciate everyone who took time out of their busy schedules to drop us a line and, more importantly, I appreciate the understanding tone that all of you took in your constructive criticism.

When we picked up *Avid* from Jim Plant, we had the idea of making this title the best resource available for coverage and tutorials for *Amiga* users. Unfortunately, as lofty as our goals were, we did not expect to encounter quite as many growing pains as we have. Fortunately, most of the correspondence expressed understanding that this transitional problem is common in most re-structured publications. Even so, this comforting news does little to correct what has already occurred.

To that end, I'd like to take a moment to assure all of you that the first order of business is to re-establish the quality of the magazine. I have had previous experience in the new capacity I am serving, and am well acquainted with the job that needs to be done.

As for writing and quality content, I am also supervising the pre-production selection of articles along with the Editor-in-Chief.

I believe that you will be happy with the quality of this issue, as both *World Of Commodore*, and *National Association of Broadcasters* coverage is included, giving you a taste of some incredible new breakthroughs.

I know that it's not always easy to keep the faith, but I ask you to bear with us a little longer. We might have a little more acreage to plow before the land bears fruit, but I think that the harvest will be worth it.

Stay True!
Gabriel Pan,
Managing Editor

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By David Duberman © 1993

Welcome back to the column for lovers of Amiga 3D stuff. To begin with, a *mea culpa*. Two columns back I wrote about *MD Grafix's Font Flyer*, and gave the wrong price. The actual suggested list price for this great *LightWave* utility program is \$89, and well worth it, especially since the program has since been upgraded. You can now specify both prefixes and extensions for font filenames, and it handles smaller fonts—one meter and 200mm—better.

Incidentally, see my review of *Caligari24* in this issue for a discussion of *HyperCache Professional*, a new utility program that can save time for all 3D artists.

Reader Response

Several columns back I printed a request from reader Terry Musgrove for a method of replicating in *Imagine* a *LightWave* trick which gives eye-catching animated glints sliding along the surfaces of a seemingly stationary 3D word or logo. To achieve this effect, you have to use a Global Brush as a reflection map, make your logo's surfaces reflective, and rotate the logo while rendering in Scanline mode. I offered the best solution I could think of, which was to create as circular a path as possible, make a copy, make one tiny and assign the logo to it, and the other larger and assign the camera to it, and track the camera to the logo. This wasn't quite good enough as it resulted in a bit of wobble. Recently, I got a call from one reader and a letter from another offering two different effective solutions.

First I heard from Charles Blaquiere, who called from Toronto to suggest using the Hinge technique, an *Imagine* function that I admit I'm not very familiar with. He was kind enough to upload several *Imagine* projects to me that illustrated several varia-

tions. Basically, he uses a centrally placed axis to which is hinged both the logo, (placed near it), and the camera, (which is placed farther out). He creates three key frames for camera, logo position and alignment 1/3, 2/3, and all the way through the animation. At the first key, he rotates the logo and camera 120 degrees and moves the camera a third of the arc around the logo, repeating the process at the second and third keys. Hinging the camera and logo to the same object effectively locks their movement together. It works like a champ!

Then I received a letter from reader Sergio Murillo of Honduras, who suggested simply using more points in the path for a more accurate circle—I had used only four points originally. Mr. Murillo offered a procedure for creating a precisely circular path from 24 axes, which consisted of grouping, copying, rotation, and pasting, using a central axis as a fulcrum, but when I tried it, I came up with a jagged circle. Once you do get the path to be circular, save it, then rotate it 10 degrees on the Z axis and save it as a path for a "chase" light. Mr. Murillo also suggests using the Rotate F/X for the logo instead of assigning it to a path.

Thanks to both Charles Blaquiere and Sergio Murillo for their help!

More on FDPPro Flight Recorder

I've been playing around with *Jaeger Software's FDPPro Flight Recorder* since my review last issue and have discovered some interesting points. First, if you create a wingsweep object and then use the same flightpath as camera motion to fly along the object's length, the camera actually moves through the object, so that the object continually bisects the frame horizontally. Ideally, the "roadway" would remain at a consistent

distance "below" the camera for a roller-coaster effect, and this can generally be achieved simply by moving the wingsweep object downward slightly. However, if there are any loops in the pathway, the camera then moves through the pathway and travels "below" (actually above) it for half the loop or so. An alternative solution might be to enlarge the path and then move it slightly downward, but this causes other problems. Hopefully Jaeger will solve this in the next release.

Also, the wingsweep (or straightline path) object gives you an ideal visual trace of your camera's path through a scene, otherwise unavailable in *LightWave*, so you can accurately place objects at appropriate positions.

One final word on *FDPPro Flight Recorder*. I recently was able to fly the simulator the way it was meant to be flown—with an analog joystick. Thanks to *DigiPrint's Analog Joystick Interface*, I could plug my cheapo IBM analog joystick into the Amiga and fly any of Jaeger's virtual aircraft with full control. It improves the experience of flying tremendously, and is well worth the small investment. By the way, *DigiPrint* also makes an adapter that permits connection of high-quality IBM bus-type mice to the Amiga. If you're fed up with flimsy low-resolution Amiga mice, check out *DigiPrint's Bus Mouse Adapter*.

Playmation Tutorial

Martin Hash's Playmation is unique among Amiga 3D programs because it uses splines for all modeling and animation. This means you're working with actual smooth curves, not angular polygons (although these can be simulated if necessary), which makes for more organic-looking shapes and natural animation. But speaking of curves, there's a pretty sharp learning curve with this program. The manual provides some excellent

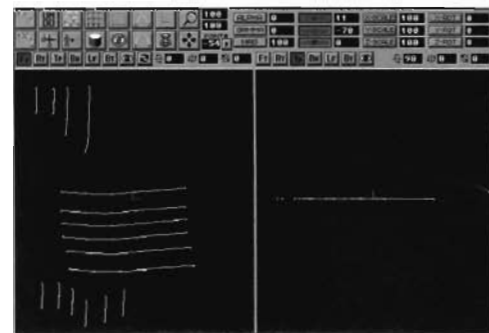


Figure 1

tutorials, but leaves a lot of territory uncovered. For example, the Modeling tutorial talks about all the basic commands, and gives examples of extrusion and lathing. It also gives a rudimentary example of manual object building, but doesn't say much about construction of more complex objects, such as faces.

continued on page 10

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- Watch snowflakes get blown around by simulated wind.
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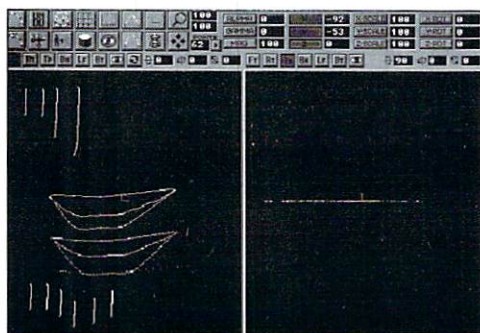


Figure 2

Continued from page 8

That's where this tutorial comes in. We'll start with basic face construction, step-by-step and, if there's enough interest, move on to character construction and animation. In any case, please write to me in care of *Avid Publications*, 21611 Stevens Creek Blvd., Cupertino, CA 95014 and let me know which 3D programs you have, which you

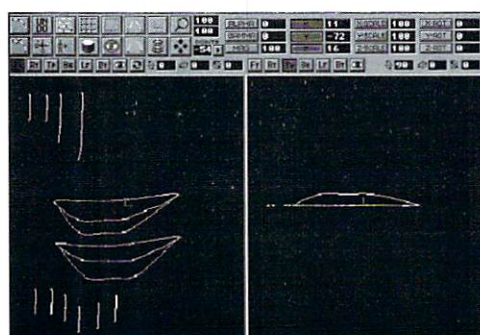


Figure 3

like, what features you need but aren't there, and anything else related to 3D on any platform that's on your mind.

When beginning a new construction project in Playmation's Sculpture module, I start by creating or loading a "parts kit." This is simply a set of splines with different numbers of control points that can be cloned and connected together to form patches. Simply create a two-knot spline, press the Tab key to select all connected points, clone it and move the clone to the side. Press Return to deselect all points. Add a control point and position it near the clone's center. Press the Tab key again, then clone and move that. Continue the process until you have several splines with different numbers of evenly-spaced control points. Save this as "Toolkit." During construction, don't use the last one of any type; just clone it to make more. Then, before performing a final save of your new model, delete any spare parts.

For this part of the tutorial, make at least six extra splines with five evenly spaced control points, and six short ones with three control points (see: Figure 1). To make things a little easier, arrange the five-point splines horizontally as shown.

The first part we'll work on will be the mouth, or rather the lips, the part of the mouth that normally shows on the face.

These curved shapes are ideal for modeling with splines, as we'll soon see. Connect the ends of the top three and bottom three splines by dragging each group's lower two splines' endpoints up and right-clicking on the top ones'. (See: Figure 2.) Press Return to deselect all points.

Now we'll give the lips some poutiness. Click on the Group tool; the one with the dashed-outline rectangle in the top row. Draw a drag box over the center three control points in the second and fourth splines to select both lips' horizontal centers. From the right-hand or Top view, drag these points slightly upward; see Figure 3. Press Return to deselect the points.

Now we'll apply the shorter splines as cross-sections. Grab one's top point and drag it to the top-center vertex in the bottom lip, then right-click to connect the two. Connect the second vertex to the one immediately below, and the third to the bottom one. Note how the second vertex jumps "up" in the Top view when you connect it. Use two more short splines to connect the two groups of three points on either side. See Figure 4. Repeat the process for the upper lip. This, then, is one basic procedure for building custom shapes in Sculpture; draw 3D outlines with splines, then criss-cross these with more splines to create surfaces.

Now give the lips some shape by dragging the vertices around. This is one of Sculpture's friendlier features—just click on the point of interest and drag—no multi-part operations required. Finally, pull the lower lip's two endpoints up and connect them to the two upper lips. My lips ended up looking like Figure 5, which could be called a Harlequin/Joker smile, but yours could be completely different—whatever works for you. Use the Quick Render function to check your work. After shaping from the front, use the Top view to group and raise the central points and lower the mouth corners for a slight curvature, to match the front of a face.

When you're satisfied, save your work—we'll call this segment FaceLips. We'll build the rest of the face around it. This means, however, that we won't be able to color the lips differently from the rest of the face. Remember, coloration can only be applied segment by segment in the Character module. If we wanted the lips to be red and the rest of the face to be a lighter or darker tone, the lips would have to be a separate segment, which might cause difficulties with animation. This is one of Playmation's limitations.

You'd probably like to see your lips rendered at this point. Unfortunately, it's not quite as easy as using, say, Imagine's Quick Render. You must load the segment into Character, assign attributes, save the data, then load it into Direction and set up the camera and lighting, then save that data, after which you can finally render it in HAM from the Workbench or in 24 bits from the Shell.

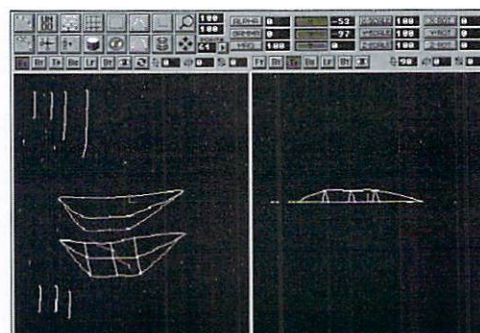


Figure 4

If you have trouble with this procedure, simply go through the examples in the manual, then try it with your own segment—it's really pretty simple, but requires a number of steps. Try making the lips red and glossy in Character. If you're feeling adventurous, try making a nose and attaching it to the lips. We'll continue with the Playmation face in the next column.

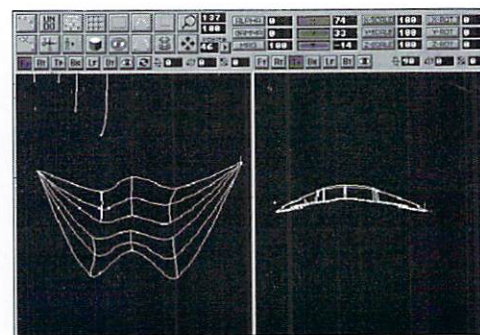


Figure 5

Font Flyer
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■ Fred Kuramura

Amiga UpDates

as of May 1993

Welcome to Amiga Updates. Every month we'll keep you informed on the latest versions of Amiga creative applications that were shipping by the time we went to press.

Product	V.
3D Pro	2.0
ADVANTAGE	1.0
ALADDIN 4D	2.1
AMAX II PLUS	2.5
AMI-BACK	2.0E
AMIGADOS	3.0
AMIGAVISION PROFESSIONAL	2.0
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PHONEFAX	2.0
PIXEL 3D PROFESSIONAL	1.04
PLAYMATION	1.47
POLYHEDRA	1.2
PRESENTATION MASTER	1.0
PROFESSIONAL PAGE	4.0A
QUARTERBACK	5.0.2
REAL 3D	2.0
REND24	1.05
SCALA MULTIMEDIA	211
SHOWMAKER	2.2
STUDIO 16 SOFTWARE	2.0
SUPERJAM	1.1
TOASTER SYSTEM SOFTWARE	2.0
TOASTERFX	1.0
TOASTERVISION	2.01
TREXX PROFESSIONAL	1.0
TRUEPRINT/24	2.0
TURBO SILVER	2.0
TYPESMITH	1.04
VIDEO DIRECTOR	1.05
VISTA PROFESSIONAL	3.0

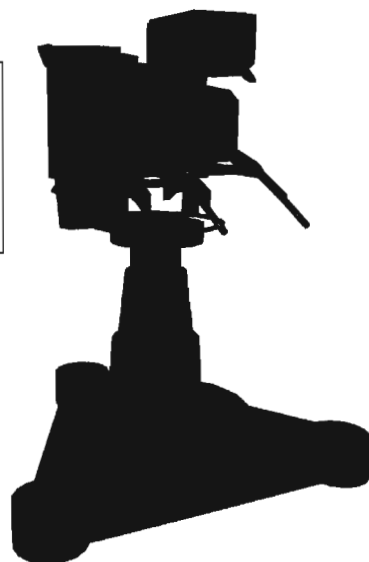
To have your product listed in this column, send a press release to:
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 365 Victor St. Suite "H"
 Salinas, CA 93907
 Or send a fax to 408/758-1744.



Lighten Up

By

David Hopkins © 1993



How many times have you sat down at your Toaster system and decided to learn Modeler? If you're like most people I know, this number is pretty high. The unfortunate problem is that I hear from people every day who tell me they just can't get the hang of it. I tell them all pretty much the same thing: It is much easier to learn how to use a program when you have a goal in mind.

Well folks, here I am to offer you a goal—a quest, if you will. Recently my friend Dave Thompson and I came up with the ultimate LightWave project. This brainstorm came about while driving by downtown Los Angeles en route to the L.A. Video Toaster Users Group meeting. As we gazed through the smog at the looming Los Angeles skyline, we started to discuss the city's interesting and unique mix of architectural styles. Then it hit us: Let's build a city! But that just wasn't enough, we wanted to get all of you involved, too!

Here's the concept: Each of you gets to create a city block for the animated town of RenderVille, USA. This block may be of any type you desire so long as one might reasonably expect to find it in a large city. This includes office buildings, gas stations, fast food joints, restaurants, movie theaters, houses, apartments—you get the idea. You choose. Build anything you like—it's your land. Once you are done (which, of course, should be by the deadline stated in the Building Code), send your block on disk(s) to my office at Mach Universe. From there, the blocks will be assembled into a complete city, including roads, freeways, streetlights, sidewalks, etc., and then a large-scale animation will be rendered for possible submission to one of the major computer graphics expos as the first national-collaboration effort produced with LightWave 3D. Sound like fun? Keep reading.

"So," you may be asking. "Can you give me some specifics?" Sure. We have devised a RenderVille City Building Code, which you will find accompanying this column. Read all of the Code carefully and be sure to adhere to these rules. Each one is there for a reason,

and if you don't comply, your creation may not be used.

The next question is where to start. Below you will find the way that we require your city block to be laid out. Again, make sure to follow this setup or else your entry won't be used. Don't ya just love rules?

Enter Modeler and make sure that nothing is in the layers by clicking New. Go to the Box option from the Objects panel, click Numeric. This brings up the requester allowing you to enter your box size by hand. Set Units to km and then, for the lefthand set of coordinates, set X:-.8, Y:0, and Z:-.8. On the righthand side set X:.8, Y:0, and Z:.8. Click OK, and the click the Make button on the left side of the screen. Press the a key to autofit your new box in the three views. You are now looking at one square mile of land.

Go to layer 2 and put layer 1 in the background via mouse with the layer gadgets in the upper right corner, or via keyboard by pressing 2, then Alt-1. Choose the Numeric tool again (you should still be in Box mode). Change the Units to m, then set the left coordinates to X:-20, Y:0, Z:-20. Set the right coordinates to read X:20, Y:0, Z:20. Click OK, and then Make. You now have the standard-sized road intersection.

Go to layer 3 and put layer 1 in the background. Bring up the Box Tools Numeric options again and this time leave the Units at m. Set the lefthand coordinates to X:-60, Y:0, Z:-60 and the righthand to X:60, Y:0, Z:60. Click OK and Make and you've got your city block.

That's all you need to get started. I gave you the full mile and intersection sizes so that you can set up temporary environment scenes for yourself. Make sure when you send in your completed portion that you do not include any parts other than those that fit within your city block. The size of the block is based on the "average suggested block size" universally employed by city planners, so we're working to scale here. Please make every effort to build all of the items in your block to scale so that we can assure nothing looks terribly out of proportion. You'll find some more suggestions to get you started in the accompanying

City Code section.

Now, the big question here at the end is: What do you get out of this? One, you now have a "project goal" which you'll find will make learning Modeler much more interesting. Two, your name will be included in the list of artists for the RenderVille project when it is submitted to a graphics expo. Three, I intend to provide copies of the finished animation on VHS (for a small fee) to all participants, and to release all of the objects into the public domain. If you have a problem with your work being used in such a way, please do not enter! Your contribution automatically implies your agreement to these terms.

Understand that neither I nor any others involved will derive any financial gain from this project; we're merely willing to contribute our time to make the event possible. We do, however, want to put forth the following request to those of you that are in a position to help: As you can tell, there will be a whole lot of rendering required to pull off this project. If you can help with the final rendering of this project, please mention that fact with your entry, and tell us which equipment and how much time you can contribute. "Farming out" parts of the animation will really help get the project finished in a timely manner.

Some of you may be wondering how on earth we could possibly render a scene of this magnitude. Well, as you probably know by now, NewTek's new version of LightWave has no more polygon limits. This, and a bunch of people with souped-up machines running it, should be up to the task. As entries come rolling in, I'll do my best to include rendered images of them in my columns along with design credits so we can get an idea of how the entire work is shaping up.

You have your quest, Worthy Animator! Make sure to follow those building codes, and get to work!

Mach Universe
3019 Pico Blvd.
Santa Monica, CA 90405
Attn: David Hopkins

Building Code

1. All structures on your property must be in proper scale to the real world. For example, a two-story building should not be five kilometers tall. Measure important parts of your office or home to get an idea of the sizes to work with. Remember that LightWave uses the metric measurement system, so you should too.

2. No structures on your property should at any time extend beyond designated property limits. This means no upper-floor decks or signs hanging out over the streets around your block.

3. All of your surface names must begin with a unique identifier. If, for example, both Joe Smith and Ann Jones use the surface name Brick, but with different settings, one or the other surface may end up looking wrong when loaded together into LightWave. Joe should use a surface name such as JSmith-Brick and Ann should use AJones-Brick, which would not conflict with each other.

4. Your city block must contain a realistic number of polygons in relation to the projected complete scene. We request that you use no more than 7,500 polygons in your block if possible. Remember that you can keep the polygon count down by making sure not to use double-sided polygons except where absolutely necessary.

5. Avoid landscaping with polygon-intensive items such as the NewTek-supplied Tree

object. When we (the city planners) assemble the scene, we will add trees where appropriate and as memory allows.

6. Your entire block and contents should be parented to a NullObject in the block's exact center. Since you should use the block size template exactly as provided in the accompanying column, your NullObject should be located at X:0, Y:0, Z:0 and every item's position should be in relation to that NullObject. For example, if you load a building, parent the building to the NullObject before positioning it on your block. The same holds true for light sources, etc. If this rule is not followed, the entry may be disqualified.

7. Surface textures may cause memory problems. It is vital that you use the smallest possible images in texturing your property. We recommend the useful ProFills textures from JEK Graphics (no, there's no money changing hands here!). In fact, JEK owner Joe Kagerer has agreed to offer a special discount on his texture sets for users who order direct and mention the project. You can get either Volume 1 or 2 for only \$34.95 instead of the list price of \$49.95. Be sure to mention the RenderVille project when ordering.

Short of buying these sets, we require that you use small, seamless brushes such as those you could create with Deluxe Paint with a maximum of 16 colors. If your property has a requirement of higher quality images, please be considerate of the memory and rendering time you'll be consuming. If you don't need to use 24-bit color in your

image map, don't! Also, if you use the FractalReflections image included with the Toaster, reduce it to 16 colors with ADPro or a similar application. Keep this rule in mind: If you can't load your own scene on a 12Mb machine, it's too big.

8. No item on your property may be taller than 20 stories. This rule is in place because we don't want RenderVille to turn into Los Angeles.

9. All objects on your block must be original. Making lots of copies of Allen Hastings' train station object doesn't count. If you don't feel up to the task of building high-detail objects, then you might be more comfortable with simpler concepts such as warehouses, strip malls, and the like.

10. RenderVille is located in the modern-day United States. This means that buildings from the future are most likely not going to look like they belong. If you wish to design a futuristic structure, please keep it in line with current technology.

11. The city planners will supply the city with streets, freeways, traffic lights, street lights, etc. You, however, are responsible for the sidewalk around your block. Please try to conform to traditional city sidewalk sizes and driveway types! Your sidewalk is to fall completely within your property. If you want to add sewer drains or whatever, feel free, but keep an eye on your polygon count.

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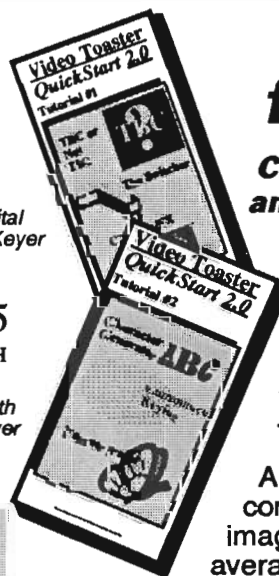
QuickStart #2 \$49.95

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12. Signs on buildings are permitted, provided that they are comparable to what one might currently find on similar buildings in everyday life. Please keep any "street-level" signs at a realistic scale and no taller than two stories.

13. Try to come up with original business names. Please do not use any names of existing businesses, individuals, etc. on your property.

14. The city planners will decide the final location of your block within the city limits. No preferential treatment will be given as to locations except where the look of a particular area of town dictates positioning. There are two different types of city zoning that will be grouped appropriately; residential and commercial. Make sure that your entire block conforms to one or the other—no mixing!

Following are a few examples of what might be found in each:

Residential: Single-Family Houses, Condos, Apartments, Convenience Store, Grocery Store, Gas Stations (on corners only), Churches and Schools.

Commercial: Office Buildings, Retail Stores, Fast Food/Restaurants, Gas Stations, Warehouses and Strip Malls.

Don't be limited by these suggestions. Just use them as a guide for ideas. The point is, if it doesn't belong, it shouldn't be there!

15. Be sure to include all of your objects on the disks you submit. We are currently able to accept contributions on standard 880K floppies (not the high-density format used in the newer Amigas), 21Mb Floptical disks, and Syquest 44Mb carts. Note that your media cannot be returned to you. Please make sure to include the scene in such a way that we can click Load Scene, point at your scene name on your disk, and have your scene loaded properly. Also include a document explaining any special techniques or methods which may require special attention. This includes documenting the lights. Refrain from using motion unless there is a really good reason.

16. Entries must be received no later than December 1, 1993.

17. If you have any questions regarding this project, please contact David Hopkins at the address found at the end of Lighten Up, making sure to include your phone number and address so we can get in touch with you. If we all pull together on this, we can make it something really special. We look forward to seeing your contributions, and best of luck to you!

By David Hopkins
&
David Thompson

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Circle 34 on Reader Survey Card

By R. Shamms Mortier © 1993

Help! I'm drowning! Drowning, that is, in new Amiga goodies (what a pleasant way to go). All sorts of new stuff is either on the way, or in the pipeline, and the Amiga user will stay ahead of the pack. So,...let's get on with it.

Aladdin-4D

Get ready for the instructional video. *ADSPEC Programming* has purchased a single frame controller, professional quality VCR, and all of the needed stuff to release their first instructional video on Aladdin-4D, which should be a blessing to Amiga Aladdin-4D users. Because of the complex nature of many of the new tools in Aladdin, and the fact that more are being added all of the time (sign on to their newsletter and disk for proof), the video should prove very useful. Even with a well written manual, this package needs an instructional video...if for nothing else than to motivate the Amiga animators to new experiments. The release date is set for about April 1st, and they're not sure yet if it'll be a 1 or 2 volume set. Price is also in debate. The next *Aladdin Newsletter* (*Aladdin's Lamp*...what else?!), will feature mapping with procedurals. Sign on board!

DPaint Away...

Get the new *DPaint-IV.1* AGA upgrade for only a \$30.00 fee (as long as you already own *DPaint IV*), or \$199.00 retail. Contact Lisa Higgins at *Electronic Arts* (415-513-7396) for the juicy details. It's really a thrill seeing your work in HAM-8 (262,000 colors) or 256 colors on the A-4000. *DPaint IV.1* loads (but doesn't save) 24 bit files, and when you see a 24 bit transformed into a HAM-8 picture, you won't believe your eyes. It's very hard to tell the difference in many cases. But don't bother to order this unless you've at least got WB 2.04 (3.0 on a 4000 is even better) and 2 megs of memory. Let's face it. It's time to upgrade in a serious way if you're still a WB 1.3 holdout! All of *DPaint IV*'s features are here for your animating pleasure and then some. First, there's the new resolution interface screen, giving you as many choices as your hardware allows. If your machine has less than the maximum hardware (an A-4000 with a multiscan monitor) some of the options will be ghosted out. Both picture and screen resolutions can be chosen separately, as well as all overscan possibilities. Other new options include the capability to move around the requesters via the keyboard, reading and conversion of 24

bit files, creating 8 bit animations and images, a player utility for display, clipboard cut-and-paste operations, application of a special "be square" operation to brushes,...and on and on including all of the enhancements already implemented in *DPaint IV.0*. All A-4000 owners should jump for joy and purchase this immediately.

Getting your BlackBelt-

Soon *BlackBelt's ImageMaster 9.24* will be available, another step towards the 10.0 target release sometime in 1993. Version 9.24 provides some excellent new features...let's take a look: File Loader Additions-TIFF, PCX, MacPaint, GE MRI, Amiga.info, Notebook, AGA anims and stills, NASA PDS, NASA FITS, Autodesk FLI and FLI animations, Clipboard, "screen grabs". They rewrote all color separation facilities, added Direct support for *Epson ES300*, *ES600*, and *ES800* scanners. They also added support for *OpalVision*, *DMI's Vivid24*, and Super Poster printer capability.

