Avid

The AMIGA® VIDEO Journal

Vol.#3 - Issue #4
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First Look: DPaint 4.1

INTERVIEW: 3D Artist Jim Robinson
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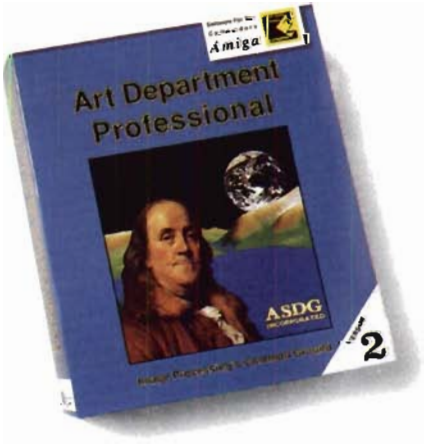

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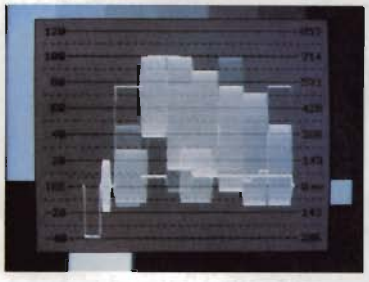

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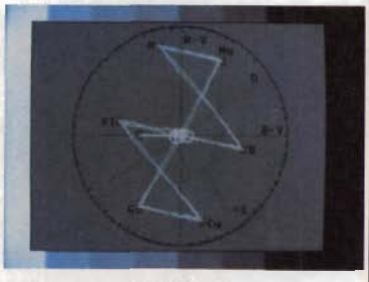

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Bars 'N' Tone

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One of the most common complaints about AVID is that there's too much Video Toaster coverage and not enough reporting of other ways to use the Amiga for Video. Well, we hear you, and we only wish there were more authors submitting non-Toaster oriented material, *especially of a tutorial nature*, for publication. How about you? If you've been using the Amiga for an interesting or unique video-oriented business, have been dying to get into print, and would like to earn a little extra cash on the side, consider AVID your golden opportunity. If you've discovered an unusual application for Deluxe Paint or one of Shereff Systems' Pro Video products, or a new technique for DCTV Paint, write down the step-by-step procedure and send it in. Don't worry about your writing style—that's what we're here for.

Or if you can teach our readers how to take better advantage of one of the great Amiga presentation programs like Scala, Elan Performer, AmigaVision, Presentation Master, Deluxe Video III, or any of the others, both we and they would really appreciate your writing for us. Even if you've never written for publication, if you can tell a stranger how to do something and can write down the steps, you've got the battle half licked. If you have something new, instructive, or interesting to say about any of the great traditional Amiga video-related software or hardware, give us a call, fax, or drop a line—we'd like to hear from you.

We'll continue to publish some articles on the Toaster, and even if you don't use one I recommend you read them anyway. Some of the most interesting computer-related reading I've done was in magazines for computers I don't use, like the Mac and PC. Who knows, you might read about a new technique that you could adapt to the hardware and software you're using. Give it a try!

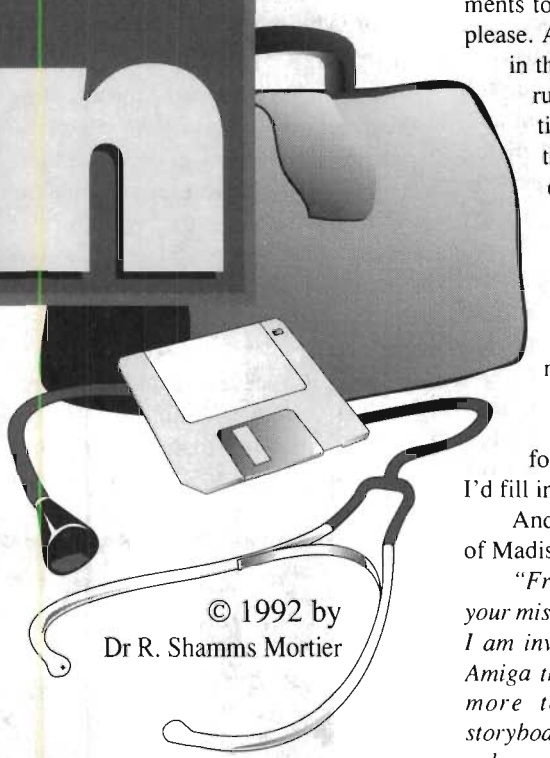
Beginner's Strategy

A common query from those getting started in video production is exactly how one should go about it. While there are books on the topic, they are often out of date by the time they get to print because things change so fast. However, there are longstanding basic principles, and the best of the books do a good job covering these and are worthwhile for that alone. Check technical book stores as well as your local Amiga dealer.