Also out (for MS-DOS operations) is the *BlackBelt* release of *WinImages*, a port of the *ImageMaster'* morphing functions for *MS-DOS Windows 3.1*. It is a very classic looking Windows application.

Reality as Virtual

VistaPro, one of the Amiga's digital scenery generators, is now in its 3.0 version. Upgrade prices are available for older version users (the retail is \$99.00). Additions include more realistic 3D vegetation, advanced fractal texturing, improved clouds, 3D stereo viewing, AGA support, and much more. Tree choices include individually shaded leaves and parts on oak, pine, palm trees, and cactus, sagebrush, and grass. You can also add roads, buildings, and waterfalls to any landscape! Historical views are also possible with many DEM files. If that isn't enough, dig their new Terraform module (version 2.0): place a DEM version of your face on a mountainside or perform a multitude of other effects on your

pictorial image. Neat, huh? Give them a call at 805-545-8515 (fax 805-781-2259) for details, or write Virtual Reality labs / 2341 Ganador Court / San Luis Obispo, CA 93401.

You Can Do it

Innovatronics (800-875-8499) is now shipping *Opus 4.0*. It comes with a 245 page manual that walks you through all of its features in a friendly fashion. The cost is \$50.00 if upgrading from 3.4x, (more if your version is earlier). New stuff includes Applcon support, global file filtering, ILBM/ANIM viewer (including AGA material), Font Viewer, Sound File player, extensive online help, and more. I know I'm going to upgrade, and so should you.

News from GVP

GVP, one of the Amiga's most qualitative and progressive developers, has a long list of information to share with the Amiga community. For a start, there is a developers disk for *ImageFX* that is available off FidoNet and Genie. Secondly, there are new items being added to the *IV24* system, among which are: updated control software,



and the ability to view JPEG files without prior decompression, totally redesigned *MacroPaint-IV24* (load/save JPEG, better speed, and free-floating color toolbox interface...), *Caligari-24* on-board, *Desktop Darkroom*, *myLAD*, and a pictures disk. Contact Bill Prescott at GVP: 215-337-8770 x273.

Wood 'n Stone-

If you're in the market for wood and/or stone textures, check out the disks from *Bearded Wonder Graphics* (1866 Ocean Ave., 5C, Brooklyn, NY 11230, Phone/Fax: 718-998-1767). I just got the sets and played with them extensively on my A-4000 *OpalVision* system. Then I ported them to *Aladdin-4D* and wrapped away in 3D. What a gas. The list of wood textures is especially impressive, with everything from Maple to Oak to Driftwood and back again. Woods come in plain (3D texture maps), plank (walls and floors), parquet, and tile. Some of the textures have been image processed for effect (bump mapping, etc.). All are also represented in small thumbnails collected in JPEG pages. An extensive doc comes with the images, and the whole set(s) is wrapped in a nice binder. A catalog printout is included. Prices are as follows (with a discount for orders received before April 30th indicated in parenthesis): *Ultimate Wood Collection* and *Sampler sets* in JPEG: \$225 & \$85 (\$169 & \$64); *HAM Ultimate Wood & Sampler*: \$180 & \$55 (\$135 & \$42); *Ultimate Rock,*

Stone, Mineral sets: \$110 (\$83).

Is This Commodore?

CBM is making a pitch to all "creative Amiga users" and asking for details so that it can use the info in ads and other marketing alternatives. In their words, "If you have something positive to say about the Amiga, let us know about it". It's about time, but better late than never. Send all comments to: Commodore Marketing, Dept. #480, 1200 Wilson Drive, West Chester, PA 19380-4251. The letters that contain this request are signed by Jim Dionne, CBM's erstwhile president.

Power Up!

I know, I know. You have all of this money invested in your A-2000 or 3000 system, and think that the A-1200 or 4000 is just a flash in the pan, a temporary fix, a needless investment. Well, my friend, if you are an Amiga graphics and animation junkie, and you get the real feel of an A-4000, you'll never be the same again. I can't begin to tell you how nice it is to have an affordable "040" coupled with the *OpalVision* card. Of course, *Commodore* wants your business, too. So they're offering you a chance to "Power Up" to an AGA machine at substantial savings.

These offers are said to end March 31st, but don't bet on it. Like other platform manufacturers, *Commodore* needs to pump up its market penetration, even to the point of

redressing its current user base. I'll bet this power-up stuff, or some form of it, is permanent. It may drop even lower, but don't look for that in the near future. The A-4000 deal includes a 25/120 A-4000, *ADPro*, and *DPaint IV.1*. It can be had for \$2693.00 (for a savings of \$1500.00 off list). The A-1200 offer includes *Softwood's Final Copy 1.3* is just \$599.00 (a \$600.00 savings).

Users of *AmigaVision* will also want to tap into *AmigaVision Professional* for an upgrade cost of \$99.00. This is especially true if you're an AGA owner, since this version is AGA compatible. Non-owners will have to fork over \$399.00 (list). Call 1-800-448-9987 for the scoop.

Put Down That hacksaw!

About a week before I received my long-awaited *OpalVision* board, I had a call from an Amiga artist who told me how angry he was that the board would not fit in his A-4000. This sent a wave of fear through me, as I was also planning to put my board in my 4000, and was not looking forward to delaying the process once I got it. Well, it arrived, and sure enough, the mounting bracket was of the 3000 persuasion. I tried to bend and drill it, but finally just took a hacksaw and cut off the offending portion. It was the weekend, and no time to call Centaur. It worked fine, but internally was held away from the motherboard by a craftily placed bag-tie! On Monday, I called *Centaur* to gently complain. Well, the news is that



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- 24 Bit JPEG Thumbnail picture files, cross referenced with printed index.
- Printed Documentation - with tips for use.
- JPEG loader *REQUIRED* - Hard Drive & 1MB Chip Ram Recommended.

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We're looking for tutorials, reviews and any interesting uses you have found for using your Amiga.

Commodore, true to their irritating habit of making changes and releasing products without supporting or telling the developer community, had released the A-4000 with modifications few developers were prepared for. All new OpalVision purchasers will receive an A-4000 replacement bracket bundled with the board. Older OpalVision users will need to send \$5.00 to Centaur for the correct bracket. I sent my money off the same day...not that the bag-tie doesn't function as hoped for.

Installing the Invisible

Workbench 3.0 has a problem recognizing some of the features of the standard Commodore "Install" program in some cases. This is especially apparent when you have a list of features that are to be installed (as in DPaint iV.1 or ADPro). These features are normally checked as a default, and you are supposed to click on the boxes to have the install program ignore specific items. Well, in Workbench 3.0, many users (myself among them) see the boxes come up with no default check in them, and click on them producing no apparent result. But, aha! Here's the rub. The checks are there all the time, and when you click on a box you actually remove them. Therefore, if you have this problem with your A-1200 or A-4000 (the two machines which run the WB 3.0 DOS), skip the section that shows the choice boxes in the install program and have the software install all of the modules. Then, because it's easy to see the icons that represent your modules on the WorkBench screen, you can remove the unwanted ones after the operation is done.

A Personal LAN-

I sing the praises of *ParNet* to the Amiga users near and far. *ParNet*, for those of you unaware of its power, is a small program that allows you to hook two Amigas together via their parallel ports so that each one can access the other. As a result of *ParNet*, I now have a unified two-Amiga system (a stacked 2000 and an Amiga 4000) that allows each computer to access (read and write to) all of the others peripheral storage devices. It's really magic to watch

the system work after so many months of porting disks of data from one system to the other. I now think of this system as one big computer with three hard drives (120, 90, and 80 meg) and five floppies. You'd be surprised at the number of ways this expands your creative options, especially with video/graphics work. You can get *ParNet* on most of the nets, or purchase it on one of the Fish disks, or a disk from another freeware/shareware distributor. The cable that connects your two systems can either be built by you (simple), or purchased from a place like Redmond cable in California for about \$35.00. A friend of mine connected

some Icon-X icons to the software, so now I just have to double-click on the icons on each computer screen to get the program going. By the way, just to educate those not familiar with the acronym LAN (used in the paragraph title), it means "Local Area Network". That's exactly what you achieve with two Amigas and *ParNet*.

Well...

That's about it for this month. Next month's "Doctor Is In" column will be devoted entirely to Shareware/Freeware packages that I have found to be useful in my pursuits for digital happiness. Till then, ENJOY! And I'll see you in ROMulan space.

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Circle 17 on Reader Survey Card

Public Domain Software

By
Harv Laser © 1993

Free and nearly free

"Free MPEG software and the Amiga"

By now, you should be familiar with JPEG, the Joint Photographic Experts' Group coding scheme for still image compression. JPEG-related software can be found for the Amiga in a wide array of both freely-distributable and commercial software packages. But you may have asked yourself, "Self, what about some kind of great compression scheme like JPEG but for animations instead of stills? Or can I use JPEG on animations?"

No, you can't use JPEG to compress animations. JPEG is designed to handle single frame "deep color" images: 24 bit (16.7 million) colors or 8 bit (256 shades of) gray. But another "working group" of professionals has developed a similar algorithm to handle moving pictures, and it's called MPEG.

MPEG is a compression method for video animations, similar to the JPEG compression method for still images. MPEG is designed to convert an animated image (with synchronized sound) into a bytestream or file that can be decoded by special hardware and played in real time, or uncompressed in software into a playable animation. There are actually several different flavors of MPEG, and the details of some of the future versions are still being developed. The first of these methods to be standardized (MPEG I) has already been implemented in several public domain programs.

The different types of MPEG are based on the BANDWIDTH (bytes per second of video) they are designed for. MPEG I was designed for a rate of 1.5Mbits per second, which (by design) is the read rate off of a CD ROM. Future MPEG algorithms will be designed for higher bandwidth for higher quality.

The compression algorithm MPEG uses is very complex. It is based on the fact that an animation frame will probably be very similar to the previous frame and only the parts of the image that change from one frame to the next really need to be updated.

MPEG uses an algorithm similar to JPEG to make a "key" starting frame, then future frames are "predicted" from this starting point. A "key" frame is redefined every second or so during the course of the animation. Interestingly, some frames are BACK-predicted from FUTURE key-frames that have already been decoded ahead of time. This means that the algorithm doesn't even necessarily decode the frames in order internally. The algorithm's decoding speed is very irregular for this reason.

For a more detailed layman's explanation of MPEG in its current state, look for a file called "MPEG-FAQ" (Frequently Asked Questions) which was written in November, 1992 by Frank Gadegast of Berlin, Germany. Gadegast's file is completely Amiga-ignorant but still it contains a lot of useful information. It's commonly available on Internet FTP archive sites, or if you can't find it anywhere, email him at phade@cs.tu-berlin.de or phade@uopax.contrib.de.

MPEG software for the Amiga is extremely limited right now, both in its capabilities and the choices of software you have. There are no MPEG builders, and only two MPEG players. Both of the players are freely distributable. One of the players requires you to have OS 2.04 or higher installed on your Amiga and the other requires that you own a DCTV from Digital Creations. Both benefit highly from an '020 or better CPU - if you don't meet one or the other qualifications, for now, you're out of luck.

There are, so far, no commercial Amiga software titles which can manipulate MPEG video streams, but that may change in the future. For now we're limited to just viewing MPEG movies created on other platforms.

It's worth noting that at the recent Winter Consumer Electronics Show, held in Las Vegas, Nevada, in January 1993, Commodore showed a "technology preview" of an MPEG hardware card running in an Amiga 4000. This was done with literally no fanfare: the card was not detailed in their CES press kit; there were no signs at their booth to indicate the card was on display and

as they've done before with non-shipping non-products, no ship dates or prices were uttered.

The Amiga MPEG card was playing back a five-minute long Bon Jovi rock video directly from a 51.5 Meg hard disk file, in real time, at 30 frames per second, in a window, on the WorkBench, in AGA colors, without sound. Even so, the Amiga continued to multitask freely. While the MPEG video was playing, I could open other windows, and run other programs, without any noticeable slowdown at all. Here's hoping Commodore keeps working on this card, adds the required sound capabilities, and ships it to us as a real product. This really NEEDS to be done to keep the Amiga in line with what's available for other personal computer platforms right now. Meanwhile, here are your MPEG-playing software choices as they exist today:

-1-

MPEG_play

Amiga version 1.22 (Dec 11, 1992) by

Michael Balzer

Student of Computer Science, Univ. of Dortmund, Germany

(based on)

MPEG Video Software Decoder

(Version 1.2; Nov 25, 1992)

Lawrence A. Rowe, Ketan Patel, and Brian Smith

Computer Science Division-EECS, Univ. of Calif. at Berkeley

Balzer's MPEG_play requires OS2.04 and up. It has a minimal WorkBench interface that allows you to choose the MPEG video stream you wish to view, and how you want to view it. It can open a custom screen, or play in a WorkBench window, and it knows how to display in AGA graphics modes for better results on AGA-capable machines. On a non-AGA machine you'll get a dithered 16 or 32 color display. HAM is not yet an option.

Speed of playback is, to be polite about it, not fast. As Balzer says in his documen-

tation, "Don't expect this player to be the Speedy Gonzales of anim players. On an Amiga 4000, you get a maximum of about 5.4 frames per second (dithering gray on 128 colors NTSC lo-res screen)."

Source code is included and MPEG_Play requires you to install a couple of additional libraries into your LIBS: directory before it'll work. The documentation explains this. The 250K distribution archive also includes a selection of some MPEG video streams for immediate gratification.

Contact the author of MPEG_play at: Internet: balzer@heike.informatik.uni-dortmund.de

MPEG2DCTV requires, as you would expect from its name, ownership of a Digital Creations DCTV display device, but unlike MPEG_Play, this player will operate under OS 1.3 if you've not yet installed 2.04 or higher.

You do, however, need at least a 68020/68881 or higher CPU/math chip combo in your Amiga.

Since DCTV's output is basically VHS-quality NTSC color television, and MPEG video contains 24 bit data, the results are quite acceptable, depending on the quality of the original MPEG video and the care that was taken when it was created.

MPEG2DCTV has no interface at all - it's invoked as a command from a CLI or Shell prompt, with various "arguments" to control its playback. Options are provided to play in grayscale or full color, use 3 or 4 bitplane DCTV mode (it's a faster playback speed versus better color resolution and depth tradeoff) and some other toggles explained in the docs.

What's still needed?

Well as you'd expect, MPEG decoding in software is pretty slow. Viewing an MPEG stream, even on the fastest Amiga you can buy or build, is more like flipping through postcards rather than watching a movie. What's really needed is for these players to be modified such that they load and play the frames from an MPEG stream while at the same time saving and compiling frames into an Amiga-style .anim file for full-speed playback.

Ben Reich intends to include this capability in a future version of his MPEG2DCTV program, so watch for that update sometime soon. In the meantime, you can multitask these players with a screen grabber and grab each frame as it appears, save them to disk, and then compile them into an animation with a utility such as MakeAnim or BuildAnim for full-speed playback.

But always be cognizant that, like JPEG, MPEG videos are extremely compressed. I took a 400K MPEG stream and ran it through a display/grab/display/grab process and ended up with a 2.5 MEG DCTV animation. Another 800K MPEG movie turned into a 9 MEG (!) anim file when run through the same process.

So what we Amigans need is a hardware solution to play MPEG video streams. Hopefully, Commodore will deliver on what

they showed to the world at Winter CES. In the meantime, these two players exist, and if your hardware qualifies to run them, you can avail yourself of the growing pool of available MPEG movies out there now.

Q. What is MPEG?

A. MPEG is a group of people that meet under ISO (the International Standards Organization) to generate standards for digital video (sequences of images in time) and audio compression. In particular, they define a compressed bit stream, which implicitly defines a decompressor. However, the compression algorithms are up to the individual manufacturers, and that is where proprietary advantage is obtained within the scope of a publicly available international standard. MPEG meets roughly four times a year for roughly a week each time. In between meetings, a great deal of work is done by the members, previously organized and planned so it doesn't all happen at the meetings.

Q. So what does MPEG stand for?

A. Moving Pictures Experts Group.

Q. Does it have anything to do with JPEG?

A. Well, it sounds the same, and they are part of the same subcommittee of ISO along with JBIG and MHEG, and they usually meet at the same place at the same time. However, they are different sets of people with few or no common individual members, and they have different charters and requirements. JPEG is for still image compression.

Q. Then what's JBIG and MHEG?

A. Sorry I mentioned them. Ok, I'll simply say that JBIG is for binary image compression (like faxes), and MHEG is for multi-media data standards (like integrating stills, video, audio, text, etc.).

Q. Ok, I'll stick to MPEG. What has MPEG accomplished?

A. So far (as of January 1992), they have completed the "Committee Draft" of MPEG phase I, colloquially called MPEG I. It defines a bit stream for compressed video and audio optimized to fit into a bandwidth (data rate) of 1.5 Mbits/s. This rate is special because it is the data rate of (uncompressed) audio CD's and DAT's. The draft is in three parts, video, audio, and systems, where the last part gives the integration of the audio and video streams with the proper timestamping to allow synchronization of the two. They have also gotten well into MPEG phase II, whose task is to define a bitstream for video and audio coded at around 3 to 10 Mbits/s.

Q. So how does MPEG I work?

A. First off, it starts with a relatively low resolution video sequence (possibly decimated from the original) of about 352 by 240 points by 30 frames/s (US—different numbers for Europe), but original high (CD) quality audio. The images are in color, but converted to YUV space, and the two chrominance channels (U and V) are decimated further to 176 by 120 pixels. It turns out that you can get away

with a lot less resolution in those channels and not notice it, at least in "natural" (not computer generated) images.

The basic scheme is to predict motion from frame to frame in the temporal direction, and then to use DCT's (discrete cosine transforms) to organize the redundancy in the spatial directions. The DCT's are done on 8x8 blocks, and the motion prediction is done in the luminance (Y) channel on 16x16 blocks. In other words, given the 16x16 block in the current frame that you are trying to code, you look for a close match to that block in a previous or future frame (there are backward prediction modes where later frames are sent first to allow interpolating between frames).

The DCT coefficients (of either the actual data, or the difference between this block and the close match) are "quantized", which means that you divide them by some value to drop bits off the bottom end. Hopefully, many of the coefficients will then end up being zero. The quantization can change for every "macroblock" (a macroblock is 16x16 of Y and the corresponding 8x8's in both U and V). The results of all of this, which include the DCT coefficients, the motion vectors, and the quantization parameters (and other stuff) is Huffman coded using fixed tables. The DCT coefficients have a special Huffman table that is "two-dimensional" in that one code specifies a run-length of zeros and the non-zero value that ended the run. Also, the motion vectors and the DC DCT components are DPCM (subtracted from the last one) coded.

Q. So is each frame predicted from the last frame?

A. No. The scheme is a little more complicated than that. There are three types of coded frames. There are "I" or intra frames. They are simply a frame coded as a still image, not using any past history. (You have to start somewhere.) Then there are "P" or predicted frames. They are predicted from the most recently reconstructed I or P frame. (I'm describing this from the point of view of the decompressor.) Each macroblock in a P frame can either come with a vector and difference DCT coefficients for a close match in the last I or P, or it can just be "intra" coded (like in the I frames) if there was no good match.

Lastly, there are "B" or bidirectional frames. They are predicted from the closest two I or P frames, one in the past and one in the future. You search for matching blocks in those frames, and try three different things to see which works best. (Now I have the point of view of the compressor, just to confuse you.) You try using the forward vector, the backward vector, and try averaging the two blocks from the future and past frames, subtracting that from the block being coded. If none of those work well, you can intracode the block.

The sequence of decoded frames usually goes like:

IBBPBBPBBPBBIBBPBBPB...

Where there are 12 frames from I to I (for US and Japan anyway). This is based on a random access requirement that you need a starting point at least once every 0.4 seconds or so. The ratio of P's to B's is based on experience.

Of course, for the decoder to work, you have to send that first P *before* the first two B's, so the compressed data stream ends up looking like:

0xx312645,...

where those are frame numbers. xx might be nothing (if this is the true starting point), or it might be the B's of frames -2 and -1 if we're in the middle of the stream somewhere.

You have to decode the I, then decode the P, keep both of those in memory, and then decode the two B's. You probably display the I while you're decoding the P, and display the B's as you're decoding them, and then display the P as you're decoding the next P, and so on.

Q. You've got to be kidding.

A. No, really!

Q. Hmm. Where did they get 352x240?

A. That derives from the CCIR-601 digital television standard which is used by professional digital video equipment. It is (in the US) 720 by 243 by 60 fields (not frames) per second, where the fields are interlaced when displayed. (It is important to note though that fields are actually acquired and displayed a 60th of a second apart.) The chrominance channels are 360 by 243 by 60 fields a second, again interlaced. This degree of chrominance decimation (2:1 in the horizontal direction) is called 4:2:2. The source input format for MPEG I, called SIF, is CCIR-601 decimated by 2:1 in the horizontal direction, 2:1 in the time direction, and an additional 2:1 in the chrominance vertical direction. And some lines are cut off to make sure things divide by 8 or 16 where needed.

Q. What if I'm in Europe?

A. For 50 Hz display standards (PAL, SECAM) change the number of lines in a field from 243 or 240 to 288, and change the display rate to 50 fields/s or 25 frames/s. Similarly, change the 120 lines in the decimated chrominance channels to 144 lines. Since 288×50 is exactly equal to 240×60 , the two formats have the same source data rate.

Q. You didn't mention anything about the audio compression.

A. Oh, right. Well, I don't know as much about the audio compression. Basically, they use very carefully developed psychoacoustic models derived from experiments with the best obtainable listeners to pick out pieces of the sound that you can't hear. There are what are called "masking" effects where, for example, a large component at one frequency will prevent you from hearing lower energy parts at nearby frequencies, where the rela-

tive energy vs. frequency that is masked is described by some empirical curve. There are similar temporal masking effects, as well as some more complicated interactions where a temporal effect can unmask a frequency, and vice-versa.

The sound is broken up into spectral chunks with a hybrid scheme that combines sine transforms with subband transforms, and the psychoacoustic model written in terms of those chunks. Whatever can be removed or reduced in precision is, and the remainder is sent. It's a little more complicated than that, since the bits have to be allocated across the bands. And, of course, what is sent is entropy coded.

Q. So how much does it compress?

A. As I mentioned before, audio CD data rates are about 1.5 Mbits/s. You can compress the same stereo program down to 256 Kbits/s with no loss in discernable quality. (So they say. For the most part it's true, but every once in a while a weird thing might happen that you'll notice. However the effect is very small, and it takes a listener trained to notice these particular types of effects.) That's about 6:1 compression. So, a CD MPEG I stream would have about 1.25 Mbits/s left for video. The number I usually see though is 1.15 Mbits/s (maybe you need the rest for the system data stream). You can then calculate the video compression ratio from the numbers here to be about 26:1. If you step back and think about that, it's little short of a miracle. Of course, the compression loses something, but it can be pretty hard to see the loss if you're comparing the SIF original to the SIF decompressed. There is, however, a very noticeable loss if you're coming from CCIR-601 and have to decimate to SIF, but that's another matter. I'm not counting that in the 26:1.

The standard also provides for other bit rates ranging from 32Kbits/s for a single channel, up to 448 Kbits/s for stereo.

Q. What's phase II?

A. As I said, there is a considerable loss of quality in going from CCIR-601 to SIF resolution. For entertainment video, it's simply not acceptable. You want to use more bits and code all or almost all the CCIR-601 data. From subjective testing at the Japan meeting in November 1991, it seems that 4 Mbits/s can give very good quality compared to the original CCIR-601 material. The objective of phase II is to define a bit stream optimized for these resolutions and bit rates.

Q. Why not just scale up what you're doing with MPEG I?

A. The main difficulty is the interlacing. The simplest way to extend MPEG I to interlaced material is to put the fields together into frames (720x486x30/s). This results in bad motion artifacts that stem from the fact that moving objects are in different places in the two fields, and so don't line up in the frames. Compressing and decompressing without taking that into account somehow tends to muddle the objects in the two different fields. The other thing you might try is to code the even

and odd field streams separately. This avoids the motion artifacts, but as you might imagine, doesn't get very good compression since you are not using the redundancy between the even and odd fields where there is not much motion (which is typically most of image).

Or you can code it as a single stream of fields. Or you can interpolate lines. Or, etc. etc. There are many things you can try, and the point of MPEG II is to figure out what works well. MPEG II is not limited to consider only derivations of MPEG I. There were several non-MPEG I-like schemes in the competition in November, and some aspects of those algorithms may or may not make it into the final standard for entertainment video compression.

Q. So what works?

A. Basically, derivations of MPEG I worked quite well, with one that used wavelet subband coding instead of DCT's that also worked very well. Also among the worked-very-well's was a scheme that did not use B frames at all, just I and P's. All of them, except maybe one, did some sort of adaptive frame/field coding, where a decision is made on a macroblock basis as to whether to code that one as one frame macroblock or as two field macroblocks. Some other aspects are how to code I-frames—some suggest predicting the even field from the odd field. Or you can predict evens from evens and odds or odds from evens and odds or any field from any other field, etc.

Q. So what works?

A. Ok, we're not really sure what works best yet. The next step is to define a "test model" to start from, that incorporates most of the salient features of the worked-very-well proposals in a simple way. Then experiments will be done on that test model, making a mod at a time, and seeing what makes it better and what makes it worse. Example experiments are, B's or no B's, DCT vs. wavelets, various field prediction modes, etc. The requirements, such as implementation cost, quality, random access, etc. will all feed into this process as well.

Q. When will all this be finished?

A. I don't know. I'd have to hope in about a year or less.

Q. How do I join MPEG?

A. You don't join MPEG. You have to participate in ISO as part of a national delegation. How you get to be part of the national delegation is up to each nation. I only know the U.S., where you have to attend the corresponding ANSI meetings to be able to attend the ISO meetings. Your company or institution has to be willing to sink some bucks into travel since, naturally, these meetings are held all over the world. (For example, Paris, Santa Clara, Kurihama Japan, Singapore, Haifa Israel, Rio de Janeiro, London, etc.)

Continued on page 44

Wanted!! Amiga Artists!

Amiga Video/Graphics Magazine is currently accepting submissions of art for its upcoming issues. We are accepting artwork in 2D and 3D or a montage containing Amiga generated work. If the possibility of having your artwork displayed on the pages of AVG interests you, don't delay and send in your artwork now to:

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Users Interface

By
Robert Cohen © 1993

Welcome to the first installation of what I hope will be an ongoing column. The *Users Interface* is a sounding board where readers will be given the opportunity to request the development of new software as well as revisions for existing software. Although I am actively soliciting the input of every reader, this column is pointedly aimed at all talented developers in the *Amiga* community. Amiga software is improving by leaps and bounds and the availability of new applications is growing at an amazing rate. I have always felt that a column such as this one would be mutually beneficial to both the end user as well as the developer, however this can only work if we receive the active participation of our readers. So Amigoids, get out your pencils and wish lists and get ready to supply the creative kindling for future software development. In fact, before we go any further, why not turn to the end of the column and write down our address so that we can hear from you sometime soon. Anyway, now that you have prepared to send us your ideas (you have, haven't you?), let's get on with the column.

3D scanners are the ultimate tool for any 3D artist, but just how many of us can ever hope to own one? Sure, if you are willing to second mortgage your home or sell your kid, maybe, but for most of us, a 3D scanner is just something that we only read about. But what if 3D scanners were the only alternative? Ever since the release of *Pixel 3D*, I have been awaiting a bitmap to 3D converter that offers something more than fancy extrusions. Picture a tri-view, similar to the ones found in most modeling programs, that can accommodate three, two color bitmaps, each of which would represent the corresponding view (top, profile, front). Now imagine a program which could assimilate a fair representation of the 3D version and spit it out in all the popular 3D formats. A user would simply create or scan in the appropriate views, load them into the corresponding windows, and then sit back while the program did the rest. It would help if the program would also automatically size all three bitmaps accordingly so that each

would fit comfortably into the others. Such a program would finally allow 3D artists to create organic forms, such as human heads, with little effort or skill.

Another welcome function would be the ability to save various elements of your form independently to facilitate hierarchical motion. Choosing elements by clicking on polygons or dragging a lasso around groups of polygons, and then accessing a pull down menu to isolate them seems to be a simple enough procedure.

One would have to realize however, that such a program would not replace the 3D scanner. Even simple, extruded forms out-

put from *Pixel 3D* often require cleanup in modeler. But wouldn't it be nice to start with a form closer to the end product than a simple extrusion?

I've mentioned this idea to several developers in the past (you know who you are), but so far no dice. Well guys, how about it? The time is certainly ripe. There are many well established developers in the industry who could pull this off, but let me state that they did not start off that way. If you are a programmer who uses the Amiga, and you feel that such a project is within your realm, go for it. There is much room in this industry for new talent.

Next, a general request to all Amiga developers. I think just about every Amiga user at this point realizes and respects 2.0 and up operating system benefits. However, there is a large percentage of us who are comfortable, and have no immediate plans to upgrade. Therefore, please guys, don't write us off. There have been some of you who have done just that. We do not want to have to feel as if we must upgrade simply to take advantage of your new offerings. Sure, we realize that there are just some things that you cannot do with 1.3, but some upgraded functions can be downward compatible. I hope that future graphics upgrades will not cut off the pre-AGA market by this process either. The new AGA machines are fine indeed, but if one has a super-charged 2000, with 24-bit capacity, for example then they may choose to stay where they are. I myself

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am very comfortable with my super-charged 2000 and Toaster workstation. I have no immediate plans to upgrade from Workbench 1.3 or to an AGA system. But I would be more than little disappointed to find future upgrades, especially with popular software, were not downwardly compatible. The Video Toaster brought record numbers of new users to the Amiga during the Workbench 1.3 era and many of us are very comfortable here. Please don't forget us!

Has anyone noticed that the desktop photo retouching industry is passing us by? I got my hands on some literature the other week by a company marketing and supporting a system aimed at the one hour photo industry for on the spot graphics services was built around a Mac. Then I remembered a photo show which I attended sometime last year, and realized that of all the photo retouching systems they had there, none were Amiga based. With the Amiga clearly out in front in the Multi-Media race, why is this the case? I believe that this is true because no one has ever bothered to write a piece of software specifically designed for this purpose. If they have, it was never marketed very assertively. A film resolution, 24-bit retouching system would be very welcome in Amigaland. Sure there are Amiga systems which could be, and are being configured for this purpose, but I do not know of one program clearly designed for such an application complete with drivers for all input and output devices (as well as a

true 24-bit paintbox) with an interface as simple to use as *DeluxePaint*. This would open up many doors for Amiga based business.

A few months back, I spotted several companies who were starting to offer 3D object libraries (other than myself). This excited me, for although I personally did not see anything that I needed, I was sure that this trend was going to continue. I am still hoping that the trend will catch on and more 3D artists will offer their work for sale. Unless you are going to try to sell your stuff through the distributors, packaging need not be expensive, and advertising in the **Market Place** of this magazine is quite an affordable place to start. (Ed.note. *Hear that guys?*) If you are a 3D artist, and already have a selection of models you have created, why not try to make some money with them while sharing your efforts with the less talented? Your models do not have to be scaled, detailed replicas to be useful to others. If you can save the end user hours of modeling time, even if they have to custom some things for their own use, then your models are worth money. If you desire to market your objects and just don't know how, then write me with your questions and I will be more than happy to supply information. The more available 3D objects become, the more powerful your system becomes.

Well, that's it for this installment of Users Interface. I hope to receive many of your ideas so that I may write another

installment next issue. In order to receive your submissions in time for the next issue, you are encouraged to fax them to (908) 530-9244, **ATTN: Users Interface**. Please include all contact information including your daytime phone number. Or if you prefer, submissions can be mailed directly to me, care of Animatics, P.O. Box 158, Oakhurst, NJ. 07755. This column will also print replies received from developers who wish to respond to our readers requests and comments. So, until next time Amigoids, reach for the stars and let your imaginations soar. This years wish lists could be next years top sellers. . .

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By
Patrik Beck © 1993



The AGA Connection
Video applications of the Advanced Graphic
Architecture
Round Three

So, how do like your new AGA machine? The chances are getting better and better that you will be owning one. Sales of the A4000's are faster than anyone anticipated, and the A1200 is positively going through the roof. After several months of their initial releases, they are still on a near constant back order from most suppliers. This is a shock to many who considered the Amiga a dead issue, except as a seat for the Video Toaster. There are reports that a good portion of these sales are to first time Amiga owners, which is another good sign. By pouring enough money into Macs and IBM's, you can come close to bringing it up to the performance level of an Amiga 1000, and many people were willing to do so. With AGA power, the Amiga is again light-years ahead of the pack.

Camcorder Reviews the A4000

In the April '93 issue of *Camcorder magazine* there was a very flattering review of the A4000 by Mr. Kirby Carmichael. He discussed in detail the potential video applications for the new pallets, resolutions and speed that is available in the A4000. With the exception of one particular super-hires overscan HAM8 animation, he was able to achieve frame rates of 30 frames per second (very important in video). He went on to explain how the new display modes could possibly obsolete dedicated display boards and the necessity of single frame recording in high end animation applications. The article was a nicely written overview for the person who takes his camcorder seriously.

A few pages past the review of the A4000 was a different sort of article. This one was extolling the video applications of the Mac's *Quicktime* movies and its port to the IBM's window environment. For those of you who

are not up on the latest video technology, it is a way to view "mini-movies" (animations) in real-time. A 386 IBM compatible computer running at 33MHz is capable of displaying video in a window that is 160 pixels high and 120 pixels wide at 15 frames a second. A 486 machine can obtain rates at that resolution of 30 frames per second. The lowest standard Amiga screen format is 320 pixels wide by 200 pixels high, just a few pixels under four times their highest resolution, and, at that resolution, will have no trouble at all playing at 30 frames per second! How many years ago was it that Amiga 1000's were playing the juggler demo, an overscan animation that ran at better then 30 fps and was synced to internally generated digital sound effects? They concluded the article lamenting that practical applications of digitally displayed video are still some years away. Well, maybe on IBM's Macs.

That aside, I feel that *Camcorder* is worth at least a browse through at the magazine rack. They have lots of useful tips for the novice and semipro video maker, and display a healthy respect for the Amiga.

Things that go well with a 4000

I have spoke with a surprising number of people who have installed *OpalVision* in their 4000. *OpalVision* is a high quality 24-bit display device and paint program that fits very well in the 4000's video slot. I am using *OpalVision* myself and I am quite pleased with it. The paint program is very powerful, yet has an easy familiarity, adopting many of the conventions defined by the venerable Deluxe Paint. (I have been using the *Opal* hot key function to display a 24-bit background picture and run Dpaint animations on top of it. Quite impressive.) *OpalVision's* makeanim24 and playanim24 really does create and play 24bit animations at usable speeds. Try doing that on any other computer platform.

I find myself also relying on *Imagemaster* quite often, and also spend a lot of time play-

ing with *Caligari24*. Both these programs use the new graphic modes to their best advantage by displaying results in the best possible resolution. I have been doing really horrible things to people's faces using warp and morph in Image Master's special effects menu, rendering them in 24-bit, and playing the animations with OpalVision. Can you say "Broadcast Quality?" By the way, I have yet to see any of the much dreaded HAM8 fringing on a Caligari rendering. It was only a matter of time until someone got the bugs out. My biggest gripe about *Caligari* is that although it has direct support for nearly every frame buffer under the sun, it does not support the 24.IFF format. They have developed their own format, called .6rn, which is, for their purposes, superior, and can be converted into a digestible form by using *Art Department*. A call to *Octree* informed me that they are currently installing 24.IFF in their *Caligari broadcast* version, and as soon as the code is done for that it will be implemented into *Caligari 24* in the form of a (probably) free upgrade.

Art Department Professional, the program that did HAM8 conversion months before anyone had a clue why, also feels right at home inside my 4000. I would like to go into depth on the subject of *Dpaint* AGA, but I have not received my powerup copy yet. When I decided I could not wait any longer, I called *Electronic Arts* directly and ordered one at the upgrade price, but they were out. It seems that Commodore was not the only company to underestimate the immediate popularity of the new models.

I did receive a nice letter from *Commodore* thanking me for purchasing a computer. It may not seem like much, but considering *Commodore's* legendary indifference to its public, it was a step in the right direction.

Some Bad News

Got some reports on things that do not work well. A very nice raytracing program, *Real 3-D*, does not seem to get along with the AGA format. This is unfortunate because in anticipation of the release of *Real 3-D V.2*, *Real 3-D classic* has been reduced in price to around \$120. If you are looking for an economical introduction to 3-D animation and have access to a non-AGA Amiga, is a nice way to start.

Anim Workshop from Axiom software, the same people who brought you the invaluable utility *Pixel 3-D*, is a utility for compiling and manipulating ANIM-5 format animations. Not only does it not work with the new AGA formats, it will not work in an AGA machine at all. This was shamefully admitted by the people at

Axiom, and they are hard at work rewriting the thing to bring it up to speed. I hope they write it quickly, because AGA is destined to become the most powerful personal animation tool ever, and anything that assists its growth will be welcome.

Toaster Tunnel Vision

Let me say first of all, the *Video Toaster* is the greatest thing to ever happen to the Amiga. It simultaneously gave it respectability and notoriety. It is the Swiss army knife of the video revolution, with every function matching, or exceeding, the equivalent dedicated hardware at fractions of their cost. It is cost effective and high quality. Viva la NewTek.

With that being said, let me quote Lee Stranahan in a recent issue of *Video Toaster User* : "...if NewTek doesn't release a board for the 4000, I don't see how the 4000 is going to succeed as a CPU." He also implies that it is unlikely that there will be a 4000 version of the Toaster, and that an Amiga without a Toaster is, let me quote again, "hasta la vista, baby!" (Ed.

Sales of the
A4000's are
faster than
anyone anticipated,
and the A1200 is posi-
tively going through
the roof.

note, This has since come to pass.)

When it comes to the Video Toaster, Mr. Stranahan knows what he is talking about. He has some of the best produced and informative video tutorials on the market. He may also be mad with power. Let me point out a few facts:

The Video Toaster is the best video device in America to put into your Amiga 2000.

There were more Amiga 500's sold than there were A2000.

Most Amigas exist outside the US in areas that do not use NTSC standard.

There are other devices that have no problem using the A4000 video slot.

NewTek likes to invent really cool stuff.

The A2000 is getting old. Its only difference from the A1000 is 1/2 meg of chip ram and a bigger box. At times it seems that NewTek and Commodore are unwilling bed partners in an arranged marriage. NewTek is about ready to release version 3 of the Toaster and it promises to be truly awesome. I find it hard to believe that they would not be chomping at the bit to give their technological child the best possible place to perform in. With OpalVision and its promised modules nipping at its heels, the Toaster can not spend much more time resting on its laurels.

Cool New Stuff

With viability of the Amiga as a platform established for at least a few more years, there is bound to be more development in software. Software companies that have recently drifted away from the Amiga may find that it is in their best interests to return. The programs that are being released today are among the handful that had prior knowledge of the advanced graphic architecture. Lead time for software development and marketing, being what it is, means that it may be awhile before some totally new programs see the light of day. Fortunately, there are enough out now to keep us busy for a while.

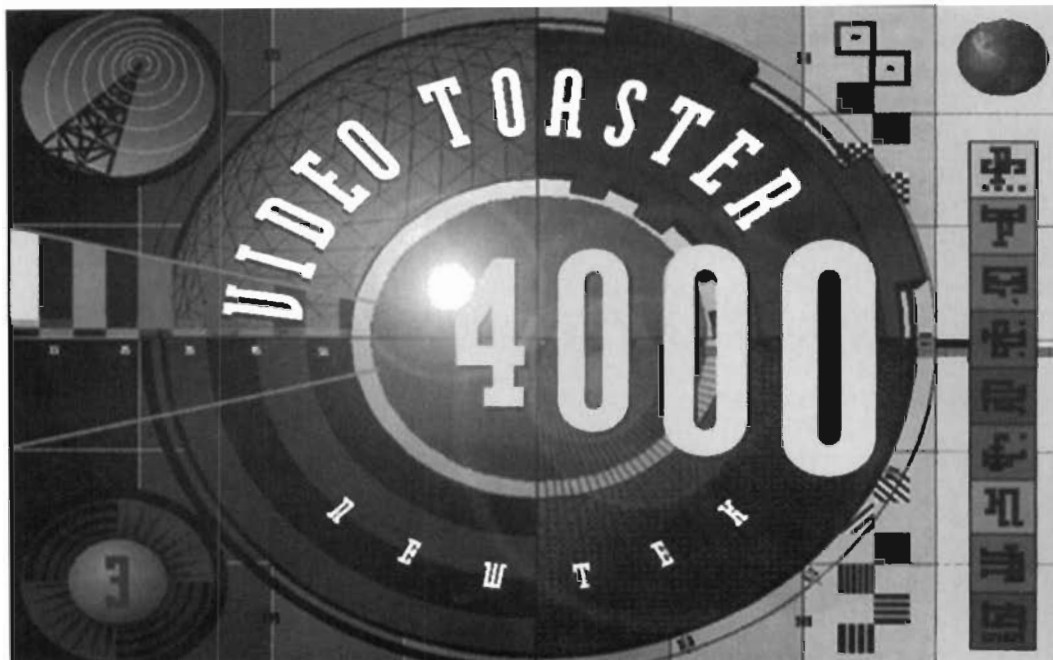
Brilliance may be out by the time you read this, or it might not. *Digital Creations* will not release even a beta copy to column writers who are desperate to see it. It is hard to be patient, but it is comforting to know that they are going to great lengths to make *Brilliance* the best paint and animation program possible. Coming from the people that created a minor miracle with their *DCTV* unit and its paint program, it should be quite a product. The list price on *Brilliance* is tentatively set at \$249, but they are offering an upgrade from any paint program for \$125! Stay tuned for details.

Vista 3.0

I have always had a warm spot for scenery generating programs. I find them more interesting and relaxing than games, and occasionally useful as clipart. The big news about the latest release of **Vista 3.0** is that it will now render directly to AGA formats. I have not had an opportunity to play with this program yet because, since I bought my 4000, I have no time for relaxation. I would appreciate hearing from any users who would like to share their experience with me.

I also need to hear from anyone with anything negative to say about the new machines. I know it sounds like hype, but I have personally talked with over a hun

Continued on page 44



L

as Vegas. The name brings to mind the glamour of a city whose millions of lights blaze even the darkest of nights into submission. Untold wealth is to be had in this place if only for the pull of a lever or roll of the dice.

This time, however, the hushed whispers and most expectant faces belonged to fully two thousand people sitting, not in a casino or cabaret, but in a darkened hall awaiting news that the video revolution would begin again.

For Amiga users, the 1993 National Association of Broadcasters (NAB) convention started off at the unforgettable Caesar's Palace with the most respected names in software, hardware development and sales in attendance. They were not to be satisfied by mere evangelizing on the glories of NewTek. Even so, very few of us were prepared for what was in store.

James Dionne, CEO of Commodore did the opening intro for Paul Montgomery, and Tim Jensen of NewTek, developers of the Toaster. The significance of this sendoff was not lost on anyone. A video presentation followed the brief talk, showcasing previous marvels and accolades that had accompanied NewTek on their meteoric rise. But everyone there already knew what was possible. What had not been thought possible was then announced in a larger than life fashion.

The Toaster 4000 had arrived!!

NewTek, combining their power of possibilities, had once again allied itself with the most far-thinking computer platform ever developed. The new Amiga 4000.

Fantastic new features fully utilizing the power of the AGA chipset stunned the crowd as the video "Beyond Revolution" displayed how, beyond the shadow of a doubt, the new age would come to pass.

Two weeks ago, I saw the best become

better, and I am still in a state of shock. Until NewTek arrived, competent multimedia (Oops. N-T prefers "Personal Video Production") development had been for years the domain of those able to pay the the exorbitant prices of dedicated systems. All that changed with the first VideoToaster. Unfortunately, the lack of upward inspiration over the last several years left Personal Video Production at a relative standstill, marking time with only small, albeit significant changes in third-party software.

But what's the big deal, you ask? Well, I'll tell you.

Not unlike many "new and improved" products that hit the market, the new Toaster has tidied up some of the details, rearranging the board and adding text descriptions to prevent neophytes from having to learn "hieroglyphic-speak" in order to key in a simple command.

This more professional looking control panel only enhances the flavor of the dozens of new effects built into the redesigned switcher. For the first time, the speed of wipes and dissolves can be user-modified to suit the aesthetics of the transition beyond "Hmmm, a bit too long", "Uh, that's about right", and "Darn! too fast."



Entrance to Multimedia World at NAB

Unlike most manufacturers, however, the guys and gals from Topeka didn't stop there. LightWave has been streamlined, allowing not only a faster learning curve, but the ability to bypass the need for single frame controllers and frame-accurate VTR's when previewing the work! Oh yes, faithful ones, you really can load and play 30 frame per second, full-screen light-wave animations from your Toaster Switcher! (I don't think we're in Kansas any more, Toto.)

(Did I also tell you that this version is faster than the old one, or were you expecting that?)

It bugs me sometimes to read a software package that says "Faster Than Ever!" on the box only to find that, in relative terms, a tortoise is still hell on wheels in comparison to escargot. LightWave on the Toaster 4000 has nearly doubled its speed and added new anti-aliasing routines to file away those jaggies. As if that weren't enough, the Booleans have been checked into the hotel, bringing with them curve control and beveling tools.

This is the kind of thinking that keeps me awake at night (in front of my terminal). Give me a product that puts their money where their mouth is, and I'll gladly give them the bucks to do it with!

But, as the man said, WAIT, THERE'S MORE!

ToasterCG has also lengthened its stride, keeping pace with the other legs of the package. The T-4000 (sorry Arnold) provides more intimate font usage and control. By intimate, I mean that you can change the font type, color, outline, or shading of any character, or group of characters you choose with the press of a button. No more dull, repetitive logos. Now personalized style means that every single element you bring in can have an identity all its own. Just bring graphics and brushes directly from either ToasterPaint or LightWave. Assign any size graphic separators (Yes, those are now changeable, too. Don't these guys think

of everything?) the flair or features you wish them to have, fading or overlapping to provide sharp, professional backgrounds. Then use Compugraphic, or any of the scads of Postscript, fonts included in the package to

overlay your message anywhere from thirty to four-hundred lines tall. Ok, so the extreme isn't specifically practical, but isn't it nice to be given the choice rather than be told? Having all of this mouse-driven is merely icing on the cake.

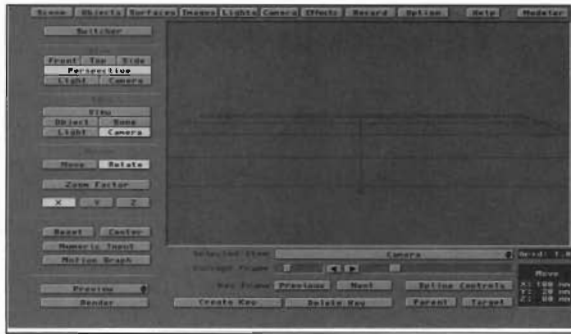
Rarely does any-one rebuild from the ground up, but NewTek knows that being the best and staying the best are two different animals, and takes the proper steps to prove it. I can't help but feel that some Hollywood-type big-wig sent in a shopping list to NewTek for them to fill. This package is now so thoroughly thought out that there's virtually no reason to go to high end machines to create professionally produced output.

If I were to go on much longer you'd probably phone the offices here to see if this was all some nasty April fool's joke. (Don't make me regret saying that by calling in to ask!) As I'm trying to keep this short, you might want to reread this article to catch some of the important changes I glossed

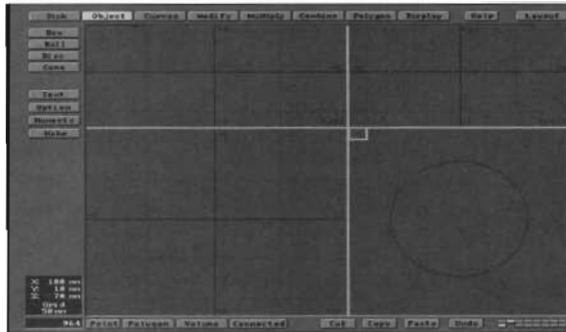
over. One of the biggest and best surprises, however, I think I'll keep under my hat. After all, if you knew that the Toaster 4000 now cost less than the previous packages, there might be a run on the market. (Remember! You didn't hear it from me!)

Enough! Before I start giving away the secrets of the universe, I'd better get back to my real job here and start reading through next month's articles. Rest assured, though. We will be reviewing this in much more detail in the future. So, until next time, this is Gabriel Pan, signing off.

Stay True!



VT4000 Layout Screen Shot



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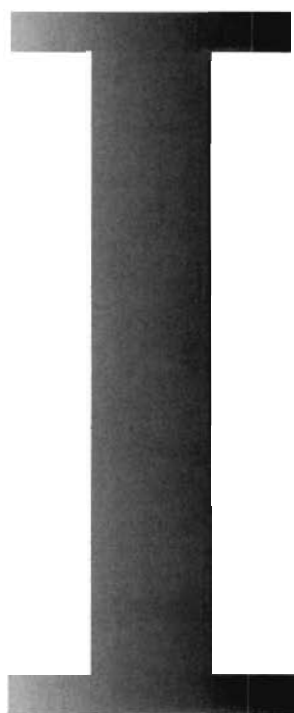
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Caligari24

By
David Duberman © 1993

The Next Generation of a classic 3D program...



If you're an Amiga 3D artist, you're a member of one of the luckiest groups around. On no other computing platform is there such a wealth of 3D graphics software power at such low prices. And you just got luckier. Octree Software's program for modeling, animation, and rendering, that until recently cost \$2,000, has been significantly improved, upgraded, and repackaged to sell for less than \$400. I'm referring, of course, to *Caligari24*, the latest version of this program that's been around practically since the Amiga itself. In fact, Caligari designer Roman Ormandy is to be congratulated on producing the longest-running Amiga 3D software under a single name, with constant support and upgrades.

Until a couple of years ago, *Caligari* (Broadcast) was strictly a high-end item, marketed primarily to graphics professionals, and coveted for its great user interface. But in 1992, Octree released *Caligari2*, a scaled-down version for the mass market. Its success prompted Octree to institute a new policy—each new mass-market release would contain all features of the previous high-end version, and then some.

When Roman Ormandy first set out to design Caligari, he was determined to create an interface that could be driven by mouse clicks and movements in as intuitive a way as possible. He wanted to have a totally natural interface that would be almost like working in a real workspace, and he succeeded remarkably. *Caligari24* features virtually the same interface Roman came up with eight years ago, with improvements in modeling, animation, and rendering. But the interface remains the classic original that is one of the best in any 3D program I have used.

Caligari24 has two major sections: Object Design and Scene Design. The interface works virtually the same way in both. You're looking at a full-screen perspective view of the 3D workspace, with a narrow control strip at the bottom of the screen. At any time, you can use the mouse to directly manipulate the viewpoint or object selected

by clicking on its wireframe representation in the workspace. Like *Imagine*, but unlike *LightWave*, each object has a visible axis used for local manipulations. This axis can be manipulated independently of the object. All manipulations can be performed on an object's local axes, world axes, or screen axis. So no matter how you may have twisted the viewpoint around, you can move and rotate objects and the view in ways that seem perfectly natural.

Unfortunately, I still haven't gotten much of a feel for the interface's beauty. The best term to describe the feeling of working with Caligari's interface is fluidity; everything fits together perfectly and flows very smoothly. That's because the interface is constantly updated as you drag the mouse; you don't have to click a button to see where you are. A grid plane serves as a reference when moving the point of view so you usually have a pretty good idea of where you are.

The control panel offers sets of functions such as Tools, each of which adds a narrow horizontal strip to the panel's top, or in some cases, replaces the control panel. Each added set of controls has its own close box, so you can build custom control panels offering as much or as little functionality as necessary at the time.

Object Design

Like certain other 3D programs, Caligari can use polygons with four or more vertices. Unlike many, you can't build objects polygon by polygon. The Primitives menu graphically illustrates 18 shapes you can add to the workspace simply by clicking. These building blocks offer a good variety of shapes that can be combined to create more complex objects. Among the primitive shapes are the standard sphere, cylinder, and cube, as well as more unusual shapes such as a truncated pyramid, a cone and a boat-shaped object.

In addition, the program lets you create objects by lathing and extruding outlines, which must be closed polygons. You

can load a polygon into this special 2D grid, or even a two-color IFF image for manual tracing. Polygons can have holes, so it's easy to create letters such as A and O. The extrude settings include the usual options such as shear and scale, and lathe offers the standard number of segments and total angle.

Not only does Caligari offer a wealth of object sculpting functions, but it also imports objects in *LightWave*, *VideoScape*, *Sculpt 3D/4D*, *AutoCAD DXF*, and *Imagine* formats. In the case of Imagine grouped objects, all child objects load and can be manipulated independently, but the hierarchy is lost. Imported objects are subdivided into different attribute "materials" (see Broadcast Render below) according to color areas, so that each set of polygons with the same set of attributes can be redefined as a whole. Also, importation of DXF objects has been vastly improved, with a special menu to give you control over the loading process. Of course, objects should be properly constructed in AutoCAD using 3DFACE and other appropriate entities as specified in the Caligari manual.

Single Point Editing

Most, but not all imported objects can be edited, and certainly all objects created with Caligari can be subjected to the array of sculpting tools offered in the Point Edit menu. First, Point mode lets you select points, polygons, and groups of polygons for further manipulation. The selection methods take a bit of getting used to—no drag boxes here—but if you read the manual descriptions carefully and work with the program, this should become second nature. It's fairly easy to select individual noncontiguous faces, but it must be done one at a time.

Once selected, points can only be moved, but selected faces can be moved, scaled, and rotated. In addition, the Slice command can be used to create any cross section of an object parallel to a selected edge set. Then you can use the Separate command to split the object along that or any other continuous set of edges girdling an object.

The unique Sweep command lets you "extrude" all selected faces "outward" from the object's center. This can be used, for example, to easily create a spiky sphere. The manual and accompanying videotape offer a tutorial that show how to use Sweep to quickly produce an interesting-looking spaceship. Also offered in the Point Edit menu are commands to subdivide selected polygons.