There's nothing like rolling up your sleeves and doing it yourself. Get a camcorder and VCR from a reputable local dealer. Once you've been at it a while you can order more advanced equipment by mail order, but when you're getting started you may need some support by a merchant in your area. Then get DeluxePaint III or IV, a genlock unit for overlaying computer graphics on video, and some additional video (large) fonts—the Kara series of color fonts are among the best. Read the manual and use the software in every spare moment. Get a notebook and keep track of any techniques you discover that you think you can use in your videos. Then hook up the genlock and start running tape! Experiment as much as possible—most will be failures, but they'll all be learning experiences.

To wrap up for this month, I'll put in a plug for the AVID Animation Tape. It is a special VHS compilation of reader-contributed videos that were sent in to us as part of a contest we held in the Fall. All entries were created with the Amiga. It's available now for $10, to cover duplication, packaging, and shipping. Call 1-800-388-3696 to order, and have your VISA or Mastercard ready.

The DOCTOR is in



April. In Vermont that doesn't mean flowers, it means ice storms, snow, and the flooding of the capital (the worst flood since 1927)! Luckily, woodstoves and Amiga adventures keep the body and mind warm. This is usually a somewhat quiet time in the micro-computer industry, but there's enough going on to keep you happy with a nice fat column of information.

AIVF

A few issues back, I told you about the Association of Independent Video and Filmmakers and the excellent services they provide. Well, it's time for an update. Here is a list of their current helpful publications: Money for Film and Video Artists ($14.95), Film and Video Financing ($22.95), Guide to Film and Video Distributors ($19.50), Alternative Visions/Distributing Independent Video in a Home Video World ($12.95). AIVF / 625 Broadway-9th Floor / N.Y., N.Y. 10012 / (212) 473-3400.

Another Wonderkind!

If you have the time, check out the work of Digital Night Productions. The owner, Neale Carhartt has some nice animation demos that you should see. In addition to his numerous Amiga enterprises, Neale is doing some wonderful Amiga paintings based upon the ancient Enneagram symbol. Digital Night Productions / 170 Central Street #7 / Somerville, Mass. 02145 / (617) 628-5059.

Stop the Presses...again...

Revisions are coming fast and furious to BlackBelt's ImageMaster software. If you haven't seen it yet, you are missing some real Amiga video magic. The package sells for $199.95, and offers some of the most awesome digital effects possible on any system anywhere. It handles JPEG, NASA, DCTV (read and write!), IFF, and much more. Now it also addresses the MetaScan scanner driver from computer giant Metadigm. MetaScan addresses the Epson series of scanners, and has extensive configuration controls for users with professional output needs. MetaScan also has a built-in interface to Gold Disk's Pro-page DTP software. Call MetaDigm at (714) 253-2828 or BlackBelt at (406) 367-6442 for details.

Letterations

Received the following letter from Ian Gregory of Brampton Ontario, Canada...

"I can't wait any longer...where's the 'Journeyman' review?..Sculpt and LightWave don't do the organic animation I want to do...I love AVID magazine, it's the only magazine that teaches you stuff about Amiga graphics and video in great detail...Is there going to be a new Sculpt 4D?..."

Well, Ian, first...thanks for the compliments to those of us at AVID that aim to please. As to the "Journeyman" article, it is in the issue you're reading. I do hear rumors that Byte By Byte may take time away from their Mac applications long enough to do a revision of Sculpt 4D, but that's not a guarantee. Ian then goes on to list his top ten for 1991...

1. Art Department Pro
2. Pixel-3D 2.0
3. Hash's Animation: Journeyman (he doesn't have it yet)
4. Imagine
5. Animation Studio

for 6 to 10, he says..."If I had the cash I'd fill in these numbers".

And another letter from John Jackson of Madison, Wisconsin...

"From your column in AVID I realize your mission is not desktop publishing, but I am involved in creating images on the Amiga that go not only to tape, but even more to paper (...artwork, proofs, storyboards...). I'm looking for a hi-res color printer, up to around $2000.00...if quality prints aren't available for this price, then how about a good quality B&W printer with PostScript?...Also, are you aware of a new combination wave-form/vectorscope for the Amiga?..."

John, I've seen something lately that promises to be a great wave-form monitor/vectorscope package, it is called the Personal V-Scope. Be sure to check out the review in Video Toaster User April/May 1992 (an AVID Publication). The Personal V-Scope is available from Digital Processing Systems 55 Nugget Ave., Unit 10 Scarborough, Ontario Canada M1D 3L1 (416)754-8090. As for desktop publishing, it is definitely a peripheral topic for AVID readers, but is not totally divorced from our considerations. After all, artwork and

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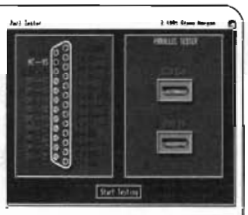

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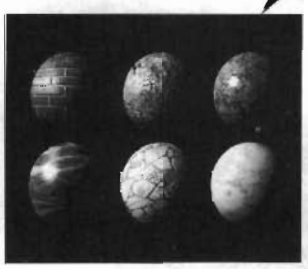

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storyboard hardcopy are also a part of any serious Amiga videography operation. As to a quality color printer for a $2000.00 max investment, I don't know of any that exist right now. All of the color PostScript printers I am aware of start in the $5000 range and up, but prices are falling every year. As for a PostScript black & white, however, I hope I can offer at least one alternative. That would be a Hewlett-packard LaserJet III (enhanced graphics capability) with a real PostScript cartridge (not a "PostScript Emulator"). I can recommend this because I have one, and I print out Amiga posters, mailers, brochures, business cards, storyboards, and general artwork. I spent around $1800.00 for this package, though you might be able to get it for less. I love it. I would also suggest that you definitely add ASDG's Art Department Pro to your list ASAP, especially for its 256 gray-level printing capability. I hope this helps.

On Impulse

For $129.95, you can get a set of 3D digitized objects from Impulse, Inc. that will cause you to "Imagine" if not fantasize. These are real 3D digitizations, and not modeled objects, and they are absolutely superb! Some objects include an Allosaurus, an Eagle, a Horse, an Amtrax Locomotive, a Dune Buggy,..and more. 3D Amiga freaks should pop for this ASAP. Did I say $129.00,..excuse me. Impulse is offering the disk at far below its retail cost, and you can get it for only $65.00. Contact Impulse at (800) 328-0184.

ScreenMaker Demo

Digital Graphics Library, reviewed thoroughly in the last two issues of AVID, has a great little demo disk that creates 24-bit sample files for you, which you can then load into any 24-bit viewer. I used DCTV, and was also able to manipulate the backgrounds to my desire using cut/rotate/paste options.

Speaking of Demos!...

There is a demo that you simply must see. It is from the ANIMotions software by Tom Macri, 3575 St. Lawrence Blvd., Ste.506, Montreal, Quebec, Canada H2X 2T7 (514) 982-9353. The Sculpt-4D version sells for $49.95 and comes with the demo. All Sculpt-4D fans should buy this animation utility, and everybody else should consider it just for the demo, and then to plead with Mr. Macri to provide it for their favorite 3D animation software. I'm not kidding! These are moving mannequins that are very nice!

VidGen 2.2

Microft Software, Ltd. (PO Box 1072, Exton, PA 19341 215-642-7638) brings you this beauty. If you think you will ever have a need for an embossed background for slides or video work, with either a generic image or your own logo (and who doesn't have this need at one time or another?), then get this software! It is unbelievably easy to use, produces great results, and costs little (only $149.95). Saved screens can be in DPaint, Pro-Video, and Broadcast Titler formats. Many sample generic brushes are included, and there are directions on how to prepare your own logos as well. I'm betting you will have little use for the manual, as the tools are very intuitive to use. Brushes can be resized, repositioned, and rotated by 90 degree increments on the spot. The finished embossed pages look good enough for any professional broadcast application. This is a wonderful addition to the Amiga professional's library of tools. If you do any video titling at all, you need this utility!