Free-form deformation is by far the most powerful of Caligari's modeling functions. By forming a 3D lattice around an object and pulling and pushing grid intersections on the lattice, you can physically shape the underlying surface in a manner much like working with clay. Things can get weird-looking very quickly if the part of the object

being shaped doesn't contain sufficient resolution, so there's an option for the automatic subdivision of manipulated areas as necessary. This is recalculated every time the grid is manipulated so that the object isn't subdivided too much. There are also options for automatic smoothing of the reworked surface for a more natural look. Unless you have access to 3D digitizing equipment, free-form deformation is one of the best methods for obtaining natural-looking organic shapes.

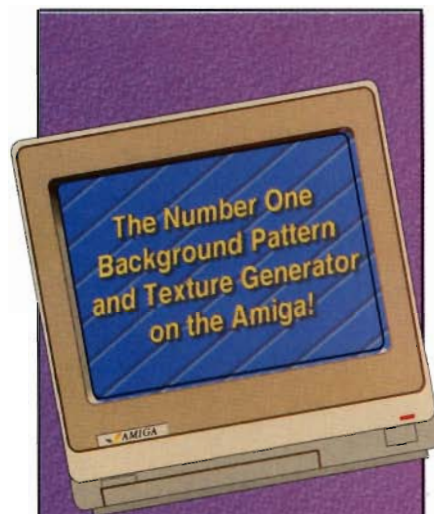
That said, mastery of the free-form deformation tools doesn't come easily. I've spent hours with it and have yet to come up with any really satisfactory shapes. In the aforementioned spaceship tutorial, free-form deformation is used to quickly create a great-looking nose cone. But I'm having a hard time even roughly approximating Stephen Menzies' superb flowers, created with Caligari Broadcast and featured on *AmigaWorld's* front cover last year. It would be great to see more tutorials on the use of this intriguing, yet elusive tool.

When working in Object Design, you're usually looking at wireframe objects. You can render one object at a time as a faceted solid. Once rendered, you can interactively select faces for recoloring, effectively giving different attributes to different parts of the object's surface. These can be changed later in the Broadcast Render module.

Hierarchy in Caligari

Caligari takes an offbeat approach to hierarchical model construction that takes a little getting used to. As in most programs, you select the parent object, then the command—in this case, Glue, whereupon the cursor turns to a small question mark with an arrow—and click on the object to be the child. At this point, both objects are highlighted, and can be manipulated together. If rotated locally, they turn on the first object's axis. However, in a sense they're both on the same level of hierarchy, because if you click the down arrow in the screen display, or press the down arrow key, you can then click on either and manipulate it independently. If you don't use the down arrow, but continue alternating clicking on Glue and other objects, each belongs to the same level of hierarchy.

To build another level below this, you must use the down arrow, then click on the object to which the next level is to belong. This object, or rather its axis, then becomes the group pivot point for all objects glued to it, plus all sub-objects. Unfortunately, the graphics scheme used doesn't clearly indicate hierarchy levels of different parts. Some method of doing so, whether graphically or in a text table as in Real 3D, must be implemented before Caligari's hierarchical modeling capabilities can be fully utilized. According to Octree Software, hierarchical modeling in Caligari works best if you work from the bottom up. For example, you begin by building a human



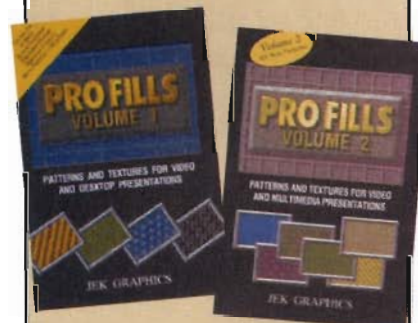
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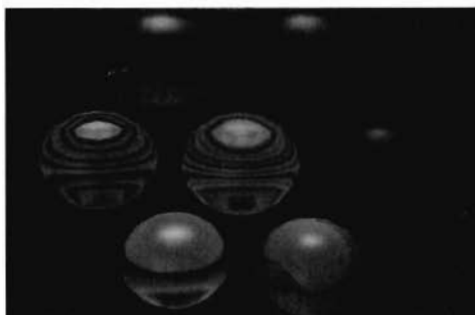
figure's hand first, then the forearm, then the upper arm, and so on.

Scene

Once you've built objects and hierarchies, a button click takes you into the Scene Composition module. This section provides two major functions: rendering, which includes application of texture maps; and animation. One special animation feature is the ability to make clones that follow all of the "master's" movements, so it's easy to make, for example, marching armies of robots.

The keyframe-oriented animation setup is fully interactive. Just go to the frame you want, then move, rotate, or scale an object, hierarchy sub-object, or the point of view, then click on a button. By doing so, you're setting up animation channels, which can then be manipulated directly in the Time Editor. This graphic display shows the action in horizontal bars called timelines, with notches showing keyframes. You can use the mouse to reposition and copy keyframes interactively, a vast improvement over a similar arrangement in another popular Amiga program.

Another nifty Time Editor feature is the Spline button, which lets you smooth out a path's sharp corners. What's especially nice is that you can see the path in 3D as you make the changes. There's much, much more to the Time Editor, such as animation



Some of the 1D and 2D environmental maps provided with Caligari24. (lus the (upper Right) created with a cloud picture from Texture City.

of surface attributes; it takes over five pages in the manual, but deserves 20 or more. This is consistently one of Caligari's downfalls, which it shares with so many other powerful programs— inadequate documentation. The manual needs many more tutorials at all levels, and more explanations in the reference material. The brief included tutorial videotape helps somewhat, but not enough.

Animations can be saved and loaded as text-based script files. These can be changed with a text editor to fine-tune your animations. The manual provides documentation for all animation script commands.

Broadcast Render

This is especially interesting if

you've imported an object with a number of differently-colored parts, or recolored parts in Object Design. Once in BRender's Attributes sub-menu, clicking on the arrows next to Material shows each section in turn with its material number, the wireframe colored approximately the same as the part, and the rest of the object rendered temporarily invisible. For any material, you can use sliders to set Hue, Saturation, and Value, or set RGB values from the keyboard, with real-time feedback from the wireframe's color. Other settings include transparency, diffuse, and specular values.

To obtain maximum rendering speed, Caligari is not a ray tracer. It can simulate shadows, but not true reflections. However, for objects that must seem to reflect their surroundings, there are two types of environment maps: one-dimensional, effectively a linear gradient; and cubic, representing the six cardinal directions. You can't create the former, and the program only comes with a few, but you can make as many of the more realistic cubic maps as you like. These do a particularly effective job of simulating metals, especially in conjunction with the metal shader. Other shaders include flat, Gouraud, Phong, and Environmental, which maps the environment onto the surface rather than making it seem to reflect the environment map.

Then there are surface types— related to smoothing—the most interesting

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of which is Auto-Facet, which lets you set the value that determines whether the angle between two surfaces is to be smoothed. The other surface types are Smooth, Simple Facet, Complex Facet, and the default setting, which is unsmoothed, but allows shadows, textures, and shading across a single polygon.

You can also apply images directly to surfaces with the Texture attribute. Images for texturing must be in one of these 24-bit formats: IFF24, Rendition, Truevision Targa/Vista, or DCTV. Caligari24 is the only Amiga 3D program besides Adspec's *Aladdin 4D* that lets you map DCTV-format files as 24-bit images. Now if programs could just load JPEG images—well, that's coming.

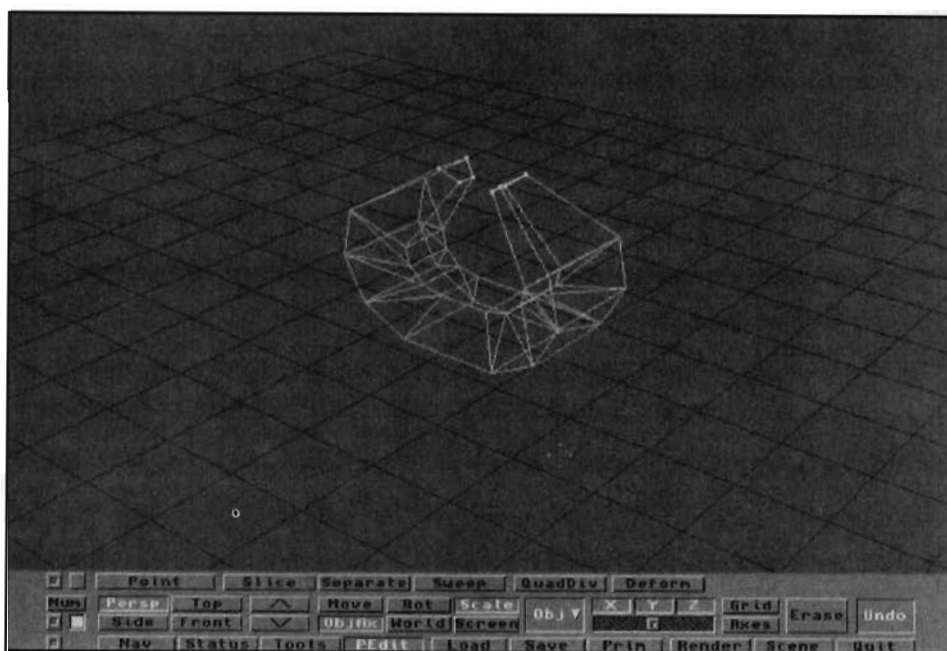
Mapped images can be "wrapped" onto part of a surface using a resizable outline box on a 2D grid that represents the 3D surface. Alternative mapping options are Planar, Spherical, Cylindrical, Per Face, and Swimming, which fixes the image's position in space and lets the object move "through" it.

The Display

In Caligari's early days, seeing 24-bit output was troublesome; you had to have a BridgeBoard (IBM PC emulator card) installed in your Amiga, as well as an expensive Targa or Vista 24-bit PC video card for the display. The program still supports this setup, but it can now also display images directly on a number of Amiga custom display cards, including Impulse's *FireCracker*, GVP's *IV24*, Black Belt's *HAM-E*, Centaur's *OpalVison* and *Harlequin* from the UK. Images can also be rendered in DCTV's three- and four-bitplane modes. In addition, the program supports the Amiga's built-in HAM and HAM8 display modes.

What's that you say? Your Amiga doesn't have HAM8? That must be because you don't have one of the new Amiga 1200 or 4000 AGA Amigas with the beautiful high-resolution 256,000-color display modes—what are you waiting for? Unfortunately, Caligari24 does not support the AGA scan doubling modes, so the high-res program display flickers even when used with a VGA-type monitor. This isn't a problem on older Amigas with installed or built-in "flickerfixer" circuitry.

There is, alas, no provision for direct saving of rendered images in the Amiga-standard IFF24 file format. You can



Caligari24's object design interface.

save images as IFF files in the display format (e.g. HAM or DCTV), or in the Rendition format, which can be handled by Art Department Professional with the Pro Conversion Pack add-on software. Of course, if your frame buffer supports direct saving of IFF24 images from its display memory, you're in business.

Recommended Add-Ons

In writing this review, I found *Pixel 3D Professional* (Axiom Software) to be an invaluable companion program, and I recommend it to all Caligari users. I had built a complex LightWave model of the Golden Gate Bridge with over 15,000 polygons. When I tried to load it directly into Caligari, the program "lost" large parts of the model. But converting it with PixelPro, which allows loading and saving of Caligari-format objects, allowed flawless loading and rendering of the bridge.

PixelPro also makes it easier to create custom fonts and other objects from 2D bitmaps, providing autotracing instead of Caligari's Extruder's manual tracing. Another plus; the program reduces some of the unnecessary additional faces created by automatic subdivision during free-form deformation. Also, if you're converting Imagine objects, you might want to run them

through PixelPro first to reduce the number of polygons.

When rendering large, complex objects, Caligari spends a good deal of time accessing the hard disk. Unless you've got a very fast drive, this can slow down rendering significantly. If you use Caligari with sizable databases, I strongly recommend purchase of the new *HyperCache Professional* from Silicon Prairie Software. This is the first hard disk caching system for the Amiga, and it works wonders with the Caligari by buffering disk operations in a specially reserved section of memory. With HyperCache, my Golden Gate Bridge object rendered in a third of the time—no lie! In general, I found it halved loading times of programs and large data files. If you value your time, get HyperCache Pro.

In Conclusion

As is usually the case when reviewing major 3D software, I run out of space well before exhausting the program's features. I haven't covered Caligari's use of Alpha Channel images, or texture antialiasing, or lighting. You can spend a great deal of time exploring this program, all to good avail.

Continued on Page 57



Golden Gate Bridge model created in LightWave Modeler and imported via Pixel 3D Professional.

Imagine cycle object of a prominent musician created by Don Scott and imported directly into Caligari24

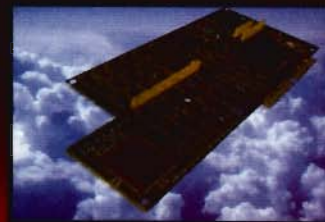


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Video Output Standards: NTSC, NTSC 4.4, PAL
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S-Video Bandwidth 5.5 MHz typical
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Video lock jitter <15ns
Horizontal position adjust -320 to +1000 ns
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Subcarrier lock range +/- 350Hz minimum
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Audio Inputs 10 inputs (5 left, 5 right) line level 20k ohms
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Feature Comparison

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Supported Broadcast Standards: NTSC PAL	Supported Broadcast Standard: NTSC NO
Inputs/Outputs: 9 Video Inputs 5 Video Outputs Key in/out Master Sync In	Inputs/Outputs: 4 Video Inputs 2 Video Outputs NO NO
Supported Video Standards: Composite Video S-Video Y/R-Y/B-Y (YUV / Betacam) RGB	Supported Video Standards: Composite Video NO NO NO
Audio Mixing 5-Band Equalization 10 Audio Inputs (5 Stereo Pairs) 2 Audio Outputs (1 Stereo Pair)	NO NO NO NO
35ns Character Generator	35ns Character Generator
Compatible with all Amiga 3D software	Includes Lightwave™ 3D
Full-Color, 24-Bit, real-time animation playback in multiple modes	No animation playback possible: single-frame recording only
Genlock with Luma Keying	Genlock with Luma keying
Chroma Keying on any color	NO
Video Sandwich Keying	NO
Transparency Keying	NO
Unlimited and definable Alpha Channel Capability	Limited Alpha Channel capabilities (Pre-Set Effects only)
Integrates into the Amiga Environment Frame Buffer accessible by all Amiga Software	Takes over the machine Limited Frame Buffer accessibility to 3rd party software
Numerous pre-set DVE effects Vector-based effects editor for unlimited custom effects.	Numerous, pre-set DVE effects NO
Optional de-interlacing of Video and Graphics	NO
Includes Award-Winning OpalPaint™ software with real-time 32-Bit painting	Includes Toaster Paint™. Operates in 6-Bit "HAM" mode, then renders to composite buffer for viewing
Time-Base Correction unnecessary for Frame Grabbing	Time-Base Correction usually required for Frame Grabbing

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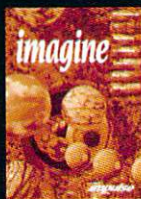
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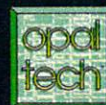
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Using OpalVision

as a Texture Design Tool...

Opalvision: The card and the software. This is an Amiga package that truly lives up to its promise and hype. In some ways, because of the myriad of options given to the Amiga artist, OpalVision can be quite an overwhelming tool. What saves it is the intuitive design of its interface. A good portion of that design refer-

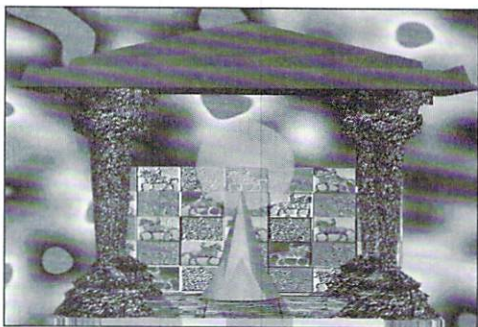


Figure 2

ences EA's DPaint (A wise move. This allows us to tap into an already practiced ability, since DPaint is owned and used by just about every Amiga artist/ animator). DPaint (especially in its AGA incarnation) is also a nice cousin package, offering the Amiga artist/animator processes that nobody does better if at all. One use that I have been putting OpalVision through is

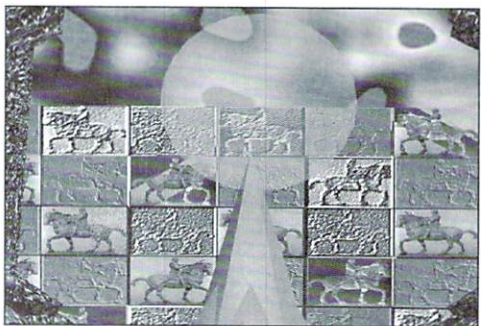


Figure3

to design texture maps for my 3D work. Any Amiga 3D program that allows you to use 24 bit textures for this purpose will accept OpalVision 24 bit files, though you may want to save your work in high quality JPEG and then use ADPro or another Amiga translator to unpack the texture before using it.

Before I walk you through a specific project, let's take a look at the OpalVision tools that make it such a wonder in developing 3D texture maps. Though I will not pretend to mention all of the tools useful to your experiments in this area, I will mention several that I consider exemplary. To begin with, there is the Antialiasing requester, addressed by a slider that allows you a range of antialiasing from 0% to 100%. Its default setting is at 100%, and I doubt that I would have need to change it, but it's thoughtful to offer us the option if needed. You can really appreciate the quality of OpalVision's antialiasing when you zoom in on an antialiased area of your work. 24 bit antialiasing makes for ultra-smooth graphics, and for spectacular 3D wraps. Second, we should mention specific painting modes, targeted in a special "Modes" pop-up menu. For this article, I would reference four: Negative, Emboss, DeepPress, and Speckle. The last three are not default modes, but are loaded into a special four-gadget area of OpalVision's Modes requester from an on-board list of extras. This leaves the way open for users to develop their own experimental modes, and to share them with each other. The four I have chosen are vital in the work I am mentioning, so let's look at each separately.

"Negative" is the easiest to describe, as it does exactly what it says, creates a negative color image from an

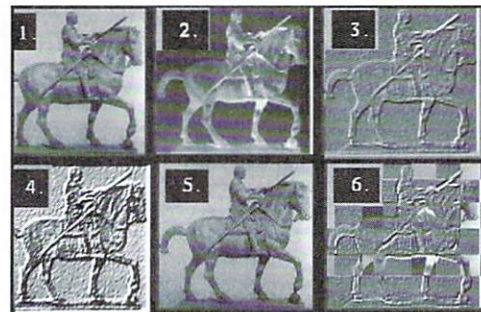


Figure 1. (1) Unretouched Images, (2) Negative mode, (3) Emboss Mode, (4) 100% Depress, (5) Speckle at 100%, (6) Checkerboard Emboss with Negative areas. Note that the elements were reduced by 50%, and then regrouped into the tiled pattern by using the "fill with brush" tool in OpalVision. The tiles were created using the "Emboss", "Depress", and "Negative" modes.

By
Dr. Shamms Mortier © 1993

area of your work. When used over an embossed area, it changes the look from mountains to valleys, from extended pop-ups to depressions and vice-versa. I love what it does to gray scale art! Next is "Emboss". The quality of the embossing possible in OpalVision has to be seen by all Amiga artist/animators to be believed.

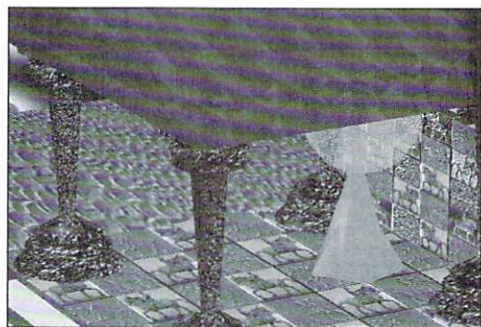


Figure 4

Embossing turns an image into a gray scale version of itself, while popping up all relevant picture data. What is achieved is a metallic-like look or that of a stone carving. The most complex graphics are treated with magical care, and the highlights and shadows definitely give the impression that one is working with a true 3D surface in 2D. Interesting embossing

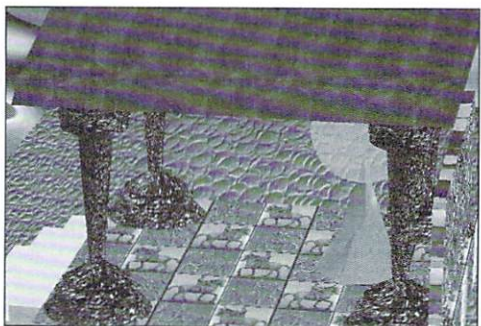
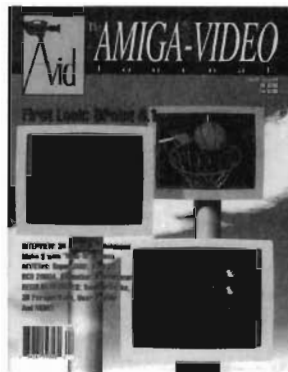


Figure 5

effects can also be achieved when alternate checkerboard patterns are embossed on top of each other. "Emboss" has no numerical slider, so the perceived "depth" of an area is always the same. To achieve alternate depth, use OpalVision's "Depress" mode, which ranges from 0% to 100%. This tool gives a visual area the look of a "rubbing," which is what happens when you take a piece of paper and put it over a penny and rub the paper with a pencil to capture the 3D surface below. As opposed to Emboss, which mutes the 3D effect on surrounding pixels, Depress takes all pixels into account (at 100%) creating a stark high-contrast surface. The fourth effect that we will look at is that of the "Speckle" mode, which gives the look of a surface that has been spattered with dots of paint. By itself it is less effective than when combined with the other tools mentioned. Coupled with the Emboss or Depress effect, it can make a surface look as metal pounded with a fine hammer. Just as an aside, all of these effects can also be applied to letters, though our present journey will not focus upon that possibility. (See Figure 1 for visual examples.)

Though we can apply all of these effects to a painting created from scratch, I have become very mesmerized lately by using digitized material as the basic graphic element of many of my texture wraps. This is because photographic-like material befuddles the viewer, making them unsure if they are witnessing a painting, photo, or some dreamlike combination of the two. I like playing the part of the creative trickster. For my basic image, I have chosen a copyright-free picture of a statue of a Guatemalan soldier. I set out to create a tiled surface of these images for 3D texture mapping. The plan was to use it as a tiling of a 3D floor, a wall, and to experiment with other 3D picture elements.

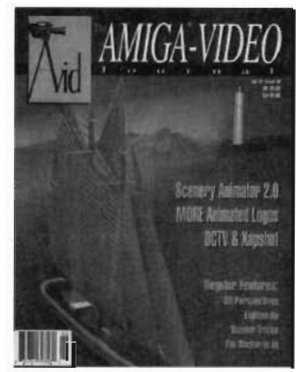
In the final analysis, I juxtaposed unprocessed images with ones that had effects applied to them. For this experiment, I used the modes Emboss and Negative. First, Embossing was applied, followed by the Negative mode. I then took two images (the side by side untouched and the modulated pictures) and picked them up as a brush in OpalVision. Then, choosing the "brush" mode from the Fill tool, I filled the screen with these images. Wanting to have a slightly different look for my walls, I used the DeepPress mode and Negative checkerboarding on the same figure, giving me an alternate texture map for the walls of my 3D construct.



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May '92



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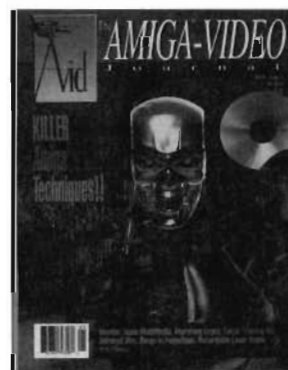
July/August '92



September '92



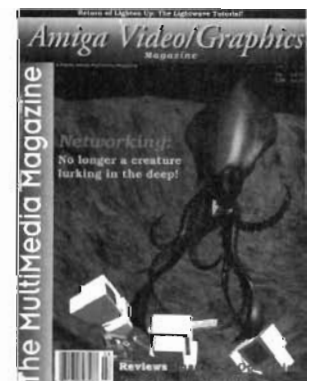
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Next Generation Animation: Getting The Most Out of AGA

By

Douglas Fusco © 1993

A
G
A

The Problem

With the advent of the AGA chipset, the next generation of the Amiga has arrived. While most are familiar with the increase in color offered by AGA, many are surprised to find that the first 262,000 color animation they create in DPaint AGA moves at a snail's pace. While the AGA chipset is supposed to offer a 4x increase in bandwidth relative to the original chipset, this can often be hard to find. 256 and 262,000 color animations are made up of 8 bitplanes, while old 4 color animations use only 2 bitplanes. If AGA really offered a 4x increase, 256 colors on a new machine would move as quickly as 4 on an old one. Anyone who has spent time creating a complicated animation with DPaint AGA knows that this simply isn't the case. While four colors would almost always be a guarantee of silky smooth 30 frame per/second rates, 256 colors can rapidly bring Dpaint AGA to a slow crawl. Fortunately, there is no need to run to your local dealer and return your brand new Amiga. While the power to achieve high speed, high color animation is present, most Amiga software, including DPaint, isn't set up to take advantage of it. It takes conversion to a 32-bit animation format to achieve the top speed on an AGA machine. These conversions, while possible, currently take a degree of effort and research to obtain.

What Makes an Animation Go?

When creating an animation, a variety of factors influence the final playback speed. The resolution of an animation, the number of colors used, the animation's complexity, and the model of Amiga will all effect how quickly an animation will be played. Most animators usually desire a high frame rate, similar to that found in film, or on television. Movies play back at 24 frames per/second, and television is played back at approximately 30 frames. Early on, Amiga animators were quick to realize that the Amiga couldn't always achieve such speed. Older Amigas, like the 500, 1000 and 2000, would

lose speed when attempting to play animations that were complicated, involved a great number of colors, or were displayed in the Amiga's high-resolution mode. Even an Amiga 1200 or 4000 can be overwhelmed when an animation grows too complex.

Animation frame rates are often determined by three main factors: the speed at which the Amiga reads the animation, the complexity of the animation, and its method of compression. While the first two factors are affected by the speed of your Amiga and its custom chips, the last one is influenced by the software you are running on your machine.

First, as color and resolution increase, the Amiga's memory bus becomes saturated, causing the playback rate to drop. In addition, there is simply a limit to how fast the Amiga can read and display graphics data.

Original Amigas (like the 500, 1000, and 2000) had a 16-bit bus. On the Amiga 3000, this bus was increased to 32-bits, but only for the CPU (which, fortunately for animators, was at least partially responsible for animation playback speed.) The new AGA Amigas offer a 4x increase in bandwidth over the original machines, using a special technique known as "page mode" to read two 32-bit words each time they access memory. Given this increase in available bandwidth, it is far less likely that AGA based Amigas will saturate memory. 16 color animations that would play at a miserable rate on an Amiga 2000, playback without a hitch on the Amiga 1200 and 4000.

Unfortunately, while the 4000 and 1200 are better able to handle higher resolution and more colors, the software hasn't kept pace. This has to do with the format in which animations are stored, rather than any limitation to the hardware.