Konkluzion

Check out the Omicron Video catalog (21822 Lassen St. Unit L, Chatsworth, CA 91311) for a listing of Omni-Gen genlocks for the Amiga professional. Also, know that the new PhoeniX color digitizer/splitter from Australia is here. Price is $499.00, and it requires no color wheels for your color input. It can also be used with your B&W camera (DigiView setup). It works in PAL and NTSC including overscan. Contact PhoeniX at 18 Hampton Road, Keswick, South Australlia, 5035, or call (08) 293-8752 for more info. And lastly, while there's still flesh on my typing fingers, I've been using a neat little editing device from SIMA systems called the Pro-Ed/It 3. It allows me to color correct my tapes and to add nice timed fade-to-blacks including audio. It has two source selects, and is a nice DTV addition to Toaster applications. For details, contact: SIMA Products Corporation, 8707 Skokie Blvd., Skokie, Illinois 60077.

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

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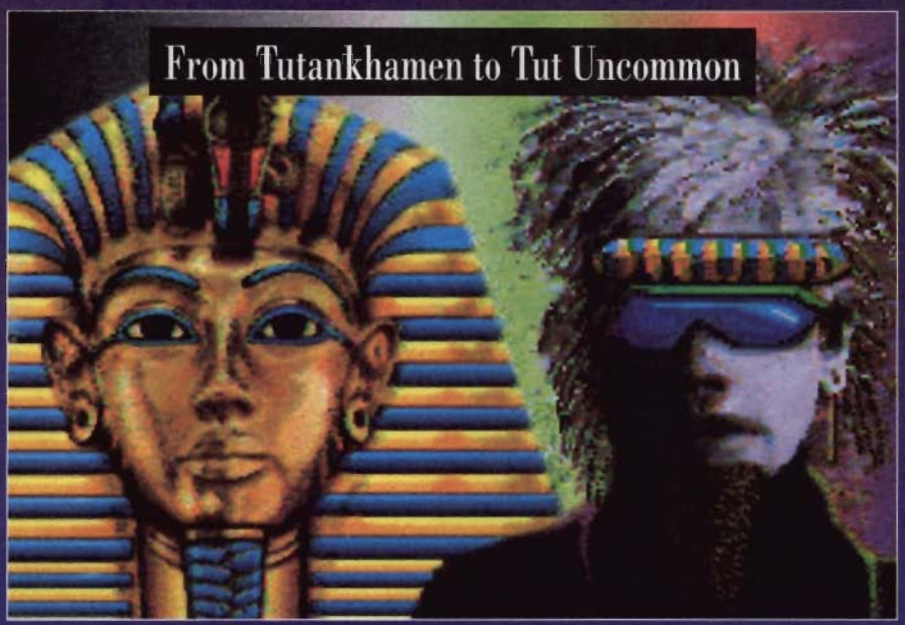

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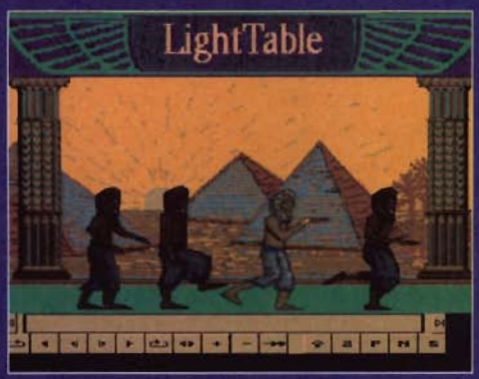

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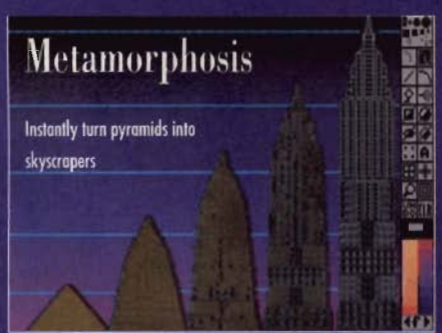

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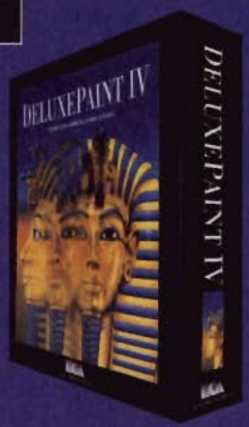