Anim Format

After the original Amiga was created, a need rapidly emerged for a standard way to encode animations. In this period, the animation format that most people are familiar

with was created: ANIM5. The ANIM5 format reduced the size of animations by first compressing them, then recording only the changes between each frame. These changes, called deltas, determine the size and speed of an animation. Animations with a high degree of change have larger deltas and, as a result, play back at a slower rate. While the general method of compression (recording only changes between frames) is universal to almost all formats, the particulars can vary widely, and have a substantial impact on speed.

Used most notably in the Deluxe Paint series, ANIM5 encoded animations a byte at a time in 8-bits (each byte is 8-bits.) This provided for an optimal amount of compression, since it is far more likely that 8-bit sized pixel groupings will be common, rather than 16 or 32-bit sized groupings. At the time, the concern was to gain the optimal amount of compression, saving memory and disk space. System resources were expensive, and these savings were more critical than gaining speed.

This explains why AGA machines aren't fully exploited by programs like DPaint. DPaint still follows the old Anim5 standard. Animations can use a greater number of colors, but the additional speed offered by AGA is wasted. AGA can read two 32-bit words (called longwords) at a time, but the animation format causes it to read only a mere byte. Reading only 8-bits at a time, the animation speed is bottlenecked by the animation format. Most other programs that render AGA animations, like ADPro v2.2, Rend24, or ImageFX also suffer from this limitation.

That's great, but what can I do?

While the animation format issue has come to the forefront with the release of AGA Amigas, solutions have been around for several years. The original ANIM5 format failed to exploit even first generation Amigas, and a variety of competing formats have emerged both commercially, and in the public domain.

Anim 7

In the public domain, the ANIM7 format emerged as a way to speed up animations on most Amigas. This format encodes animations vertically, reading 16 or 32 bits at a time. Created by Wolfgang Hofer, this format was originally available in two public domain programs called AAP and AAC. Although these programs break on Amiga 4000s, Thomas Krehbiel (of GVP ImageFX fame) has created a public domain package called MakeAnim7 that will convert older animations into the ANIM7 format. This utility is simple to use. Double clicking on the program icon reveals a file requester in

which an anim file can be selected. Once selected, animations are automatically converted into Anim7 format.

Once converted, animations can be played back with Thomas Krehbiel's highly useful freeware ViewTek utility. It should be noted that version 1.04 of ViewTek is required to display and play back Anim7 format animations. The MakeAnim7 program is included in the ViewTek 1.04 distribution, and should be available on most on-line networks. ViewTek is also very easy to use. When clicked upon, a file requester allows the selection of a picture or animation for viewing. ViewTek, incidentally, is an incredibly useful utility, offering support for JPEG,

Animation
frame rates
are often
determined by three
main factors: the
speed at which the
Amiga reads the ani-
mation, the complex-
ity of the animation,
and its method of
compression.

GIF and IFF images along with its extensive animation support.

When I converted some of my own HAM8 animations to the Anim7 format, I gained a 3 to 4 fold speed increase. I should note, however, that I did experience some distortion in one of the HAM8 animations that I converted. This may be a small bug in the program (or in the program that created the animation). Thomas Krehbiel has done an excellent job of supporting ViewTek and there can be little doubt that the program will continue to evolve in the same user-friendly manner.

Commercial Solutions

Scala MM200, and its recently introduced upgrade, MM210 offer a competing commercial standard for 32-bit animation viewing.

While Scala is an incredibly powerful presentation package, it also offers a set of lesser-known animation utilities. Languishing in (appropriately enough) Scala's utilities subdirectory, the AnimLab utility will convert animation from the old 8-bit format into two new proprietary formats, called Anim16 and Anim32.

Anim16 and Anim32 both encode animation in 16-bit or 32-bit formats that allow both old and new machines to gain a significant speedup in playback rate. Sadly, older versions of Scala do not function properly with the AGA chipset. Since the most recent version does, an upgrade is strongly recommended. If you own an older version of Scala, call the company for an update. If you do have an older version, make sure to turn off mode promotion. The mode promotion control, found under the "Iconcontrol" program in the Amiga's preferences directory, automatically renders interlace screens in flicker free modes. On my machine, the older version of Scala would not give optimal playback rates with mode promotion turned on.

Using AnimLab

AnimLab presents users with a simple, button-based interface similar to that found within Scala. The options are few, since the purpose of AnimLab is limited largely to the conversion and modification of animations.

In my case, I first rendered an animation using VistaPro v3.0. In order to convert the animation, I simply clicked on the load button and selected the file that I wished to convert. Scala then assigned it a new extension that denoted the conversion that I was to perform (in this case "Anim.32x"). There are several different options available during animation conversion, accessible through the slide bar on the right hand side of the interface.

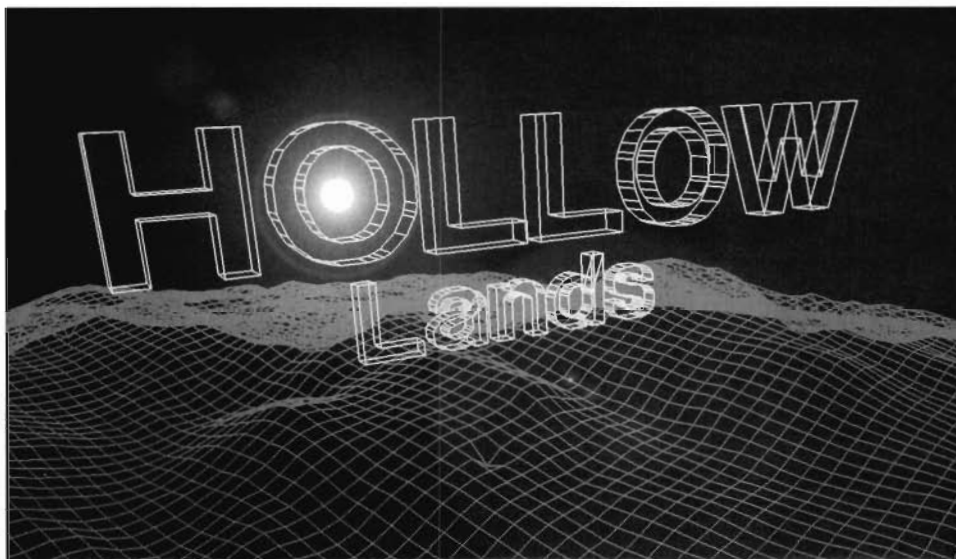
First, clicking on the arrows next to "Save format" allows the user to cycle between the different available formats (old Anim 5, Anim16 or Anim32). Below that, the "Add DiskANIM INDX" button sets up an index for the file that is used when Scala plays animations off of a hard drive. Scala has to generate the index whenever one plays off of disk, so generating in advance saves time during a presentation.

The "Intellize" button saves space and increases playback speed by removing every other line of every other frame within the animation. If an animation were played back in interlace mode at 60fps, this would not result in any loss of animation quality, as interlace can only manage to display every other line each frame at this rate.

Continued on page 56

The HOLLOW Lands

By
Jim Omura © 1993



Tutorials, Reports, Reviews and Opinions

Before I get into this month's discussions, I should tell you what you can expect in "The Hollow Lands", and why. First, let me clarify the title. It's "The HOLLOW Lands". I could have been cute and used a more trendy "HOLOlands" or something similar, but I opted for a pun that you can really sink your teeth into. The "hollow" lands are the vast empty wastelands of information in the computer field (see: Eliot, T.S.). These articles are going to try and fill up some of that space. In particular, we're going to concentrate on areas in regard to 3D/4D techniques and technology. We'll cover some "related matters" as necessary, but I don't expect to stray far from 3D/4D. Furthermore, it's mainly going to be tutorials and reports because I believe that that's where we can do the most good.

In the "Pro" world, there seems to be a shortage of designers and animators who know how to maximize software potential. In the field of directing and producing, however, knowing what is possible as well as

where to get it done, or how much it will cost is apparently an arcane art, especially when it comes to multimedia platforms. What these professionals need is a demonstration of the steps that go into producing models setting up choreography, and rendering the final product. Producers already know about pre-production storyboarding and post-production editing. We might be able to give some new ideas in those areas, but mostly that's stuff other writers in AVG will cover. As for designers and animators, this same set of tutorials should give some insight into how other people are actually using tools.

For the "Amateur", particularly the beginner, everything from basic concepts to research methods can be valuable.

While I'm going to try to strike a balance between "Amateur" and "Professional", I'm hoping that the trademark for this column will be depth. As I see AVG right now, other writers are covering a little bit of everything, or skimming the "unique" features of various packages. This is valuable, and I'll overlap other writers to some extent. But I'm also going to cover some basic areas from a different perspective.

Minimum System for Choreography

Returning to my first topic, I've already covered what I feel is a minimum system for "scratchpad quality" static 3D modeling. The question I'm addressing this time is, "Could there be a similarly 'reduced' system that can do significant work in the professional 3D/4D animation field?"

It usually takes a lot of people to do traditional animation. On the other hand, you can have a lone artist drawing everything at a single desk, shooting every frame, or even marking up film stock by hand. "One man" or "small team" animation has been done, but it's more common to work in a team. Computer technology won't change that. It will mean that it is possible to produce better work with smaller teams, or that a single artist might produce much more work than before. But in the long run, there's no substitute for creative manpower. Group effort is going to be with us as long as animation is done.

With group work comes the opportunity to specialize. You will find some people are good at making 3D models. Others might be better as writers and choreographers. Musicians, sound people, and a host of other creative field areas will also tend to be specialized. This was at the heart of my earlier Vertex tutorials. One can foresee a small company wanting to save money by providing more limited equipment in certain situations. For the 3D Modeler it's easy to understand the "scratchpad" system for light work supporting a larger, more powerful computer. But what about supporting work stations for blocking (composition) and choreography?

There is an equivalent role for "scratchpad" level work in traditional animation. In fact, there are 2 equivalents, both of which are essentially previewing functions. First there's the "storyboard", and second, there's the "pencil test". For 3D computer animation, these can be rolled into a single overall process, and in some ways it might even be looked upon as backwards from traditional animation. With most computer systems, you compose your starting positions, then choreograph the motions in a "wireframe", "facet" or other low quality display mode. You might want to check specific frames by doing "full quality" still renders, which could be used as a type of storyboard. Then when you think you have it right, you render the sequence. If it's wrong, then you make adjustments and re-render. This preparatory stage might be done on a less powerful machine than your final rendering system. In a group situation, you might have more than one of these "support" computers doing the preparation for a smaller number of rendering machines. We'll call them "pencil test" machines.

So we've identified a vaguely less powerful support machine. But what can we give up? For "scratchpad modeling", we could give up a lot. The display could be mono-

chrome, and the speed relatively slow. RAM and disk space could also be comparatively small. But a "pencil test" package will have to come much closer to a final rendering system. You can give up *some* display quality, *some* processor speed and *some* disk space. Unfortunately, for RAM space, you'll probably need about the same as your final render machine because it's likely you'll have to run the same software and use the same data models to set up your choreography as you will for final rendering. There are generally no "data compatible pencil test/wire frame rendering" packages. That means, one must use the final rendering software package, but with parameter options just switched to a different mode. Usually this will be some kind of "wire-frame" render. Preferably, the system should render fast enough for the operator to work without saving the render to disk. This isn't just economically nice because it saves disk space. The time between making a change in choreography, then rendering and viewing it would be time wherein one might lose the train of thought and forget the point where a change was made, or where one might want a change.

Aladdin Memory Usage:

Adspec supplies 2 versions of Aladdin in every package. One is for systems with floating point units such as the 68881 or 68882, and the other uses CPU based math functions. I'm testing the "CPU-only" version, but there should be no substantial differences for the "FPU" version. The necessary disk files that Aladdin adds to your basic system are:

"Aladdin4D" 839,544 "Aladdin4D.info" 1,810
"dctv.library" 16,196

If you are unpacking the files to 880K floppy disks, "Aladdin4D" and its .info file will have to reside on a separate floppy. It will unpack successfully on a freshly formatted disk with the "Trashcan" directory present, but there's no point in having the "Trashcan" on an otherwise completely full floppy anyway, so I advise that you delete it. There's a point to this. For some reason, when you unpack the Aladdin kit, they left the default location of the icon outside the window when you open it. Because the disk is full, you can't just move it into and out of the Trashcan. If you have a utility to make the icons "float", then you might be able to use it. I just formatted another disk, (which I was going to use for a backup disk anyway), deleted "Trashcan" and "Trashcan.info", and dragged the icon from the "unpacked" disk to the new empty disk icon. This leaves the icon free floating. I then backed up this latter disk onto the original "unpacked" disk. This leaves 4 blocks free on "A4D", which aren't really useful for anything. This does tell you something about the future of Aladdin though. They really can't do much more without a change of design philosophy.

So, if you've been sitting on the sidelines watching the developments in the field, thinking that Aladdin may fit your needs, you might as well buy it now, because I have doubts whether the program is going to progress much further in the near future. It may be that behind the scenes, the programmers may be doing some major work, but I'm just guessing about this. I have no "inside information" at this time.

This is what "Workbench" reported in terms of memory usage as I booted the system and program:

Fresh re-boot: - (only Workbench window open) 1,912,248
Insert "A4D" disk - (still no directories open) 1,911,160
Boot Aladdin - (Workbench still open, other windows closed) 1,029,808
So booted, Aladdin default memory usage takes up 881,352 bytes.
Internally, Aladdin reported available resources as follows:
"Project/Information" reports "Available Fast RAM 607,320"
"Available Chip RAM 155,264"

Aladdin does not take up all available memory immediately. It is still possible to multi-task. In fact, I'm writing this article with Aladdin still open in the background, though I can't access it from within "Ed." Multi-tasking for a renderer is fairly mandatory since you could be rendering for hours, or even days at a time and may not have another computer to work with in the meanwhile.

I don't know how good Aladdin is at knitting together chunks of non-contiguous RAM, but I would be cautious about assuming that all that RAM will be usable. When I tried to load "city.geo", which was the subject of the February tutorial, Aladdin could only load about 3/4ths of the file. There may have been more RAM available on the OS level, I haven't been able to confirm this conclusively. I ran a Shell window later and "avail" reported available chip as 166,880 with 160,896 largest, and available fast ram as 568,560 with 478,184, but it'll take a lot more testing, and perhaps a call to Adspec, before I can definitively say how Aladdin is actually seeing and using RAM. Nevertheless, the bottom line is that for Aladdin, my 2 Megabyte is not a lot of RAM. As I write this, I've finished all the modeling and animation tutorials, and finished about half of the rendering tutorials. I think it's safe to say that all the tutorial exercises that come with the manual can be done on a 2 Meg system.

For "real time" animation previewing, my standard 68000 processor isn't enough for professional usage. With only 1 cube or a very simple shape, Aladdin could render a wire-frame preview at a speed close enough to "real time" to get a feeling for the movements. But with only 5 cubes present, the

time-lag was becoming significant.

So, based on Aladdin, a minimum "pencil test" system would be either an accelerated Amiga 500, or, much more likely from now on, an Amiga 1200 with a 32 bit RAM expander, (for about 2-4 Meg of Fast RAM), and math co-processor. You'll also want a battery backed "real time" clock which is, curiously, not included on the A1200.

That's all for this column. So far, Aladdin's worst problem is its manual. The manual is essentially unchanged from the 2.0 version manual, with the addition of about 6 Addendum pages. On the one hand, it is essentially correct. That's not a point to take for granted. But beyond that, the page numbering scheme makes it difficult to find information when you need it, and the general formatting and indexing is poorly done making it hard to read. The program's actual interface is inherently tricky because of non-standard usage of the right mouse button. On top of that, there are some occasional anomalies. For example, the "Workbench" screen comes to the front if a necessary floppy disk is not in a drive, which makes you think that the program has crashed when it hasn't.

On the other hand, the program never did crash while I was using it, and all the functions seem to be present and usable. Looking at the rendering capabilities in particular, that's a *lot* of functions. The biggest thing missing from a static render point of view is the lack of "full ray trace" (semi-traced shadows are present). As a general rule of thumb, I don't think it's wise to have only one program of this type, even if one program could cover all my foreseeable needs. Some day I'll probably explain the reason for this in detail. In any event, for rendering, Aladdin looks like a good addition to the toolbox of any serious 3D artist. I'll have to reserve my comments on modeling and 4D till later. In the meanwhile, I can say that I'm planning more Aladdin tutorials in the future, so look forward to some interesting pictures.

Aladdin 4D version 2.1r
Adspec Programming
PO Box 12 Salem, Ohio 44460, USA

Buy

AVG

Flyin' With FantaVision

By
Dr. Shamms Mortier © 1993

W

2D Morphing-

hen the buzz-word "morphing" comes to mind, *Amiga* artist/animators generally think of packages like *ASDG's Morph+*, *BlackBelt's ImageMaster*, or *GVP's ImageFX*. Even *DPaint* comes to mind as being the "first" morphing package. But, truth be known, morphing has been with the *Amiga* since day one of the first major graphics software release. Some of you may recall those days, when you could seriously count the number of visual packages on two fingers...there was *DPaint I* from Electronic Arts and *Animator* from Aegis Development. Remember? *DPaint* was, at its heart, the shadow of what we see today, with many of its advancements foreshadowed in that early package. But *Aegis Animator* was another story. It had animation tools that, even today, would separate it from the rest, if only they addressed the *Amiga's* higher resolutions and overscans. The core of those tools centered around polygonal morphing, the ability to take a polygonal shape in one "keyframe", then to grab its vertices, change them around, and make this another keyframe. When the animation was created from this shape, a smooth flowing poly would alter its shape before your eyes. But "Animator" had its drawbacks. Besides the resolution problems already mentioned, the animation was a bit jerky, and coloring the polys was a bit limited. Enter *FantaVision*.

The Basic Concept-

FantaVision works with structured graphic shapes (polygons), not unlike the graphics that are created in a

desktop publishing program. These shapes have control points, the number of which can be set. The more control points, the smoother the image. The higher the resolution of the screen, the smoother the image. Like structured graphics in general, the output device determines the actual smoothness of an image (CRT screens are by nature not nearly as refined an output device as is a high quality printer). A printer may address 300 dots per inch, but even in high res on a "normal" *Amiga* monitor, an inch holds only about 60 pixels. So in video, jaggedness in a finished image is much more likely, except when very ultra-expensive high res monitors and the software to address them are used. There is no way to "smooth out" the edges of a structured image in *FantaVision*, so it is best to at least stay in Hi-Res, though the software addresses all *Amiga* resolutions (including HAM) and a selection of overscans, with the present exception of the AGA modes.

The Methods-

There are four movable toolboxes on the *FantaVision* screen: Tools, Film, Palette, and Modes (See: Figure 1), as well as a selection of items in pull down menus. When you work in Hi-Res, they are somewhat difficult to read, so I would suggest that any beginning tutorial work that you do in this program be accomplished on a Lo-Res screen. Each of the toolboxes holds a set of important items for creating animations. By the way, *FantaVision* is an animation program, and its use as an *Amiga* painting program is consciously limited. You can import IFF



Figure 1



Figure 2



Figure 3

graphics, however, as background screens, and the structured graphics you design can be turned into bit-mapped items for IFF export.

The Palette Tools do not offer a standard Amiga palette Requester, but much more. In addition to the selection of colors one would hope to access as part of any Amiga screen resolution, there is a scrollable selection of 36 more palettes designed as color combinations that are patterned in various ways. There is also a separate "switcher" that targets the colors to the background, the border of an object, or to the object itself. This allows the Amiga animator to create works that have many more apparent colors than those limited by the strict palette involved.

"Tools" contains many of the drawing tools an Amiga artist expects to see, but there are some novel options here as well as strange and unfamiliar icons. For instance, there is a separate tool that allows you to change a structured graphic into a bitmap. Bitmapped brushes can be moved in an animation, but not otherwise manipulated, so it is wise to consider this before applying the bitmap converter. The Text tool is unique, as it allows you to type with any font in your library into a box you set beforehand, and then apply various animation options to the box (flips, rotations, squeezes, etc.). There are tools for shoving selected objects to the back or front of other objects, Rotation tools, Skewers, Squashers, Insert/Delete Points, and Zooms. The Draw tool itself is interesting. It draws only polygonal structured 2D objects. A simple bezier curve option would be appreciated here in a future upgrade. By drawing different polygonal objects, colorizing them differently, and placing them over/under each other, finished objects are created and ready for animation.

The "Film" Toolbox contains five separate animation gadgets. The first is

called "Info", and it keeps you informed as to the number of objects in a frame, the frame number, overall speed and "twens" between keyframes (adjustable). "Blank" allows you to insert a frame (keyframe) at any point in an animation, while "Clone" copies the current frame and its objects to the end of an animation sequence (as another keyframe). A "GO!" button plays the animation in a ping-ponged loop. But there's much more magic at hand.

FantaVision has got the very best Sound module for adding sounds to an animation that I have ever used, and one that other developers should consider beginning from. If this module could be

When the buzz-word "morphing" comes to mind, Amiga artist/animators generally think of packages like ASDG's Morph, BlackBelt's ImageMaster, or GVP's ImageFX. Even DPaint comes to mind as being the "first" morphing package. But, truth be known, morphing has been with the Amiga since day one of the first major graphics software release.

marketed as a stand-alone product that would address *DPaint* ANIM5 files, it would be worth about \$200.00 all by itself! You will become absolutely addicted to this module (See: Figure 2 for the Sound module's graphic interface. This allows you to manipulate a sound file's speed, channel target, volume, echo, and duration parameters). The average user will need no tutorial walk through of this mod-

ule, but will begin the creative process immediately. Any 8svx sound you import and manipulate will be targeted to play when the frame you access the module from appears on the screen. Once a sound is loaded (and the number of sounds are limited only by your available memory constraints) it can be re-manipulated for another frame, so one sound can become many by altering its speed of play, its echo, channel, and volume. This part of the program is so flawless, you will never again dream of having animations that are silent. Once more, I entreat Scott Anderson of *Wild Duck* to release the sound module as a separate program for

ANIM5 files, and maybe even a separate module for certain 24bit applications. I cannot praise it highly enough. This sound module could even be bundled with a specific Amiga digitizer as a complete sound-for-animation package.

The last Toolbox is called "Modes". There are four "animation" modes and three "dimension" modes. The animation mode "Normal" changes an object from one keyframe to the next as specified. Background turns an object into a background. This is necessary if you want to save a FantaVision screen as a background IFF file. Lightning creates a novel flashing effect for the object. Trace is used to leave a clone of the objects movement over animated frames. "Dimension" modes change the way objects are painted to the screen. The default is as "Solids", but objects may also be drawn as empty outlined frames, or as a series of sizable

dots or squares. Add this all together and you have more animation options than most programs dream of.

Uses-

If I were a teacher in primary or high school, and I wanted an Amiga animation program that could teach beginners the basics, giving them have as much

Continued on page 57

Diary of A Frog Commercial

By
Michael D. Brown © 1993

Diary of a Frog Commercial

We Amiga owners are used to seeing clever, 2-D cartoon-style animations. Maybe we even think of them as low-tech or old-hat. But the ability to use affordable cartoon-style animation in their local spots is still new, even unheard of, to most TV advertisers.

So if you're looking for a way to put yourself and your Amiga to work on some paying DTV projects, consider becoming a producer of TV commercials. You don't have to have a Toaster, AGA, or single frame recording capability. Even art talent and pro-level recording equipment (as we shall see) are optional.

Here's the step-by-step account of how, using just my trusty A2000, DPaint, genlock and a digitizer, I had fun, earned extra money, and even some fame, producing a commercial for local cable:

Monday, Dec. 15, 2:00 P.M.

I get a call from a friend of mine who sells ads for a local radio station. Her station, she tells me, has just bought a package of cable time to publicize an upcoming promotion. The cable company's associated production house will shoot a commercial as part of the price of the air time. But she thinks that something different from their standard commercial would be more effective, maybe even something using some cartoon-style animation if possible, since their station's mascot is a frog.

"Is that," she asks, "the kind of thing you can do with your video computer?"

I invite her to drop by the next afternoon and to see a demo of what my Amiga can do.

Later that evening.

I hook up my SuperGen video-out to my AG1960 S-VHS record deck.

I begin to draw a frog. The result is

illustration 1. As you can see, I am no artist. One of the things I'd like to get across in this article: you don't have to be a great artist to be a good Amiga animator. When I sit down at the keyboard and fire up DPaint, I feel like Sigourney Weaver in that exoskeleton in *Aliens*. The power of the Amiga magnifies my puny artistic strengths many fold. Skill with DPaint, DCTV, and your other tools are at least as important as art talent. Let the hardware do the hard parts.

Avoid high saturation, especially on warm colors. They may look good on your computer monitor, but they'll probably cause unwanted bleeding and other effects on video, especially on later tape generations. Don't wait until the art is done to watch it as video; use both your Amiga's screen and a TV to monitor your progress.

Once the frog is drawn, it's easy to make him jump by drawing the legs extending and using DPaint's move requester (I'll assume that you're familiar with the basic tools of DPaint or the paint program of your preference, since a detailed tutorial on computer painting is beyond the scope of this article - if you're not, get out your manuals and back issues of *Avid* and get cracking: the world of professional video producer awaits!)

After an hour and a half's work, I have a simple animation of a frog jumping. I get out a tape of two previous commercials I've done (one is a car-driving, talking crocodile done for a car dealer named "McCrocklin," and the other is a political commercial with a graphic of mis-

spent tax dollars piling up), and I pop the tape into the VCR. Now prepared for tomorrow's demo presentation, I go home.

Tuesday, Dec. 16, 4:30 P.M.

My salesperson friend arrives at my office. First, explaining that this is just a rough start to give her an idea, I show her the frog animation. Then, to show what a finished animation can look like, I play the tape. She's very pleased, delighted. Everyone loves cartoons.

"Is there some way you could get this into the computer?" she asks, handing me piece of paper. It turns out they already have frog art, the result of a contest where they'd given a prize for the best cartoon of their mascot.

"Sure," I tell her, "no problem." And I suggest as a demo, an animation of the frog playing its guitar and stomping its foot. "I can have a rough one done in a few days and

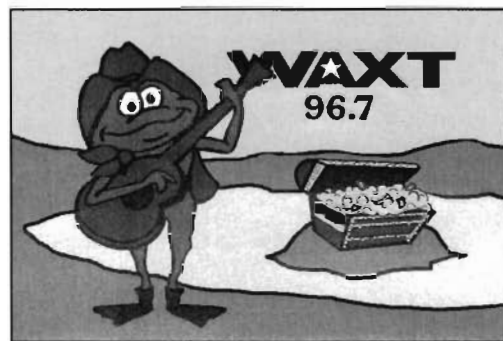
put it on a tape you show to your boss."

"Terrific."

After dinner that evening.

I start on the new demo. The easiest way to get the frog "into the computer" is to digitize it. I use DCTV to get a two color, hi-res IFF file of the artwork. If I hadn't had DCTV, I could have used my Live!. And, if I hadn't had any digitizing hardware at all, I could have used "genlock-rotoscoping" technique (see my article "Logos To Go" in *Avid*, July/August '92).