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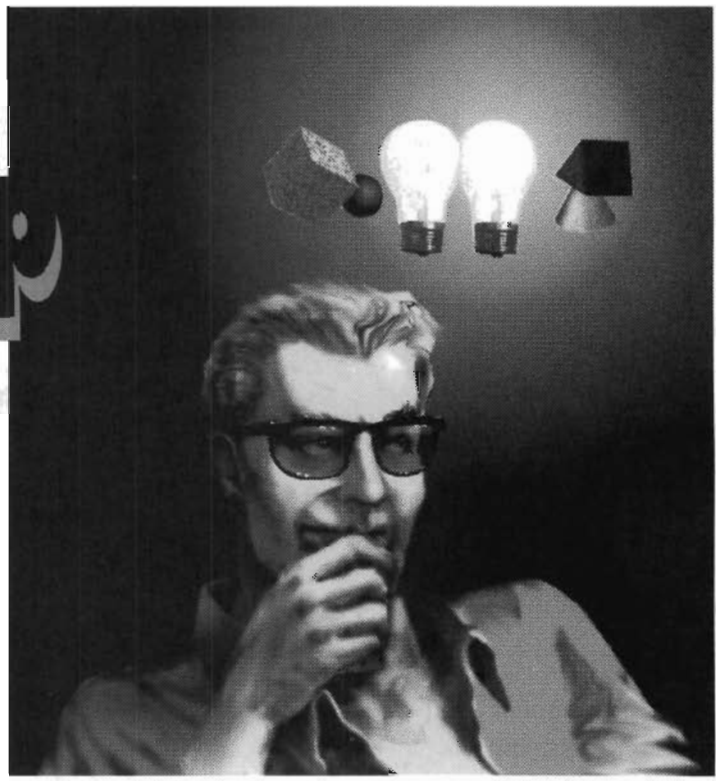

Techniques for LightWave 3D Users

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An Interview with LightWave 3D Artist James Robinson

One of the most valuable pieces of reading, at least in my opinion, is an interview with an expert in your field of interest. Usually it allows you to find out what goes on inside a person's head, some of their tips and tricks, and tends to leave you inspired. Recently, I had an opportunity to speak with an expert in my field, James Robinson. Although I've known him personally for quite some time, I found the interview to be full of fascinating and useful information even to myself.

Jim is the creator of a number of "infamous" animations in the Amiga and Toaster community. Some may recall his Telstar One project, which was featured prominently in another magazine a couple of years ago. Involving a fully articulated robot, this animation stretched Aegis' VideoScape 3D package to its limits. While that project remains in the works, Jim has embarked on another amazing animation, "Please Don't Feed The Daisies." Clips from this monstrous undertaking have appeared on a number of NewTek's Demo Reels, including Revolution.

So, making AT&T very happy, I spent a few hours discussing Jim's work and thoughts with him. I'm sure you'll find it to be most enlightening!

AVID: What's your background in animation?

Jim Robinson: Well, I guess the thing that really got me started was one of the original games for the Amiga, Arctic Fox by Electronic Arts. I loved the whole concept of solid-model, 3D type of stuff. I started out with VideoScape back in 1987 when it first came out. It didn't have a modeler or anything at the time, so I was designing things on graph paper and entering them. Heh, actually, I used to just make rough grid lines on plain white paper and I went into Sculpt a little bit and then back into VideoScape because of the rendering time and things like that. I was doing little VideoScape demos right up until before LightWave came out.

AVID: So, how did you get involved with NewTek?

JR: I got involved with them through their seeing my demos and some Super-8 films I showed at AmiExpo back in '88 or '89 At that time, I was sending Allen Hastings, author of both VideoScape and LightWave 3D, a lot of VideoScape demos. Things like Mars Flight, Telstar One, then I came out with one called "Lost In Scape." He really liked the stuff. We'd meet at the AmiExpos out here in Chicago and we'd hang out together.

AVID: Just about everybody has seen the short clips of your bee animation on the various NewTek tapes and in their booth. Are we ever going to see the whole thing at once?

JR: Yes! Eventually you will, but I've still got a little more work to do on it before I'll consider it finished.

AVID: So, can you tell me more about the film?

JR: Well, it's called "Please Don't Feed The Daisies!" I don't want to go too far into it, but if you use a bit of imagination you'll probably guess what's going to happen. I'm putting that together for SIGGRAPH, which happens to be in my backyard this year, in Chicago. The animation you saw last year was just one part of it. The SIGGRAPH people saw it last year and wanted to have it in anti-alias mode (now known as hi-res). Because I only have one machine, I was having them run it on like 10 systems at a time. We got a real late start on it. In fact, all of

the stuff that was shown at their booth was recorded in about a month and a half or so.

At the time, I think Steve Hartford was working on it last year, at NewTek. I haven't talked to them in quite a while. In fact, I spent so much time doing 3D stuff, I kind of burned myself out and took a vacation for about three and a half months. I intended to take only about a month, but I got carried away.

AVID: Rumor had it at the time that NewTek had taken most all of the hard drives out of their machines to use in the systems that were rendering your animation.

JR: I heard that too! It was funny because they were still begging for more. I was up until about three o'clock in the morning cranking stuff out for a while.

AVID: How long did it take you to build the scene?

JR: Well, I do everything in phases. Like I'll begin with modeling a wall, where the windows are going to be, the entrances, and stuff like that. I'll work from there and add layers of textures and different kinds of furniture and stuff. The amazing thing about the technology that we have with LightWave is that you're able to combine so many different colors, shapes, and textures. It's not just modeling and setting up scenes, but you've got to pretty much become an interior decorator, too. Which is good and bad. It's a lot more work, but you don't want to have a tablecloth clashing with the wallpaper, you know? In the "Daisies" animation I used a XapShot image of my back yard for the outside of the room, which I mapped on to two large cylinders. That took away the problem of generating a landscape and allowed me to spend more time on the interior.

AVID: Are the objects you make based on things in your home? Do you go around measuring things, or what?

JR: No, it's all out of my head. In the bee animation, the only thing that is from around me is the clock on the wall. 60 to 70% of it was taken out of a JC Penney Summer/Spring catalog. The fun part is designing your own furniture. Also, surface detailing is a unique feature I like to employ. This is one feature of Modeler and LightWave which doesn't get enough press. What it is is the ability to apply any number of flat polygons to the surface of another. One nice thing about this is that it's easy to create polygons with multiple surface types. This can come in handy in any number of situations.

AVID: What kind of system did you use to create all of these objects?

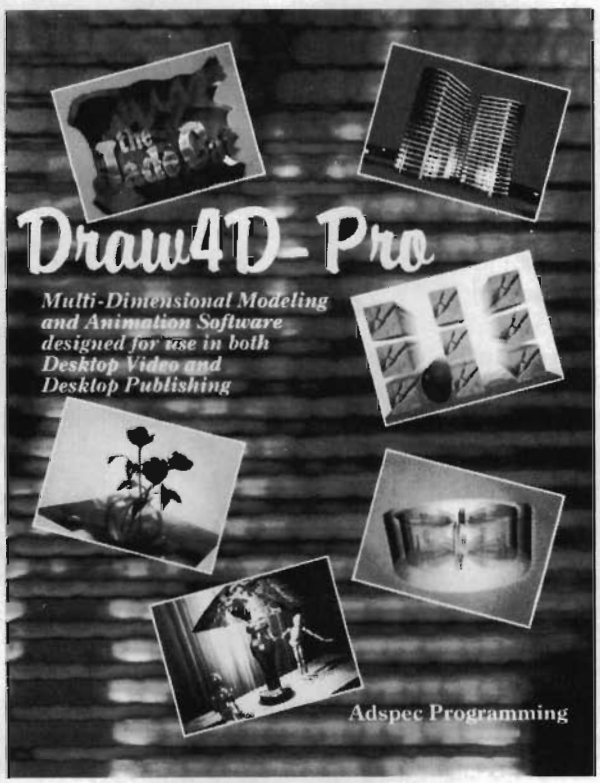
JR: I've got a GVP 50Mhz 68030 board with 16 megs of 32-bit RAM, a 210-megabyte harddrive, a Toaster, a Personal TBC, and an analog optical recorder (Panasonic EQ3031), which lets me lay down frames right to a recordable laserdisc system.