Once I've loaded the two color frog into DPaint, I go back to Screen Format,



Final Illustration

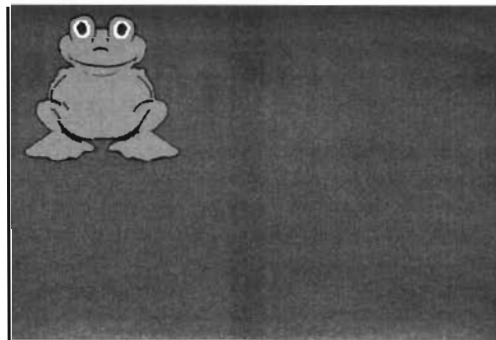


Illustration 1

reset the number of colors to 8, then create a suitable palette.

I expand the frog as big as he could get and still fit on the screen. The results of reducing are invariably less jaggy than those of enlarging, so it's always good to start big. Speaking of jaggies, I smooth the edges and fill in the areas with color.

Now I create a two-frame animation, the two frames differing only in the positions of the leg and the strumming-hand, up or down. By adjusting the frames-per-second play rate, it's easy to get him to stomp and strum in time to music. This will be the basic motion of the animation.

But, at this point, I make a copy of each frame and speed up the animation by a factor of two. The animation looks the same when it plays, but the extra frames will give me leeway later if I want to add finer, smoother motion.

At this point, I decide I'd like the frog's left "hand" to move up and down the guitar's bridge, and I'd also like to see what having his head waggle back and forth would look like. So, I remove his head and his left hand and arm and save them as brushes.

I start over and create a two position, foot stomping animation from this "decapitated" version.

Now I make several repetitions of the animation by saving it and then loading and appending it to itself. I use the 'X' key to waggle the head brush back and forth on the second half of the frames, then I have the hand move up and down the guitar bridge. The resulting frog stomps, strums and changes chords, wagging his head half the time.

Again, I use save/append to make a longer, repetitive version of this animation, plug a cassette player (with a country music tape) into the AG1960's audio in and lay down the animation.

The whole process has taken less time than drawing and animating my original frog, and the result is much more impressive. I almost want to stomp my foot along with the little guy. I'd actually thought it would only take an hour or two to do the animation when I told my friend a couple of days, but it never hurts to leave yourself some leeway if possible, nor is it totally undesirable to leave the client with the impression that these things take longer than they really do.

Thursday, Dec. 18.

My friend picks up the tape in the morning and I get a call that afternoon.

She's played it for her boss and everyone in the office loved it. This is the point where you usually encounter the "Dreaded Changes".

Typically, you'll create a simple effect as a demo, and the client will be impressed. He'll take the tape back to his business, show it to his employees. They like it too. But then someone suggests: "The Change". He calls you. "It's great, but could you make the little guy turn around and walk off into the distance after he finishes singing?"

Last October, a political candidate

wanted two commercials to be rotated on the Kokomo cable station. I sent him a sample from another project: stacking bills. It's a very useful effect and easy to do using the move requester in DPaint. He loved it. "We'll use that

for one commercial,

he said on the phone. "For the other commercial, we'd like an image of the Indiana State Capitol building expanding like a balloon and exploding and money flying everywhere." I had to talk them out of that one.

Anyway, from the client's point of view, if you can make a frog stomp his foot, you should also be able to make him walk in 3-D. You have to explain why the drawing of a 180 degree turn would take ten times longer (and cost ten times more) than just animating his leg.

My friend Bill Myers, of Guerilla Video fame, and himself a producer of many low budget commercials, so feared client involvement in the creative process and the resulting "Dreaded Changes", that he advised not even letting your clients know where your studio is.

Happily though, the station owner wants to use the foot-stomping frog in the commercial as-is.

But now comes the project's first complication. I want to produce the whole spot. But the cable's production company insists on doing it themselves. The reason is that the production cost of doing a commercial (I know from other dealings with the cable company) is included in the price of the time. My guess is they're afraid that, if someone else makes the commercial, the client will ask for some of his money back.

It's no coincidence that cable companies across the country are so uniformly disliked; monopolies know they can have things their way, so they do. Don't expect much leeway or cooperation from yours, or its associated companies.

A compromise is reached: they will produce the commercial but agree to use the foot-stomping animation as a musical lead-in. The philistines don't even have an Amiga, so I have to submit my animation on tape for them to edit in.

Of course, the cable company won't use VHS or S-VHS tape; 3/4" only. Like most video producers, I try not to buy anything I can borrow or rent (I do draw the line at stealing), so I don't own a 3/4" deck. You too can probably do as I have done: find an industrial-grade video producer in your area who has a 3/4" record deck which you can dub your finished product to. In my case, a company nearby not only has such a deck, but also an Amiga, so I can take my animation over there on floppy, and tape from it, saving a generation.

Tuesday, Jan. 5.

I see the spot run on cable. Most of it looks like all the other commercials they produce. Later, my friend calls. The only part of it that the station owner was really happy with, she tells me, was the animation.

Now that the cable company has extracted its pound of flesh (actually 9,500 pounds, for three months of four spots per day on two channels), they don't care if I produce another spot or not. So the next one will be all mine. I suggest a talking frog this time.

Wednesday, Jan. 20.

I receive a cassette tape of the voice track for the spot. Making a cartoon face mouth words is simple. In DPaint, I erase the mouth and use Brush and Grid to make several identical and exactly "registered" copies of the blank face on the Spare Page. Then I draw the mouth positions. [Illustration 2.] Jumping back and forth between the animation and the Spare Page, I make the face mouth the words. It's easy to get the timing right by adding copies of frames.

I also do a close-up version of the talking-frog-head and insert several screens of titles. A good rule is: Don't stay on any one shot for too long. Keeping an effect on screen overly long not only risks boring your audience, but it gives them time to notice any flaws or shortcomings in your animation. So keep things moving. Even "jump cuts" (where the "camera" changes the distance from the subject without changing angle), while they might be forbidden in most film and video production, are acceptable, even desirable, in this kind of animation.

Within a couple of days, I've recorded this first rough version of my animation, synched to the sound, on VHS tape and sent it to the station for them to watch as a "proof."

Thursday, Feb. 18, 11:00 A.M.

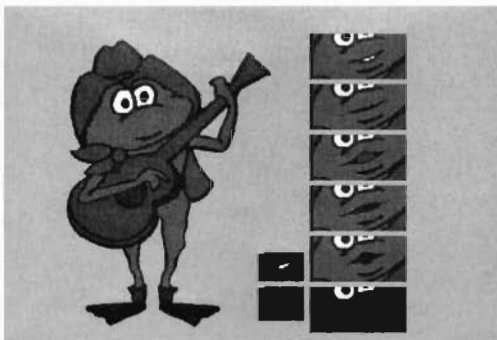


Illustration 2

Three weeks have gone by and I'm beginning to wonder what happened to my tape. But a call from my friend explains it: her boss has been gone on a vacation/business trip. But he has looked at the tape and he approved it. In fact, he took it with him on his trip and has shown it to some other radio people and media types in Nashville. They've told him that an equivalent animation job done there would cost \$15,000 (considerably more than I'm charging - \$350, if you want to know the details).

I'm to go ahead and produce the whole thirty second spot myself this time, without significant changes from the "proof," and have it ready to be inserted in the cable company's rotation in March.

That evening I go to work. There's not really a lot more to do but draw a background in the spare page and add it to the animation using DPaint's Merge-In-Back feature. Illustration 3 is the first frame of the finished animation.

All that's left now is to lay it down on video tape. The trickiest part of this is synching sound and animation. Without time code, it's a trial and error process. Add plenty of identical copies to the beginning of your animation to give yourself lead time (identical frames, by the way, do not add to the size of your animation if it is in "anim" format). This is necessary because of the seconds which the recorder heads need to get up to speed.

When you've set up your record deck with your client's sound as audio-in and the encoded Amiga output as video-in, start the record deck recording. Next, start the sound-playing deck and watch the tape counter. When the right count rolls up, start your Amiga animation. Eventually, by trial-and-error and watching for exactly the right moment on the sound playback counter, you'll get a perfectly synched recording.

If you have two VCR's, and especially if they are identical or both have counters that display frames or seconds, it may help to copy the sound supplied by your client (on audio tape) to video tape and then use a VCR as the audio-out device.

In my case, I don't want to take the extra trial-and-error time at the studio where I'm basically borrowing their Amiga and 3/4" VCR. So, before going there, I record a perfectly synched version on S-VHS, but first: I make the second frame of the animation a blank white screen. When this frame plays, it produces a momentary white flash. The idea is this:

At the studio, we'll use their S-VHS deck to play the sound (similar to the set-up described above) instead of an audio deck. This way, when the operator sees that white flash, he knows it's time to press the key that starts playback of the Amiga animation. By adjusting the position of the white frame among the animation's lead frames, it's easy to get a precise

synch after a few attempts. Because the playback speeds of the computer and video deck don't vary, the only variable is the reaction time between the operator seeing the flash and pressing the key. Unless you take a six pack with you to share with the guys at the studio in return for their help, reaction time should stay pretty constant from one trial to the next.

Tuesday, March 16, 8:30 A.M. My salesman friend just stopped to pick up the tape for inclusion in the cable rotation starting today. And now I'm sitting at my Amiga, using it to finish up my story of how I used my Amiga for a little fun, profit and fame (my mom saw the first commercial on TV and thought the animated frog was great) as a TV commercial producer.

Continued from page 20

At press-time, a new Amiga MPEG player made its debut under the uninspiring name of MP102.LHA. This one, authored by Michael Van Elst is derived from the UNIX/X11 MPEG decoder version 2.0 by the Berkeley Plateau research Group. In Van Elst's own words: "Most work for 'mp' went into dithering and display code for the native Amiga graphics hardware and some third party graphics boards but some friends and I also tried to improve playback speed so that it becomes usable on a small computer system like the Amiga."

Requiring at least OS 2.04 and a 68020, MP 1.02 is certainly the fastest software-only Amiga MPEG player I've seen so far, and one of its most exciting features is its ability to decode MPEG video streams directly to Centaur's OpalVision display card in either its 15 bit or full 24 bit display modes. Non-Opal owners will appreciate its myriad of other modes including AGA 8-bit grayscale (AGA HAM-8 is coming soon), HAM, Extra Halfbrite, and many forms of dithering.

The program's author can be reached via E-Mail as
mlelstv@mpifr-bonn.mpg.de.

Continued from page 25

dred people who purchased the new AGA machines and they are unanimously pleased with them. These people are not just video folks, they are primarily 1200 owners who have been using them for music, desktop publishing, and CAD work. One person using DynaCad told me that once he added a 68881 math coprocessor and some fast ram to his 1200, it ran DynaCad faster than his A3000! About the only thing all these people had

in common was a slightly smug expression and circles under their eyes. If there is any downside to the AGA chipset it is that it seems to retard social interaction. Or as one sleepy eyed owner put it, "When you have a 4000, you don't need friends."

A4000 Demos

If you are lucky enough to have access to an actual Commodore dealer, you may get a chance to witness "4000 ways to use the Amiga 4000 Demo." Jeeze, what a title. Commodore has supplied some dealers with a 4000 that contains nearly 76 megs of demo material pre-installed on the hard drive. Portions of the demo are very nicely done. The sound samples are superb in both music and narration, which is interesting considering that is an area that is still original equipment. I have got a beef with some of the art samples presented as "eye candy". There are several examples of digitized images that are of photographic quality, but most of the images look like something you would use to sell an IBM clone. Investigation shows that most of the images are in hi-res 256 colors. What did they use, GIF files? They are not even in full over-scan! I was also disappointed with much of the original artwork. Any of us who have been living and breathing the Amiga for the last couple of years will notice some of the work seems a bit slap dash. Word is that in some sort of bizarre cost cutting measure, rather than commission some well established Amiga artist (they are leigon now) to create the best possible presentation, they simply downloaded public domain files. From the looks of some of the crudely cut out brushes, not much effort was put into the selection. There are plenty of fine artists out there who would have donated their best work for the cause of promoting the Amiga. But at least it is something.

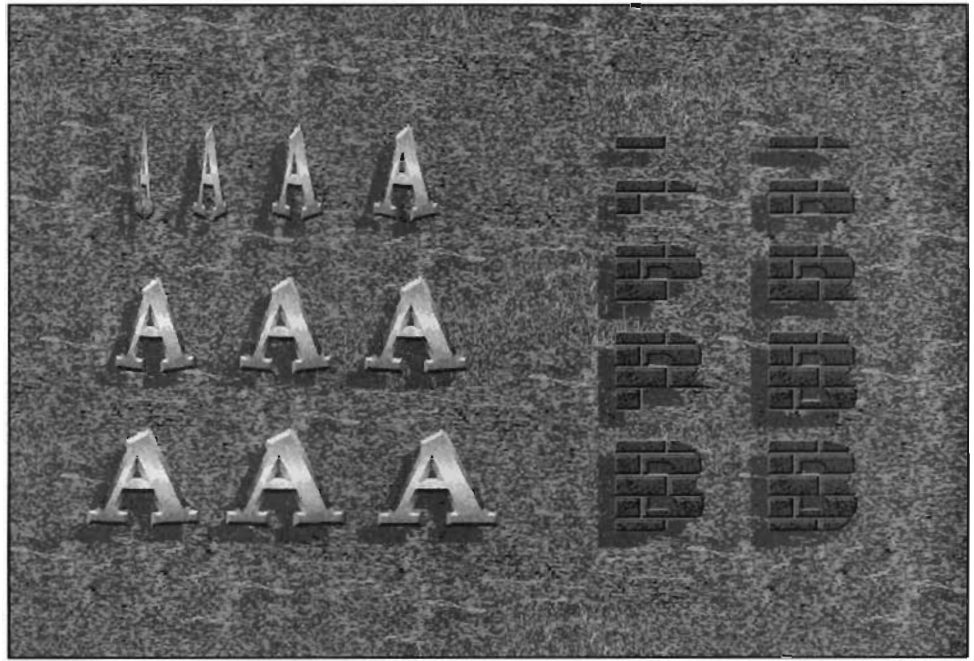
So once again, it is up to the Amiga community to promote the Amiga. It recently struck me that we are as guilty as Commodore to the sin of preaching to the choir. At a recent job, I had my 4000 on location and was showing it off to a number of local video producers. It was the first time that any of them had seen an Amiga! They had heard rumors of the platform's capabilities, but it passed them by. Until I rubbed their noses in it, they could not believe what the Amiga could do.

Perhaps that is the problem. The basic facts about the Amiga are better than the hype on any other machine. Till next time.

Send your questions and smart remarks to:

Patrik Beck
Electric Crayon Studio
3624 N 64th St.
Milwaukee WI 53216

Roll Your Own Animated Fonts For Fun And Profit!



Plc 1: The A in the picture uses the Move requester to rotate each half of the letter 90 degrees out from the center. The B is a color font called Brick, animated by removing one brick at a time.

By
Patrik Beck © 1993

A

migas are often used in the production of industrial, educational, and promotional videos which present much information as text, often to reinforce the narration and screen images. In the publishing and video worlds, the way text looks is almost as important as what it says. Manipulating text in interesting ways is something the Amiga is extremely good at.

The Deluxe Paint Revolution

Titling techniques have come a long way since the early days when text simply appeared on and then disappeared from the screen. The Amiga can perform amazing animation feats with text that would have delighted any horror film maker from the 1950s. Deluxe Paint's Move Requester has sent more logos flying than in Roger Corman's entire oeuvre. We've delighted ourselves for hours by punching in X, Y, and Z coordinates at random and watching our names spin off into infinity. Some of us were so bold as to combine these trips through space with the new animated brushes, discovering strange and sometimes useful effects. The invention of colored fonts was just icing on the cake.

Occasionally you may have wanted the text to move in a particular way. If you are anything like me, you are easily distracted when the brush does not go where it is supposed to, but something really neat happens. When you are working under a deadline, this is not a good thing.

Prefab AnimFonts

Enter the Kara animated font packages for use with Deluxe Paint and multimedia programs. These are not strictly fonts, as they are not handled the way fonts typically are, but collections of animated brushes of every letter of the alphabet. These handsome animated brushes allowed quick creation of professional-looking

animations. I often study the techniques employed to achieve their stunning effects.

As good and easy-to-use as the animated font packages are, there are sometimes complications. You may need to animate a stylized logo in the same manner as the text; or the font you want to use is not animated in an appropriate manner; or you may think that the number of frames of a particular letter is not right for your animation. For the rest of this article, we will examine ways of dealing with these situations and creating your own animated fonts.

A Quick Trick

Here is a way to expand your color font collection. After typing some text on the screen, load a different color font's palette. This changes the look of the original color font on the screen. I have had good luck with this, mostly because Kara's fonts' palettes use shadow and highlight colors consistently. I have also had luck using this technique with public domain color fonts.

Let's Get Animating

It is up to you whether you want to take the time to animate the full alphabet, or just the letters you need for a particular project. These techniques work equally well with whole words as with individual letters. If you are planning to release your efforts as a commercial package, or into the public domain, you should animate the full alphabet. Otherwise, simply animate the letters needed for a particular logo and save them for future use and reference.

Write On!

Let's try animating a letter so it appears as though it is being written across the screen as you watch. First enter from the keyboard the

character you wish to animate. Choose a duration: five to ten frames is usually good; we will use 10 frames for easy math. Create 10 animation frames.

Once you have 10 identical frames of the letter, begin erasing. On the first frame, erase 9/10 of the letter, leaving only the left-most 1/10 remaining. On the second frame, leave 2/10 of the letter. Continue this pattern until the last frame, where the complete letter should remain.

Check your work by running the animation. Chances are that you will have a little clean-up work to do. When you are satisfied with your results, pick up the letter as an animated brush and save it. Are you having second thoughts about animating the entire alphabet yet?

Adding Sizzle

Before you delete the animation you have just created, let's add some extra flair. Using the Airbrush tool, spray the letter's leading edge as it is being "written on." This makes it look as if the letters are being drawn by electrical sparks. The spray area's radius is important; you can adjust it by clicking the Spray Can icon in the Toolbox with the right mouse button. This sizzle technique works well with anything moving on the screen. Try activating Cycle mode (F7) when spraying—this can give you a nice multicolor sparkling effect when the ranges are appropriately set up. If possible, add some sizzling sound effects to the audio of the finished video for more impact.

Do not limit yourself to a left-to-right action. It is just as easy to have the text appear from the opposite direction, or from the top or bottom. If you are up to it, you could have the text appear from the edges and work its way in, or work its way out from the center. It is not necessary to limit yourself to spray can sizzles either.

Make an animated brush that consists of a small flame that makes it look like the text is being burned on, or a sparkling star that

some interesting things with text, however.

While morphing entire words tends to get kind of "mushy", I have obtained good results by morphing one letter at a time. This is probably due to the fact that all characters in a font have a stylistic consistency. The color font Chrome works extremely well morphing from one letter to another, giving a Terminator-like effect. The success of this depends on your skill with the morphing function and a bit of luck.

To morph, select two brushes for the morph's beginning and end. I have morphed individual letters from shapes like balls and cubes with useful results. After choosing Morph from the menu and setting the number of frames, it takes

only a few minutes before you find out whether you have created a usable transition. Some morphs can be greatly improved with a bit of touch-up work. Patience and experimentation is the best way to develop good morphing techniques.

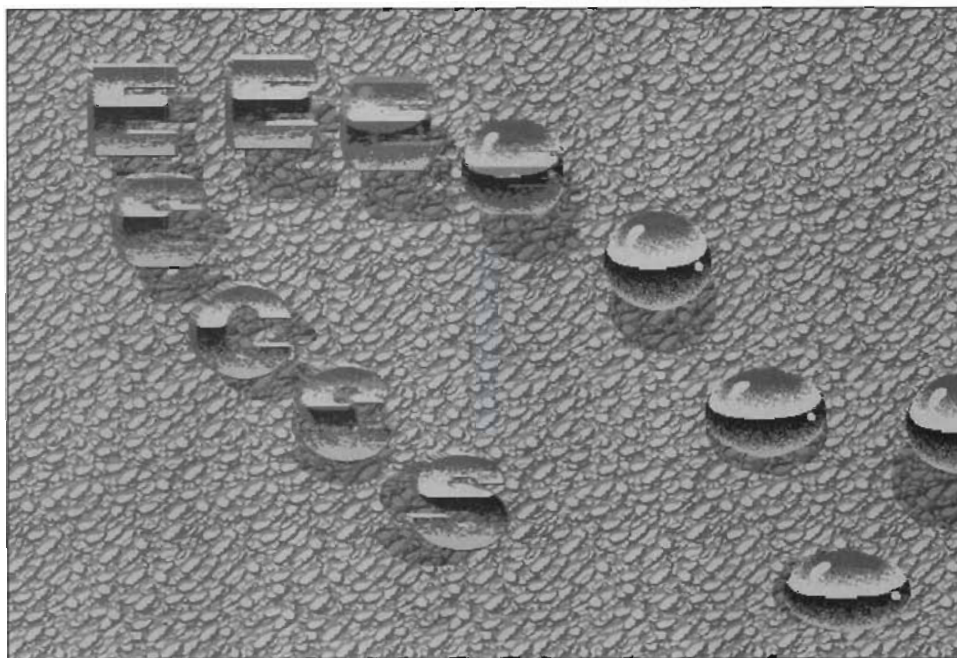


FIG. 2 - Imitating the technique used in the color font Chrome, a bouncing ball was made. The ball then transforms into the letters ECS, using DPaint IV's Morph function.

makes the text appear like magic. Any ideas yet?

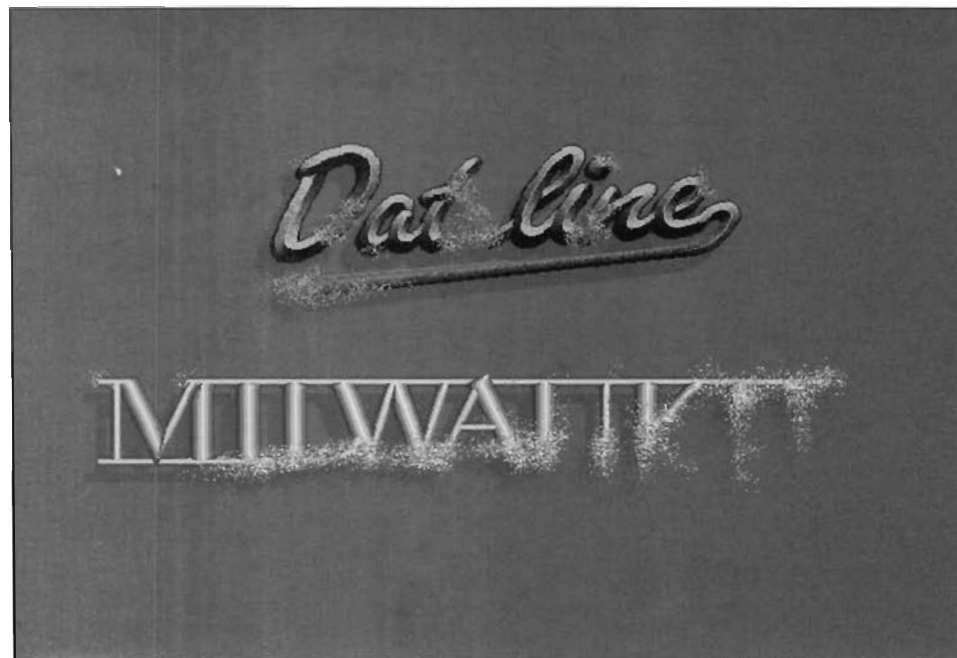
Morphing Madness

When version four of Deluxe Paint came out, I was excited about the morphing func-

Trying out the Moves

Reproduction of several of Kara's AnimFont moves should be easy for anyone who has played with the Move command. One is a simple 90-degree turn as the letter rotates about its center. Often such a simple effect is better because it enhances the video instead of distracting from it.

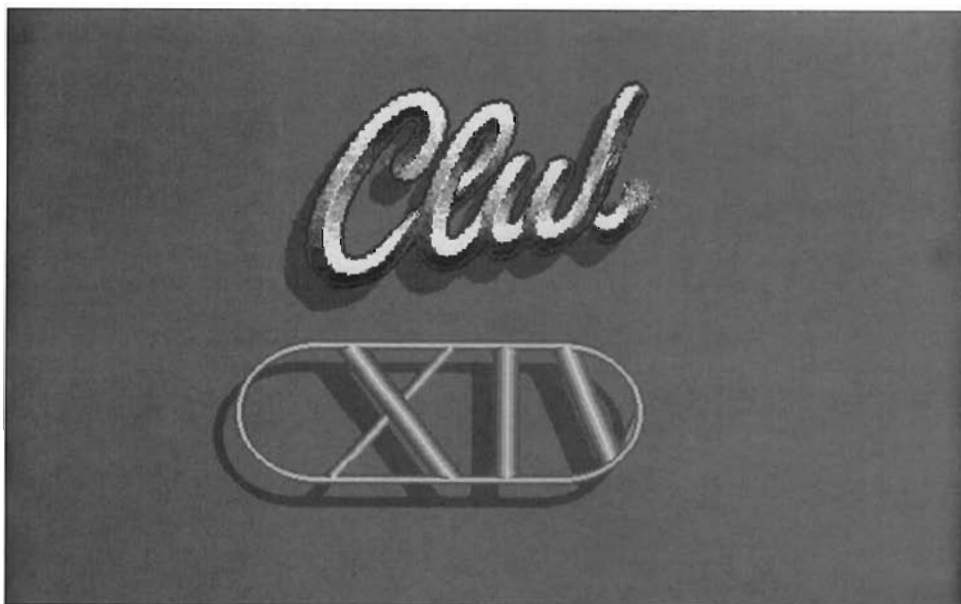
A number of other effects can be obtained by simply moving the brush's handle (its pivot point). By placing the handle on one side, the letter can appear to swing in like a bar-room door. Placing it at the top or bottom lets the text appear to "drop in" or "stand up." All these variations are just from changing the



A. br. FIG. 3 - Two color fonts were modified to create the logo for Dateline Milwaukee. The letters write themselves on the screen with sparkles created with the Airbrush tool in Cycle mode.

tion. But as I and many others discovered, this feature has limited usefulness. It can do

the text appear to "drop in" or "stand up." All these variations are just from changing the



A.br.Plc.4 - The same fonts as in Figure 3 with a different palette.

placement of the handle and direction of rotation.

Let us add some new twists to the moves. Try the swinging door effect with only half the letter at a time. Done correctly, it can look like a book opening up or a butterfly unfolding its wings. You can even have the first half of the letter unfold itself. For an even more interesting effect, pick up the unfolding letter as an AnimBrush and animate it rotating on.

Getting back to something simpler, start with 10 blank frames, and type a letter on the last frame. Pick up the letter as a brush, clear the screen, and stamp it down. Go to the Move requester (Shift-m) and select the Goto option so that the letter returns to the place you stamped it. Be sure that the number of frames for the movement equals the number of frames in your animation. Next, for Y Distance, enter a value that will start it just outside of the original letter's area. You can check this with the Preview function. When satisfied with the results, let it draw.

When the animation is complete, pick it up as an AnimBrush, but pick up only an area as large as the letter's final position. This results in an AnimFont that appears to be dropped in, like looking through a window while the blind is being pulled down. By changing the X and Y distance values, you can have the letters appear to come up from the bottom or in from the side. By adding the

sparkling effect described earlier, you can make the text appear to "materialize."

Colorizing Fonts

You don't need to buy color fonts—you can make your own from existing monochrome fonts. You should stick with fonts of a sufficient size for titling purposes. An easy way to do this is simply by using the Fill tool with a gradient or pattern fill. A Brush fill with the Warp function activated can give you some truly strange results, but you might find something you like. You can also color your font after it is animated.

To help in coloring fonts, use the Stencil function to lock out all colors except for the one that makes up your text, so only the text will be affected. Try this with a large brush containing a gradient or tiled pattern and use the Move requester without values to stamp it in the same place every time for an interesting (but not necessarily useful) effect.

I hope that this has been kind of an "oh yeah!" sort of article; one that triggers many thoughts of things that you might try. Maybe you got some ideas for spicing up a logo treatment. Even with the thousands of hands that Deluxe Paint has been in for years, I am still seeing new things that look great and make me wish that I had thought of them. Creating a unique effect or developing a new technique is a great way for establishing a look that is uniquely yours.

Let me know how it turns out.

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Circle 21 on Reader Survey Card

Amiga Sound for Video Tips

By
Jaxon Crowe © 1993



This time, we'll take a slight deviation from the norm. Instead of reviewing a specific product, I'll answer some common questions and misconceptions I've encountered in corresponding with dozens of video (and audio) producers. I'll also give you a quick preview of the newly released Bars&Pipes Professional 2.0. I'll detail some of the modifications and improvements over earlier versions of Bars&Pipes Pro, and provide information on upgrades from Blue Ribbon's earlier sequencers.

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Sound Card Confusion

The most common misunderstanding involves the two hottest new Amiga music and sound peripherals, SunRize Industries' AD516 Hard Disk Recording System and The One-Stop Music Shop from The Blue Ribbon SoundWorks. Apparently some confusion exists concerning the applications of these two 16-bit soundcards. This confusion is understandable, so I've undertaken this explanation of their similarities and differences.

Both of the devices are indeed 16-bit, CD-quality digital audio cards that work in any open Zorro slot in an Amiga 2000, 2500, 3000, or 4000. Both are serious, professional audio tools, and they both sound great! But that's where the similarities end. They are two entirely different types of devices, each with a unique set of functions used in the composition and editing of sound and music for video.

Band on a Board

The One-Stop Music Shop is an electronic musical instrument. It is, in reality, an E-Mu Proteus SoundEngine or synthesizer module on an Amiga card (some sort of MIDI input device such as a keyboard or MIDI guitar is also required for most applications). E-Mu is one of the most respected names in professional audio synthesizers. The One-Stop Music Shop is a 16-bit digital synthesizer with 213 sampled waveforms contained in four megabytes of ROM. The sounds are taken from E-Mu's vast libraries of samples for their EMulator and Emax lines of professional audio samplers.

The One-Stop Music Shop can play up to 32 sounds simultaneously. The sampled soundwaves are played through a system of envelopes, modulators, and amplifiers to produce a wide palette of instrument tones and percussive sounds.

It is a multi-timbral synthesizer, which means it can respond to MIDI messages on all sixteen channels at once. By assigning different instruments to different MIDI channels, you can use it to play complex multi-instrument arrangements without requiring any additional sound sources.

The One-Stop Music Shop's SoundEngine functions like any other MIDI sound synthesizer. However, it has no knobs, buttons or switches; all controls are accessed through the Amiga's graphic interface. The One-Stop Music Shop card also has a fully functional built-in MIDI interface. This allows your Amiga's serial

port to remain free for use with other peripherals, (such as a scanner, modem, or drawing tablet.) The One-Stop Music Shop includes some very good sound-editing and storage software. It also comes with the software required to operate the One-Stop Music Shop directly from Bars&Pipes Professional and SuperJam!, making it an ideal synthesizer to use with either program.

Dozens of Channels

The One-Stop Music Shop has a clear advantage with B&P Pro over any other external MIDI synthesizer. The card's internal voices can be played directly from specific sequencer tracks, while other tracks can control a separate set of sixteen MIDI channels through the card's built-in MIDI interface. And, if you have a standard serial MIDI interface, an additional sixteen MIDI channels can be accessed out of that MIDI interface. This gives you a total of 48 available MIDI channels!

Recording Studio on a Board

By comparison, SunRize Industries' AD516 is a professional quality, multi-track digital sound recording and playback system on an Amiga card. It reads SMPTE timecode, and can therefore be locked to video with true frame accuracy. The AD516 is not a musical instrument. If anything, it would be more closely related to an eight-track digital audio tape recorder, but instead of tape, its storage medium is the computer's hard disk. The AD516 can record and play back narration, music and sound effects in 16-bit words at a sampling rate surpassing that of CDs. (The AD516 can digitally record at up to 48,000 samples per second, compared to the 44.1k rate used in CDs. Of course, the faster the sampling rate, the higher the fidelity of the resulting audio signal. Only professional DAT recorders use the 48K rate.)

The included Studio 16 software can be used to record and edit sounds, and assemble cuelists to schedule playback of these edited sounds. Depending on the speed of your Amiga and its hard drives, up to eight sounds can play simultaneously. This allows an entire soundtrack, including dialogue, sound effects, background ambience, and music to be constructed and synchronized to SMPTE timecode. Whether your audio tracks con-

sist of a simple voice-over or full-blown original sound productions, the AD516 is a serious professional tool perfectly designed for audio-for-video applications.

SunRize has announced a new software utility called the SMPTE Output Module, which allows SMPTE time code to be written to tape through the Amiga's audio output, eliminating the need for an external SMPTE interface.

The One-Stop Music Shop is an electronic musical instrument. It is, in reality, an E-Mu Proteus SoundEngine or synthesizer module on an Amiga card.

Which One?

Which of these two digital sound boards best suits your needs depends entirely upon the application. If you are building a MIDI music system and need a great-sounding synthesizer for producing original music, I recommend The One-Stop Music Shop. However, if what you require is a SMPTE-compatible multi-track audio recorder for the production of music and sound for video or radio, check out the AD516. If you design multi-media presentations for the Amiga, get both. In my own audio-for-video studio, both units have proven to be priceless.

Choosing Music Software

Probably the second most common question I hear is this: Which music program should I buy to make some original

music for my video productions? The right answer to this question depends largely on your level of musical experience, the amount of time you have to learn the programs, and your budget.

No experience playing music? Not to worry! Algorithmic composition programs such as M, Music Mouse, The Video Music Box, and SuperJam! allow even the uninitiated Amiga user to compose some useful electronic music. The best algorithmic composition software lets the program contribute to the music's content, but keeps the process fully interactive so that each composition can be unique. If you have absolutely no musical aptitude but need some original themes or stings, check out The Video Music Box and SuperJam!. Both of those programs are extremely simple to learn, and can be very useful for composing quick and easy songs in a number of recognizable musical styles.

My favorite algorithmic composition program is M. While it's a bit more abstract in concept (and in results), it is a great program for producing highly syncopated, rhythmic electronic sequences. M is well suited for individuals who like to experiment. (Some classically trained musicians have a rough time with M due to its unorthodox approach to music composition.)

Bars and Pipes and B&P Pro are very good programs for creating computer-assisted music arrangements, but are easier to use for "players." The two programs use a unique set of algorithmic tools in conjunction with an environment that resembles a multi-track tape recorder. Dr. T's Keyboard Controlled Sequencer 3.5 also uses a variation of the tape recorder metaphor, and is best suited for experienced players. It is much less graphically oriented than the Blue Ribbon sequencers (I find its clean and simple graphic interface less distracting than the screen clutter created by overlapping windows and overabundance of colors found Bars&Pipes).

All of these programs can work with the Amiga's four-voice audio chip to produce some fairly acceptable sounds. SuperJam! exceeds the four-voice limit by using "TurboSound" technology. Depending on your Amiga's processor speed, up to 16 sounds can be produced at once. This is accomplished by "summing",

or combining, the individual sounds to form a single waveform. This complex wave is then played through one of the Amiga's oscillators. The trade-off is in reduced fidelity and increased noise.

However, with even an inexpensive MIDI keyboard from Casio, Yamaha, Kawai, etc., and a MIDI interface, you'll be amazed at the capabilities of these programs. (As I mentioned, The One-Stop Music Shop is an exceptional sound synthesizer with a built-in MIDI interface. Most likely, you'll still need a MIDI keyboard, guitar, or wind controller to fully take advantage of these sequencer programs. Fortunately, the cost of MIDI instruments has become extremely reasonable these days.)

Another common misconception deals with using the AD516 to add a soundtrack to a videotape with SMPTE time code. Many people seem to be under the mistaken impression that a separate sequencer program—such as Bars&Pipes Professional—must be used to synchronize a series of sounds being played by the AD516 with SMPTE time code on tape. Fortunately, this is not the case.

Studio 16's Cuelist module lets you specify exact hit points by their SMPTE addresses. The SMPTE code is first written to an audio track on your videotape. This time code signal is then routed back into the AD516's SMPTE input, which lets it serve as the master clock. Events specified at certain SMPTE times will be executed by the Cuelist in perfect synchronization with videotaped events.

Bars&Pipes Professional does contain a set of tools specifically designed to allow access to all of Studio 16's controls. One tool allows recording and playback of a "virtual track." This lets you record a part played by a non-MIDI instrument such as guitar, percussion, or even background vocals, to be recorded and then used as a part of a MIDI sequence. Any digitally recorded audio track can be played in perfect sync with your MIDI sequence.

B&P Pro—The Update

This month I just received Bars&Pipes Professional 2.0. It's full of revisions, and sports some exciting new modules designed specifically for multimedia applications. A major new addition is Media Madness, software for orchestrating various types of audiovisual media so they play along in sync with your MIDI music tracks. Blue Ribbon SoundWorks also provides a program on the B&P Pro 2.0 disk called Media Madness Player. Since it is freely distributable, you can include it with

The One-Stop Music Shop has a clear advantage with B&P Pro over any other external MIDI synthesizer. The card's internal voices can be played directly from specific sequencer tracks, while other tracks can control a separate set of sixteen MIDI channels through the card's built-in MIDI interface.

Media Madness "compositions" that you create for distribution.

Media Madness integrates numerous different media tracks. Each media track is controlled by a particular tool designed for that type of media. For example, the IFF Image tool can display a series of images from disk in sync with a MIDI sequence, while the Sample Tool cues an eight-bit sound sample to play through one of the Amiga's audio outputs. Media Tools included with Bars&Pipes Professional 2.0 provide direct control of Amiga-resident hardware and software such as the Video Toaster as well as the remote control of certain external devices like Panasonic's Optical Laser Disk Player.

More New Tools

The ANIMal Tool preloads, plays, and then removes Amiga animation

files. You can set the number of loops and adjust the playback rate in frames per second. The Command Performance Tool sends commands to the ARexx ports, files, and devices such as SER:, CON:, etc. Tools are provided that can freeze and unfreeze the picture in picture (PIP) in GVP's Impact Vision IV-24 board.

Other tools permit control of GVP's G-Lock and Digital Creations' SuperGen genlocks. The Last Slide Show preloads, plays, and unloads a sequence of Amiga IFF files. Another tool lets you assign a different IFF picture file to each individual MIDI note number. For special effects of a sort, you can control picture brightness or shift the colors with the MIDI keyboard's velocity, pitch-bend, and modulation controllers.

The MediaPhile Controller is used with the MediaPhile Desktop Video System from Interactive Microsystems. The SamplePhone Tool allows up to 128 different Amiga IFF eight-bit samples to be assigned to each MIDI note number. Level, duration and left/right output selection is adjustable. If you have either the AD516 or AD1012 audio card, the SunRize Out Tool cues audio samples to play

through the card's stereo audio outputs. The Scala Tool provides control over the Scala program environment in performing multimedia presentations. Another tool gives you MIDI control over Video Toaster transitions. The Toaster's T Bar can be assigned a MIDI Control Change number, allowing you to control Toaster fades and wipes from either your MIDI keyboard or B&P Pro's Mix Maestro window. Each MIDI note number can activate a script containing as many as six Toaster program commands. For example, commands could be sent to set up both the Preview and Program inputs, select the "Shatter" transition, and then trigger the transition with the AUTO command. Finally, the Yak Tool sends text to the Amiga's internal speech synthesizer, letting your computer provide commentary in its not-so-unique robotic cadence.

Continued on Page 57



Once more, the World of Commodore returned to the Big Apple, drawing Amiga enthusiasts from all over the globe. Inside Pier 88, long tables and booths of exhibitors displayed their wares for the throngs waiting at the doors.

OPALVISION

By far, the most impressive showing was *Centaur's Opalvision* booth, strategically placed at the entrance. The newest features of *OpalPaint* had everyone oohing, and ahing. These include: Online help, new drawing modes (including Chroma Control), Convolutions, Balance and Real-time preview options, full implementation of Magic Wand tool, and Overscan Painting. Also new is the Custom paper types - now load any IFF images as a paper type, and the newest version of *OpalAnimMate* which is now even faster than ever. Look for a full review in the future.

GREAT VALLEY PRODUCTS

GVP introduced a number of hardware modules for the *Amiga 1200*. The *A1200 SCSI/RAM+* expansion board offers a high-speed DMA SCSI controller, 8MB of 32-bit RAM expansion, and a 68882 math co-processor.

If it's speed you're looking for, then try the *A1230 Turbo+* for the *Amiga 1200*. This high performance 40MHz 68EC030 accelerator supports up to 32MB of 32-bit RAM expansion and a 40MHz Coprocessor.

On the video application side, GVP upgraded the software for the *ImpactVision-24* board. The packaged software includes: *Macro Paint IV24* (allowing you to paint in 24-bit real-time), *Caligari24-IV24* (a 3D rendering package for 24-bit still images), *Desktop Darkroom*

(an image capture and processing software designed especially for the IV24), and *MyLAD* (My Live Action Director allows you to perform a variety of real-time transitional wipes between two video sources).

GVP is also shipping *ImageFX* version 1.03 and *CineMorph* 1.03. In addition, the *PhoneFax VFX* software has been upgraded to version 2.0, which now includes message time & date stamps, on-demand retrieval, fast-forward and rewind during message playback, and "Command stacking", allowing entry of multiple commands without waiting for prompts. Also, *DSS8* has now been upgraded to *DSS8+*. It seems the elves at GVP are really putting in a lot of overtime.

ICD

ICD was showing their newest hard drive controller card, the *Trifecta 2000 LX*. It offers a fast SCSI-2 and IDE controller for adding low-cost IDE drives, and up to 8MB of fast RAM expansion. The SCSI-2 controller offers 10 Megabytes per second synchronous and 5 MEG asynchronous transfers from a SCSI-2 hard drive to RAM.

Software-wise, ICD was offering *Flicker Free Video Preferences*. This program allows adjustable vertical scan rates (to provide a more solid display), and an adjustable Workbench overscan for maximum use of display area.

Also on display was the *Viper 1230*, this offers the *A1200* owners a 68030 accelerator, supporting high speed memory expansion, an FPU Coprocessor socket, a battery backed-up real-time clock, and a unique 16-bit Direct Memory access port for further expansion capabilities. Two high quality SIMM sockets are on board for memory expansion. The board can be configured with either a 40MHz or 50MHz

cpu. In addition, the *Viper S2* board was previewed, the first *VDP* peripheral designed for the *Viper 1230*. The *Viper S2* is a full DMA SCSI-2 controller offering truly sustainable transfers of 5MB per sec asynchronous and 10 MB per sec synchronous from a SCSI-2 Drive.

SCALA, Inc.

All during the show, Martin Ricketts of *Media Innovations* was demonstrating the latest version of *Scala MM200*. If you don't own a *Video Toaster*, but want to use video and still images for your presentations, *Scala MM210* (which is the newest version that supports the AGA chipset) might be just the software application you've been looking for.

If you have an Amiga A4000, and are into animation, *Scala 210MM* also has the ability (if you have the RAM) to show HAM8 animations at 30 fps with sound, through the use of the *AnimLab* utility. (ed. note: *Scala* currently does not support HAM8 overscan animations.)

NEWTEK

LightWave 3D version 3.0 was premiered by none other than the *Toaster Guru* himself, Lee Stranahan. He captivated everyone with the new look and feel of *LightWave* and *Modeler*. The biggest improvement seems to be the rendering of *LightWave* scenes which were three to four times faster than the older version. Another great feature was *Lightview*. You can now see exactly where the light is going to be pointed. No more guessing where it will shine. The *Modeler* now supports Boolean features. You can now cut any shape out of any currently selected object. In the animation part, *LW3* now allows you to edit a motion path to the exact frame specified. Each frame of your animation is shown as a tick mark on your motion path. Keep an eye out for a more detailed description of *LightWave 3.0* in future issues.

COMMODORE

All the while, Commodore waited patiently at the other end of the hall with their *A4000T*. Everyone eventually gravitated there to see the best and brightest of the new generation Amigas. This preview addressed complaints Commodore had received about the current A4000. Most noticeably, they've included two video slots as a standard feature, and SCSI-2 support. No more slow IDE hard drives for the A4000. With SCSI-2, Commodore has finally joined the rest of the Industry in moving towards faster and larger

capacity hard drives. Gone too, is the IBM look. The attractive tower case provides more room for expansion and internal storage of hard drives. If that wasn't enough, Commodore was previewing their version of an MPEG (Moving Picture Expert Group) card. They were showing a 5 minute *Bon Jovi* video playing in HAM8 at 30 fps in a window on workbench. This was all done on their new A4000 with a 030 cpu and a 50MEG IDE hard drive. If and when Commodore ships this product, it is the belief of the staff at AVG that single frame-accurate tape recorders will be a thing of the past. Video editing will stay in the digital domain (so as not to lose detail), until final output to film or tape. So if your thinking of buy that \$6000+ VTR deck, you might want to wait and see.

SUNDRIES

In the emulator world, the newest player is *Utilities Unlimited, Inc's Emplant* board. The *Emplant* is a hardware and software package designed to emulate any computer platform. A simple software driver and ROM(s) from the computer are all that are required. *Utilities Unlimited* was showing a working version emulating a Mac IIx. Amiga 2000 owners would have up to 16 colors, while A4000 owners will have 256 colors, and it is fully multi-tasking. So if you're looking to buy a Mac soon, check out the *Emplant* board before you lay that cash down.

DKB, was showing the *MegAChip 2000/500*, *DKB 2632* (a 32bit memory expansion for the A2500/030), and *MultiStart II*, (which lets you install V2.0 and V1.3 Kickstart ROM in your Amiga). However, their major feature was also their newest release, the *DKB1202*. The 1202 allows true 32 Bit wide, zero-wait state fast RAM access. It also has a built in real-time clock and uses the Motorola 68881 math Co-processor clocked at 16MHz to speed up math intensive operations.

For music applications, there was the *Clarity 16*. This real-time, 16bit sampler from the UK allows you to sample CD quality sounds at 44KHz on an accelerated Amiga. It has duo I/O MIDI connections, and includes a Midi Keyboard emulator that allows you to assign samples to any individual note or range of notes.

The World of Commodore show was an unquestionable success. The vast turnout is just another indication that the Amiga computer platform is alive and growing. In what looks to be the Multi-Media decade, Commodore has taken the right steps to extend its lead in the field of integrating Video and Sound into a total

experience.

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Scala, Inc.
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NewTek
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Commodore Business Machines
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Utilities Unlimited
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Lake Havasu City, AZ. 86403
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Modeling 101

By
David Hebel © 1993

When setting out to improve your modeling and rendering skills, it is best to have a project. In other words, learn by doing. A project allows you to focus your skills, and in the process develop new ones. At times you may have trouble coming up with an idea for a project. I find watching a few minutes of commercials can be inspiring. Some of my favorite computer animations are in Listerine commercials. You know the ones, with a lively Listerine bottle courageously fighting plaque with his sword or swinging fearlessly through the jungle on a vine. Our project this month is to recreate the Listerine bottle using LightWave and several other Amiga software packages.

The First Step

When modeling an object, it is best to refer either to a picture or the object itself. For this project, it is imperative that you actually buy a bottle of Listerine. Try to buy the biggest bottle available. This makes digitizing the label easier.

Once you have your bottle, the first step is to remove the label. Though there are two labels on the bottle, only the front one is necessary. Carefully remove the label with steam. The steam loosens the glue and allows the label to easily slide off.

The simplest way to create this

object is to obtain a black-and-white silhouette of the bottle. To do this, set your bottle against the wall and framegrab it with the Toaster Freeze button (fig. 1). Now take the image into ToasterPaint and black out all but one half of the bottle. The most tedious part is going around the outside of the bottle. Using one of the angled brushes move slowly (a few pixels at a time) around the edge. Save the finished image as an RGB file named LIST1.iff (fig. 2).

Next, load LIST1.iff into Art Department Professional. Set the number of colors to two. Now go to Balancing and set all the parameters except Gamma to 50. This should give you a near-perfect silhouette of the bottle. Save this image as LIST2.iff.

Load DeluxePaint IV in Hi Res, four-color mode, and bring in LIST2.iff. We now need to touch up the image. Make sure the bottle is completely white and contains no stray black pixels. Also, check to see that the left side is directly vertical. Using either the Box tool or Line tool, level both the top and bottom of the bottle in order to remove the rounding caused by the perspective. To add a label, select the Line tool with a single-pixel brush. In magnification mode, add a blue line to the outer right side of the bot-

tle approximately where the label should be (fig. 3). This should be saved as LIST3.iff (fig. 4).

In Pixel 3D Professional, load LIST3.iff. Smooth excess points and save as LightWave object LIST4.lwob. Now load the object into Modeler. The first step here is to lathe the object. Select the Lathe tool and place it vertically, directly on the left side of the polygon. The left side should turn black when it is in the correct position. If it does not, magnify the view and realign the tool until it does. At this point, you may need to do a little horizontal and vertical stretching to make the object appear in correct proportion.

The second step we need to do in the Modeler is separate the cap, glass, and label. To remove the label, click on Polygon Select and move into the Statistics mode by pressing the 's' key on your keyboard. Scroll through the surfaces until you find blue (the color we made the label). With the mouse, click on the '+' sign to select all of the blue polygons. With these polygons selected, first press the 'x' key to cut, then the '2' key to go to layer 2. Now press the 'v' key to paste the label in layer 2.

Next press the '1' key to go back to layer 1. Now we need to select the polygons



Figure 1

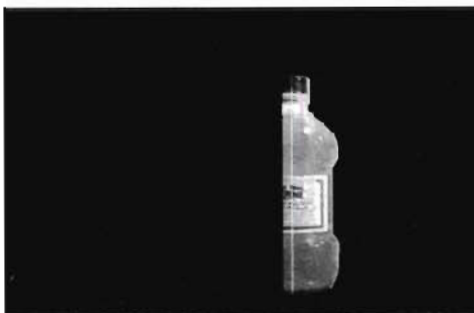


Figure 2

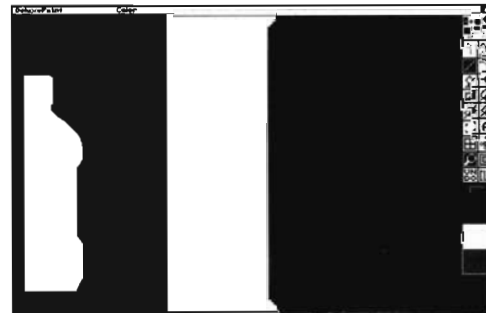


Figure 3

that form the cap. To do this, make sure you are still in Select Polygon mode. Using the mouse, and while holding down the Shift key, simply click on all polygons that form the cap. Cut the polygons, press '3', and then paste the cap in layer 3. We now have the bottle in layer 1, the label in layer 2, and the cap in layer 3.

We still need to make the mouthwash itself. To do this, go to layer 1 (press the '1' key). Now press the 'c' key to copy the bottle, the '4' key to go to layer 4, and finally the 'v' key to paste the bottle. While in layer 4 we need to cut a small portion off the top. Click on the Select Volume button, draw a box around the top portion of the bottle, and press 'x' to cut it out. This leaves us with only the mouthwash portion (fig 4). Now, numerically size the bottle by a factor of .95. This reduces the size of the mouthwash so it can be placed inside our bottle. Press 'Alt-1', which places the bottle in the background while leaving the mouthwash in the foreground. Now move the mouthwash until it is fully surrounded in all three perspectives by the bottle in the background. You may need to stretch the mouthwash a bit for a good fit.

Go to layer 2 by pressing the '2' key. We need to remove some of the polygons on our label. Select the polygons shown in figure 5 and delete them by pressing the 'x' key. These polygons are removed because the label will not wrap around the entire bottle. We now have our label on the front only.

The next step is to create some surface names. Go to the Options menu and click on Surface. Now create the following surfaces; Cap, Bottle, Label, and Mouthwash. Press '1' on the keyboard. This takes us to the bottle layer. Click on the Polygon menu, then the Surface button, and finally scroll through and select Bottle. Press '2', click on Surface with the mouse, and select Label. Press '3', which takes us to the cap layer. Again click on the Surface button and select Cap. Finally, press '4', click on Surface and select Mouthwash.

To combine the layers into a single object, hold the Shift key and press '1', '2', '3', and '4'. Then press the 'c' key to copy the object into memory. Release the shift key and press '5'. Now paste the completed object in layer 5. Save the bottle as Listerine.lwob (fig. 6).

Putting It All Together

The hard part is over. But we still need to add the raised "LISTERINE" text to the outside of our bottle. To do this, go back into Pixel 3D Pro, select the Text option and, in all caps, type LISTERINE. Now select a font similar to that on the original bottle (I chose a Times style). Extrude the object slightly and then smooth it once. Save the object as List_Text.lwob. Return to the Modeler and select New. Load Listerine.lwob in layer 1. Press '2' and load List_Text.lwob. The text may be out of scale with the bottle, so use your own judgement in sizing it correctly. Press 'Alt-1' to bring the bottle into the background. Click on Tools and select the Bend option. In the Left view, place the tool in the center of the text. Holding down the left mouse button, move the tool to the right until the curvature approximates that of the bottle. Make good use of the Undo command; you may need to try this several times.

When the text is correctly curved, move it to the appropriate position toward the top of the bottle. It should be placed so that the text is slightly raised from the bottle. Press the '.' (period) key if you need more magnification. Once the top text is in place, press 'c', then '3', and finally 'v'. This copies the text into layer 3. Now press 'Shift-1' and move the text to the bottom of the bottle. I chose to have the raised text on the top and bottom of the front only. You may add more if you wish, but the text uses quite a few polygons, slowing the rendering process even more. While in layer 3, Cut the bottom text and press '2'. Now Paste the bottom text with the top text. Click on the Polygon menu and select Surface. Scroll through the list and find Bottle. This gives the raised text the same surface attributes as the bottle.