AVID: Wow! Are you pretty happy with it?

JR: I like it, it's great! The only problem is you can't erase it! But they've got a new one that does let you erase. It's pretty expensive, though.

AVID: What kind of controller system are you using for that?

JR: Well, a friend of mine, Keith Williams (he wrote a program called TRexx that you may have heard of), wrote a little controller that works with the switcher. It'll call up framestores while the optical just clicks them off. It's very fast. Before that I was calling them up manually and triggering the recorder.



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Den by Jim Robinson

AVID: That must have been a lot of work!

JR: The thing about the optical recorder is you can go right to the frame you want to record, click the button and it grabs it. Go to the next one, press the button and it grabs it. Or go ahead five frames and trigger it there. Then you can go back and fill in the missing frames. I can punch in 1500 for frame 1500, press the button and it'll be there in half a second. No pre-roll or anything. And the picture quality is very good, too!

AVID: Why don't you move up to an '040?

JR: I'm waiting for a 50Mhz '040.

AVID: How much longer do you think it will be before "Please Don't Feed The Daisies" is complete?

JR: It depends if the guys at NewTek want to begin rendering it again. All the different clips and angles and stuff is in one giant scene. If you have enough memory you can set a large range of frames in a preview and it'll actually have all the different cuts to all of the different angles. Which is another really great thing about LightWave, that it allows you to do stuff like that.

AVID: You make all of your own objects, as you told me a few days ago. Do you have any advice for aspiring modelmakers?

JR: Begin modeling simple things. Things that you have an interest in already will be the best place. If you're interested in airplanes, model a simple airplane from small sketches that YOU do. The most important thing is to find a modeler that you're comfortable with. Stick with it, and learn how it really works. Some stuff can seem easier to do than other things. It's common to get into something thinking "Oh, this is really easy" or "This is really hard", and it's the exact opposite. An item that seemed like it would be simple may be one of the most complex in the long run. The blur motion in "Daisies" is a good example. When the bee's wings "flap"...that's actually a complicated segment of a model that I built to get that effect with different envelopes and taking every individual wing position. I change the level of transpar-

ency for each wing position. In fact, each segment of each wing is also controlled by itself, to give the illusion of more transparency further from the body. The whole thing is kind of complicated to explain, and it's a lot more complicated than it looks in the final animation. I tried a lot of different ways to do it, and most of them produced a really nice still image, but when it was animated it looked like a bubble with things moving around inside it. Very bizarre, actually!

AVID: So, do you condone the use of more than one modeler to achieve the desired effect rather than figuring out how to do what you have in mind in a single program?

JR: Well, it depends, actually. I don't really have many problems with the modelers I use now. I use Aegis Modeler 3D, the original VideoScape Modeler, and I use the NewTek version as well. When it comes to twisty, curvy objects and stuff like that, I just take most of the stuff from the old Modeler into the new one. I find that I'm able to make just about anything I want this way.

AVID: I'm glad to hear that you're using the old Modeler, for which I wrote the manual when I was with Aegis, but why?

JR: I like being able to adjust the background colors to suit me. Blue grid, yellow points, white polygons on a black background. I also like the ability to lock on a plane and select points that way. When things are getting really deep, it's nice to be able to modify the colors so that certain things will stand out from the rest. The redraw on the new Modeler is amazingly fast, and the moving preview lets me get to just about any point or polygon in any model in no time flat.

AVID: Do you ever use the Sculpt or Imagine modelers?

JR: Well, I used to use the Sculpt modeler when it first came out. For its time it was very good. Then they came out with Sculpt-Animate, where they began to integrate animation in the modeler and it was still pretty good. To be honest with you, though, I cannot STAND working with triangles! It drives me nuts! That's another reason I really like

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LightWave and VideoScape. They allow you to have more than 200 points describing a single polygon. Plus, you can have single-sided polygons, which is basically the default. That speeds up render times a lot and gets rid of information that the computer doesn't have to deal with.

AVID: So I assume that the features you like about the old Modeler you'd like to see included in the new Modeler, right?

JR: Yeah, I would! It's funny because they're just little things, but I've been using the old Modeler since '88 or '89. Once you get used to them it's kind of difficult to do without them. I talk to the right channels, mostly Allen, and he gets them through.