Your bottle should now be completely modeled, though you may want to do a little tweaking. The next step is to digitize the label. A scanner is the best method, but a framegrab with a camcorder may be used. We will use a framegrab. You want to get as much detail as possible, so zoom in close to the label. If you need to, enlarge the label on a copy machine. Bring the image into ToasterPaint and make it a brush by cutting it out with the Scissors. Now go into TxMap mode and press 'w'. This should fill the screen with the label. Touch up the image

and save it as an RGB named Label.iff. Reduction of the size and colors in ADPro might be necessary. Make sure that the pixel height and width are divisible by 64—a requirement of LightWave for Texture maps. If you want to give the bottle a little spirit, as I did, use the Bend tool. Make sure you save your original bottle and file it safely. You don't want to save over it with the bent bottle. Before you bend the bottle, go to the Polygon menu and select Triangle. This divides all the polygons into triangles and prevents them from becoming non-coplanar when bent or twisted, which can cause rendering problems. Use Select Volume and place an Include box around the top third of the bottle, making sure not to incorporate the label. Now use the Bend tool and, from the Bottom view, bend the bottle slightly to the left or right. You may try bending the entire bottle, label included, but I ran into difficulty rendering it correctly. When I called NewTek, they felt it should work. If you have better luck with this than I did, please let me know. Save your bent bottle as List_bend.lwob.

We now need an image to use as a Reflected Image Map. For my reflection map, I simply framegrabbed a room from my house. Because of the reflection map's importance, you may want to experiment with several different pictures. If you are placing the bottle within a scene (as I did), you should probably render an image with everything but the Listerine object and use this as your reflection map. Save your final reflection map as Reflect.iff.

Load the bottle into the Layout scene and position the camera to your preference. From the Images menu, load Label.iff and Reflect.iff. Now set the following attributes:

Lighting

Ambient Light: 5%
Shadows: On
Distant: Targeted at bottle
Surfaces
Glass
Color: 255 255 255
Diffuse: 80%
Specular: 80%
Glossiness: High
Reflection Map: 20%



Figure 4



Figure 5

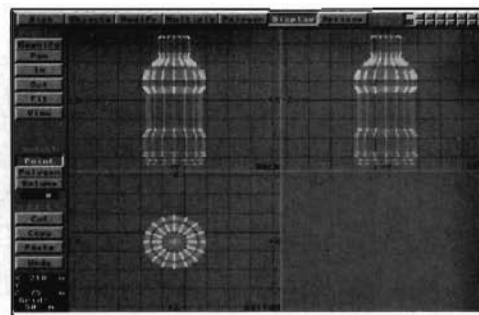


Figure 6

Reflected Image: Reflect.iff
Transparency: 100%
Refractive Index: 1.6
Edge Transparency: Opaque
Edge Threshold: 0.5
Smoothing: ON

Liquid

Color: 0 141 208
Diffuse: 62%
Diffuse Texture: Fractal Noise
Value: 50%
Frequency: 3
Contrast 1.0 Specular: 80%
Specular Texture: Fractal Noise
Value: 50%
Frequency: 3
Contrast 1.0
Glossiness: HIGH
Reflection Map: 20%
Reflected Images: Reflect.iff
Transparency: 25%
Refractive Index: 1.3
Edge Transparency: Normal
Edge Threshold: 1.0
Smoothing: ON

Cap

Color: 15 15 15
Diffuse: 78%
Specular: 70%
Glossiness: High
Reflection Map: 12%
Reflected Images: Reflect.iff
Transparency: 0%
Refractive Index: 1.0
Edge Transparency: Normal
Edge Threshold: 1.0
Bump Map: Fractal Bumps 50%
Smoothing: Off

Label

Color: Texture: Planar Image Map
Image: Label.iff
Z-Axis

Automatic sizing
Anti-alias
Luminous: On
Smoothing: On

In Conclusion

My final image, rendered with Trace Shadows on, took about five hours in High Resolution mode. Though Shadows and Refraction are not necessary, they do add realism to the bottle.

When creating objects, don't limit yourself to just the Modeler. In this project, we used many software packages to achieve our final goal. I highly recommend that anyone serious about modeling purchase Deluxe Paint IV and Pixel 3D Professional. These packages can make modeling certain items a lot easier.

That wraps it up for this month's project. Subscribers interested in a copy of the finished objects, along with all the in between stages and images, should send \$12.00 (non-subscribers, \$15.00) to: David Hebel, Dimension Technologies, 2703 Vineyard Drive, Erie, PA 16506

DeluxePaint 4.5
Electronic Arts
1450 Fashion Island BlvdS
San Mateo, CA 94404
(800) 245-4525
(415) 571-7995 Fax

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ASDG Incorporated
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Madison, WI 53713
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Axiom Software
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Rochester, MN 55904
(507)289-8677

Wanted! Amiga Artists!

Amiga Video/Graphics Magazine is currently accepting submissions of art for its up coming issues. We are accepting artwork in 2D and 3D or a montage containing Amiga generated work. If the possibility of having your artwork displayed on the pages of AVG interests you, don't delay and send in your artwork now to:

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Unfortunately, this function is, at present, only of use to European Amiga owners, as Scala is currently limited to 50fps. While 50fps is sufficient to play back European style PAL anims at the appropriate speed, Scala can't keep up with our 60fps NTSC speed. At this point, intellize is best avoided.

"Compromise," "Lock First Palette," and "Merge Pictures" each perform the functions their respective names would imply. "Compromise" attempts to change the color palette of each frame in order to increase the amount of compression in the file. This reduces file sizes, but takes some time and can occasionally change the palette of the animation in a distasteful fashion. "Lock first palette" will use the color palette of the first frame without remapping the colors afterwards. This is useful when used with "Merge Pictures," which takes a series of IFF frames (selected by holding down the shift key in the file requester) and merges them together into an animation.

The final function in AnimLab, "TV Standard," allows users to convert animations designed for the European PAL format, which have a higher vertical resolution. These animations often appear with a large portion overflowing beyond the bottom edge of the screen. This function will convert them to our lower resolution format.

Once the options are decided upon, a click on the "Execute!" button will start the conversion process, with each frame of the animation appearing on the screen.

When I converted my animation, I simply activated the 32-bit animation format and added a DiskANIM index. Once converted, the file size of the animation increased, although not as dramatically as one might imagine. The more complicated the animation, the smaller the increase when converting from Anim 5 to Anim32. This is because the amount of possible compression is lower in a complicated animation. With this in mind, the file sizes I experimented within my VistaPro animation went from approximately 10.4 megabytes to 11.6 megabytes, while speed increased substantially. The results during playback were miraculous, as the animation appeared to increase in speed 3-4x, going from a frame rate of approximately 10fps to a smooth, television like 30fps. Rapidly moving, complex, 262,000 color overscan animations have to be seen to be believed, and with Scala's AnimLab and MakeAnim7 they are fully attainable.

The Future

There is more support for 16 and 32-bit animation formats on the way. Perceiving a need for new standards, another official IFF animation format, ANIM8, has been created by ASDG. The new format reads an entire word (16-bits) or longword (32-bits) at a time. Basically an extension of the old ANIM5 format, Art Department Professional v2.3 (which should be shipping by the time

you read this) and Morph Plus both feature full support for this standard, and will include a new version of the View player to play back these high speed animations.

With the creation of ANIM8 and other standards, 32-bit animation formats will likely become as commonplace as the old 8-bit animation format. Hopefully, ADPro and Scala MM210 represent only the first of what should be broad commercial support for faster animation formats.

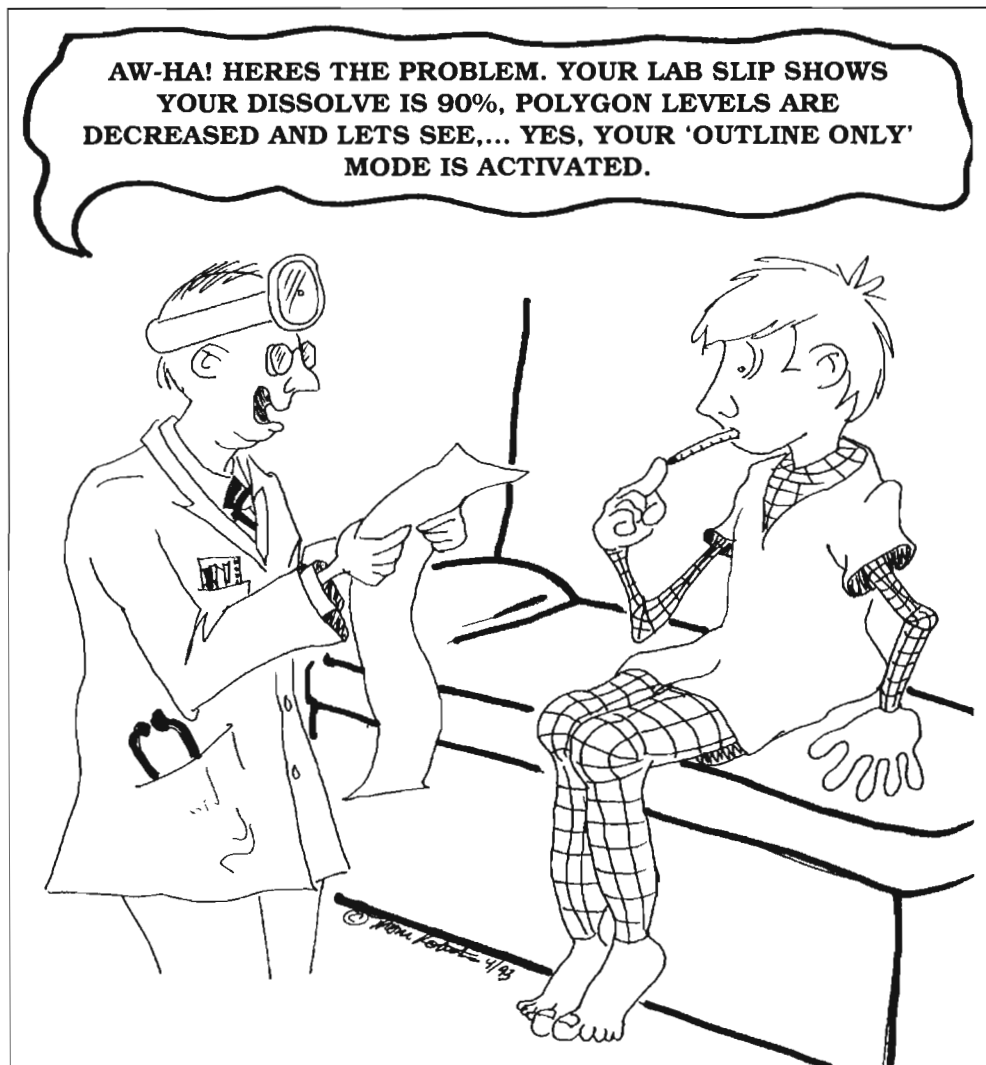
In addition to commercial support, public domain support for 16 and 32-bit animation is also expanding. Steve Koren, a popular author of many public domain and shareware utilities, has created another non-commercial animation format. This animation format has been posted in not-yet-bugfixed format on several on-line networks, and should be available soon. Mr. Koren's new format, the Flexible Animation Format presents a competing fast animation standard. This should provide another viable public domain alternative for those Amiga owners unable to afford programs like Art

Department Professional or Scala.

With the creation of the Amiga 4000 and the Amiga 1200, more support for high speed animation formats is sure to come. Despite the registered IFF designation granted to ANIM8, it seems as though competition may only increase. The ViewTek readme file, for example, expresses a strong belief that ANIM7 is superior to ANIM8, and the author of the utility claims he will never support ANIM8 (although MakeAnim7 will convert Anim8 to Anim7). While this claim may or may not be substantial, it does seem that the Amiga will be gaining a diverse number of competing formats for animation playback. Still, despite the lack of standardization, this can only be a good sign. Given the rate at which new animation and graphics tools have already arrived for these systems, users who make the leap to new machines can look forward to more complete support. 32-bit animation is only the first step in what will surely be a bright future for the next generation of Amigas.

On The Fly!

By Thom Robertson



When 3D Computer Animators become ill.

Caligari doesn't work very well in the multi-tasking environment. Its screen insists on always being foremost, and if you try to force things, you'll generally end up needing to reboot the computer. Consequently, the program has a Shell button that you can click to bring up an Amiga command line Shell window within Caligari's interface. You should use this only for simple commands such as Copy and Format; if you try to run a program that opens its own screen, you'll encounter problems. Caligari is the only major Amiga 3D program that I know of that doesn't support multi-tasking, which is a deficit to its utility.

Nonetheless, I find Caligari to be an amazingly powerful program for its price. While the workspace aspects of the user interface are quite well designed, navigating the control panel interface can be frustrating at times. Lack of object morphing, bump mapping, and true ray tracing capabilities limit the program for certain applications. The quality of the final rendered image is potentially as high as with any 3D software I've seen—indeed, some of the Caligari animations on the enclosed videotape rival network quality. Rendering speed is generally close to that of LightWave 2.0, although the program can get bogged down with extremely large objects. Hierarchical animation with powerful timeline controls make the program suitable for character animation, but not of the spline-based "claymation" type.

Many, perhaps in particular those who come from traditional sculpting, will find Caligari's free-form deformation tools alone to be worth the price of admission. The fact that the program can export objects in LightWave and VideoScape formats means that you can probably use its objects with your rendering software even if you don't have PixelPro.

If what you've read sounds attractive, don't hesitate to avail yourself of this 3D graphics power provided by Octree Software at a comparatively low price. Caligari24 represents an unprecedented value in high-performance graphics software, and will probably fill at least several gaps in your array of 3D tools. Depending upon your application, it could very likely provide a complete solution as well.

Caligari24
Octree Software
1955 Landings Drive
Mountain View, CA 94043
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Fax (415) 390-9755

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Axiom Software
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Bloomington, MN 55420
(612) 888-0352

HyperCache Professional
Silicon Prairie Software
2326 Francis Street
Regina, SK
Canada S4N 2P7
(306) 352-0358

There are many other improvements in 2.0 including several new tools and updates of others. I've tried to stick to the changes and improvements of special interest to the Amiga multimedia and video community. B&P Pro 2.0's retail price is \$429. The cost of upgrading from an earlier release (1.0x) of B&P Professional is \$99. The upgrade from the original Bars and Pipes costs \$168. (By the way, Blue Ribbon SoundWorks has discontinued the manufacture of Bars and Pipes, though they will continue technical support. The last available copies of Bars and Pipes have been sold to a mail-order broker, and they are probably available for a very low price. The upgrade to B&P Pro 2.0 is only \$168.00, and you get both programs!) We'll have an in-depth report on Bars&Pipes Professional in an upcoming issue.

If you send me up to five blank 3.5 inch disks, along with the appropriate postage, I'll provide the following demo programs: the demo version of Video Music Box 1.6, the SuperJam! 1.0 demo, the M 1.0 demo, the Bars&Pipes Pro demo, and the Synthia Professional demo. That way you can try some of these dynamic music and sound programs for yourself!

Bars&Pipes Professional 2.0, and the One Stop Music Shop are manufactured by The Blue Ribbon Soundworks, Ltd., Venture Center, 1605 Chantilly Drive, Suite 200, Atlanta, GA 30324, (404) 315-0212.

The AD1012 and AD516 (hard disk recording systems) are from SunRize Industries, 2939 S. Winchester Blvd., Suite 204, Campbell, CA, 95008, (408) 374-4962.

Jaxon Crow is currently in production on two tutorial video projects: Inside the AD516; and Amiga Music for Video, Volume Two (introducing Bars&Pipes Professional 2.0 and The One-Stop Music Shop). Other tutorial videotapes on the production of sound and graphics for video are also available. Jaxon can be reached for comments, questions or consultation at: Neon Tetra Productions, P.O. Box 876, Hot Springs National Park, AR 71902, (501) 321-1198. Please write for a free catalog of audio and video tapes.

creative enjoyment in the process as possible from the getgo, while paying as little

as possible for all of this, I would rush out and buy this software. With it, you could teach color and palette manipulation, composition, morphing, keyframe 'tweening, and sound applications...all from the same software platform, and all for a very limited investment. As for the professional Amiga animator, working with all of these same tools in Hi-Res Overscan can produce not only animated sequences that have to be edited together, but mini-length films as well. The bigger your storage space and the fatter your RAM, the larger your FantaVision movies can be. FantaVision has a portable Player that can be used if you want to pour your movie on a floppy and share it with Amiga friends. As stated at the start, I see uses for Amiga logo artist/animations with this software as well. I have already used it to create instructional videos at the University of Vermont.

Possible Drawbacks-

If you insist on working with ANIM5 files for compression reasons, then this software may not be for you. The only way to port the frames over to DPaint for editing would be to save each as a background image first (very time/energy consuming), and even then, because FantaVision creates the 'tweens on the fly, that would not be too satisfactory. There should be a converter on-board to make this conversion if needed, or to save the animation as a compressed ANIM5 (without sound of course) for use in other editing/painting software. Perhaps we can beg Axiom software to consider it for an option in their new ANIMWorkshop software.

For a mere \$129.00, this software is a bargain. You will have a hard time putting it down. Broderbund was the original company to market this software, but it is now put out by "Wild Duck" (799 Golf Course Drive, Suite 256, Rohnert Park, CA 94928). The copyright reads "1991", but this is the same package that I've had for years, so the copyright probably indicates a legal transaction that occurred. The manual is new. The software is not. Even the "ReadMe" file on the disk relates to the Broderbund name. The first thing you must do if you get this software is to load and play the exquisite little movies on board. They are very well done, and demonstrate the strengths of the software. As for me, this is one of my all-time favorite Amiga packages because of its price, versatility, tools, and all around addictive enjoyment. With it, I can create animations with a very different look than the standard Amiga packages, and then edit the results into my finished projects. That's all for now. ENJOY! See you in ROMulan space.

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INs and OUTs of SMPTE

SunRize Industries the makers of the famed AD516 sound card announces the release SMPTE Output. This \$249 stand alone software package will allow a start-up studio to encode SMPTE time information on video tape through the Amiga's audio out-put jack. A user can also vary the frame time code generation, and placement of the time code window on the screen. SMPTE Output is both NTSC and PAL compatible. SMPTE Output will pay for itself with one job.

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A Master Designer

Rick Rodriguez master 3-D object artist has released a series of high-end 3D objects for professional applications in LightWave, Imagine, and Caligari formats. Volume 1 is called Bed & Bath. Included are highly detailed objects of a complete bedroom, with a queen size bed, armoire and ceiling fan. Volume 2 is a set of highly detailed exteriors of Victorian homes. Each set sells for just \$79.95. If

you want to put quality into your work, but don't have the time to do all the modeling. Then get VRS's objects, it's well worth the money.

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Animations Made Easy

Axiom makers of world famous Pixel 3D Professional has started shipping ANIM WORKSHOP. This \$99.95 animation utility is a must for any Amiga Animator. AWorks will allow you to play, create and process Amiga animation. You can also add sound to your animations with the click of a button. ANIM WORKSHOP has extensive AREXX support allowing for batch processing through ADPro. ANIM WORKSHOP is well worth the cost.

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Inside Studio 16

Neon Tetra has just announced the release of Inside Studio 16. This instructional videotape shows you how to use SunRize Industries' Studio 16 software to control their AD516 and AD1012 Hard Disk Recording System. This tape is produced by veteran Amiga author/composer/producer Jaxon Crow. He guides through the process of digital sound recording and editing. The tape is available through Neon Tetra and will sell for \$49.95.

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DKB's 1202

New from DKB is the 1202, a Math Chip and Wide RAM expansion card for the Amiga 1200. It expands to eight megs of 32-bit Fast RAM the 1202 should be your first choice when expanding your Amiga 1200. Price not available at this time.

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Toaster 4000

NewTek Inc. has announced the Toaster 4000. Ship date is not available. This new system will have improvements in the Switcher, Toaster CG and LightWave. Prices have not been set for upgrades, but suggested retail for new systems is \$2399.

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Real as you can get

Godfrey & Associates has started to ship it's new version of Real 3D with features not available in any other 3D package. Real 3D is something any serious animator should use. With Particle Animation, Collision Detection and Inverse Kinematics, a user can create the most realistic animation ever on the Amiga. Real 3D sells for \$699. Look for a full review and tutorial soon in AVG.

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Electric Crayon Studios has just released a brand new collection of 24-bit textures. These textures are scans of real world objects and can be used in any program that accepts the IFF 24 brush format (LightWave, OpalVision, DCTV, etc.). The brushes have been carefully retouched to make them appear seamless when repeated, making them perfect for creating background screens, fills, or as texture maps on 3D rendering programs. Thirty six specially prepared brushes includes wide selections of woods, stones, and cloth. Also included are a number of non standard textures like "Moss" and "Sponge".

Power Crayons comes on two disks for the cost of \$59.95. They are available also in 256 color AGA and Ham Format for \$29.95 each.

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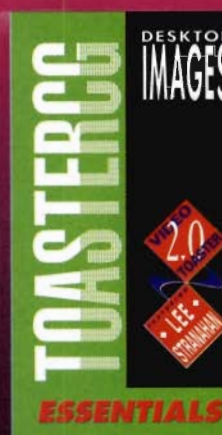
LIGHTWAVE 3D MODELER
Learn how easy 3D modeling can be! Creating basic objects changing their shape and defining surfaces, and simple techniques for creating complex 3D objects.



LIGHTWAVE 3D FLYING LOGOS
Step by step instruction on converting simple printed logos into 3D objects to create dazzling animations. Plus, simulate high end "Paint Box" moving text graphics, and step by step instruction on Pixel 3D Professional.



VIDEO TOASTER ESSENTIALS
An entire overview of the Video Toaster's switcher and special effects including: Luminance Keying, Chroma effects, keyboard shortcuts, maximizing memory usage, avoiding jump cuts, and more.



TOASTERCG ESSENTIALS
Learn how to operate and master the CG book, using font edge and palette controls, digital effects transitions, loading text files, quick loading CG framestores and more.



TOASTERPAINT ESSENTIALS
The complete ToasterPaint system is explained and demonstrated including: brush warping, texture mapping, time saving tips, using the spare page and more.



PROFESSIONAL TECHNIQUES FOR TOASTERPAINT AND TOASTERCG
Learn how to create professional high quality graphics and Images, make ordinary frames look like paintings, add texture to CG text, embossed backgrounds and more.

Lee Stranahan gives you indepth instructions on how to maximize the usage of your Video Toaster with our incredible series of 8 instructional videotapes designed to be user friendly. You'll learn step-by-step the tips and techniques to create high quality graphics, images and effects on the Video Toaster.

DESKTOP
IMAGES

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ToasterFX™

Framestore Operators for GVP's ImageFX™ Software

Supports
DIRECT Painting
on the Toaster's
Framebuffer!



ToasterFX for your Video Toaster!

The ToasterFX framestore loader, saver, preview and render modules, and GVP's ImageFX software are a complete paint and image processing package for NewTek's Video Toaster, allowing direct painting on the Toaster framebuffer screen!

Replacing ToasterPaint, GVP's ImageFX offers complete 24 bit painting tools with an 8 bit alpha channel, airbrush tools, color balancing, composition controls, special effects filters (oil paint, ripple, disperse, distort...), morphing and more.



ToasterFX completely integrates the operation of ImageFX with the Video Toaster, allowing direct access from the Toaster's switcher screen.



ToasterFX's **FX Croutons** bring image processing power directly to the Switcher screen! **User configurable** special effects like emboss, antique, blur, sharpen, oil paint, flip, disperse and more are available as standard Toaster Effects to be performed directly on a framebuffer image.

The ToasterFX **LOAD** module allows **DIRECT** loading of framestore files into ImageFX as 24 bit images. View the **ENTIRE** image on screen while painting, or choose any zoom level for detail work.

The ToasterFX **SAVE** module saves any image loaded or created in ImageFX directly to NewTek's framestore format.

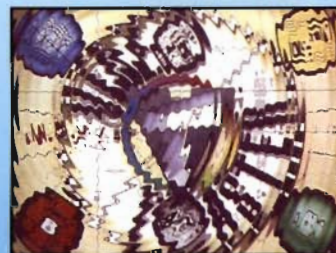
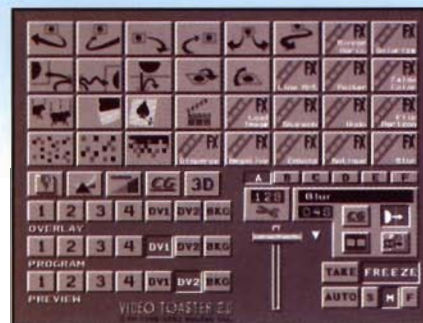
Convert Video Toaster framestores directly to and from Amiga IFF24, JPEG, Targa, TIFF, GIF, Alias formats and more.

Paint **DIRECTLY** on the Video Toaster's framebuffer with the ToasterFX **PREVIEW** module.

The **RENDER** module can directly display to the Video Toaster's framebuffers without leaving the ImageFX interface. (choose between DV1 or DV2).

ToasterFX also includes stand-alone utilities for:

- **Converting Framestores to IFF24 images**
- **Converting IFF24 images to Framestores**
- **Displaying any Amiga screen directly to a Toaster framebuffer.**



Not just for painting, ToasterFX with ImageFX is also a powerful image processing and special effects generator for Toaster framestores.

ToasterFX requires GVP's ImageFX for painting and image processing functions. Painting and image processing can be accomplished on any Amiga computer. NewTek's Video Toaster is required only for direct displaying of framestores to the Toaster's framebuffers.

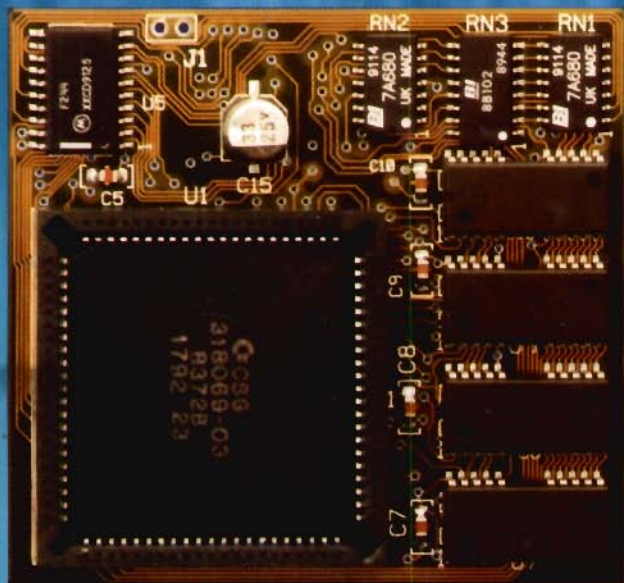
ToasterFX is available at your Video Toaster and Amiga dealer or directly from:
Byrd's Eye Software 9001 Northgate Blvd. #135, Austin, TX 78758 (512) 835-4811

Video Toaster and ToasterPaint are registered trademarks of NewTek, Inc., ImageFX is a trademark of Great Valley Products, Inc.

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SUPERCHARGE YOUR TOASTER SYSTEM

With the MEGACHIP 2000/500 2 MB Chip RAM Expansion



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

Jim Plant - Publisher/Editor Video Toaster User

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

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

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

Tim Doherty - Video Toaster User

The MegACHip 2000/500 allows you to upgrade your Video Toaster, Amiga A500 & A2000, and CDTV™ to 2 Megabytes of Graphics Memory.

The MegACHip 2000/500 is a needed addition if you are using your system for Desktop Video, 3D Rendering & Animation, Multimedia or Desktop Publishing.

The MegACHip 2000/500 is compatible with the Video Toaster™, OpalVision™, VLab™, IV-24™, DCTV™, Ham-E™, and most genlocks and framebuffers.

DKB Software

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Contact your local dealer or call for information. Dealer inquiries welcome.

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