AVID: What kind of new features would you like to see in the two programs?

JR: It would be really nice to be able to do something like roll a ball off of a table, for example, and have it bounce away on its own, realistically. Of course, I'd still want the ability to set the way it handles that, as far as gravity and so on. I think this is called "procedural animation?"

AVID: Yes, Allen said that in the interview I did with him a couple months back.

JR: Yeah, something like that would be nice, but it would probably slow down rendering time because it would have to calculate the motion and all that stuff. That could allow you to do something like have a leg assembly where if you moved the foot the leg would bend appropriately and stuff like that. That would really help with the animation process. I'm sure that all of this stuff is going to end up in LightWave in the future. When, I don't know, but it's constantly growing and getting better. Spline-based animation would be nice, too. That would make things a lot easier as well. The trade-off, I'm sure, is going to be still more rendering time.

AVID: What would you do to LightWave's Modeler?

JR: That's kind of tough. Stuart has added a lot of things that I didn't really expect him to have added. I'm very happy with the new tools, and the only complaint I have is those few things that

were left out from the original Modeler. I've been yelling my head off to Newtek about the problem you mentioned in "Taming the Wave" (Video Toaster User 4/92 p.16) with cutting polygons and points disappearing along with them. I mentioned it to Allen and I imagine something will be added to fix that in the not too distant future. And I think we need to have more control over point merging. When I was working on the room for "Daisies", I had it just about finished, did a point merge, then discovered that it had killed the screws I placed in the light switches. I couldn't believe it! I tried it twice more and found that it was doing it every time because the merge distance is relative to the total size of the object! If you were modeling...oh, say the deck of the Titanic or something and did a point merge, you would have details smaller than a few feet getting merged! I ended up having to move each piece to a layer of its' own, merge it, and then put it back in place. It was a big hassle.

AVID: So, what do you think of the 2.0 Toaster in general?

JR: I think it's great! It's fantastic! It amazes me that there is so much power in such a small board. Being able to do the CG stuff, grabbing stuff, like from the Xapshot, taking it into ToasterPaint, and mapping a real image onto a surface in a fake world, is just incredible.

AVID: Do you have any other general tips you'd like to share with our readers?

JR: All I can say is start a scene and stay with it, building it up layer by layer. The smallest adjustments in lights can affect a scene dramatically. The level of shadowing and stuff like that is very, very important. In fact, I found a neat trick for dealing with shadows, using the abilities to have lights with or without shadows. I'll take a light and set it at about 50% or whatever I may need, and have it set to cast shadows. Then I'll add another light, in exactly the same position, only this one DOESN'T render shadows. You can use it like a filler for shadows. The brighter this second light is, the lighter the shadows from the original light become. It gives you a lot of control for real soft, natural shadows.

I also use phony shadows in many situations. You and a couple of other people noticed it in the shot of my wireframe preview that NewTek put in their promotional material at SIGGRAPH. In that shot, rather than eating up rendertime by turning on shadows, I created an outline in the shape of the shadow that would be cast. I laid it into the scene in such a way that it looks like a shadow, but it's really just a dark polygon.

With LightWave you've got that new Super Low Res mode which lets you quickly render a scene over and over until you get exactly what you want, without taking a tremendous amount of time. I use that a lot.

You've got to be able to see the way things are in the real world and knock them down to 3D. It's pretty much the opposite of painting. Painting is sitting and looking at a 3D object and drawing it in two dimensions making it appear to be 3D. This is more like taking something 3D, and actually creating it as a 3D item in a 2D world. It's going to be easier for some than others.

When you start working on an object, it's always best to work on it in pieces spanning a number of layers. That way you don't have a lot of stuff cluttering up the screen. Save the object in individual pieces and then combine them later into one object as you need.

AVID: It's good to hear your suggestions mirror those that I mentioned in the first installment of Lighten Up!

JR: Ha! Well, good advice is good advice, right? It's difficult to come up with stuff like that because I've been doing it for so long...all of these things are just second nature. I've watched this whole thing rise up from the beginning, you know? I actually used to use the program ROT, which came with the original VideoScape, to create objects, then improve them on graph paper and spend a huge amount of time deleting the duplicate polygons it would create. It always made double-sided polygons. We're talking about deleting as many as 600-700 lines of data by hand using the Ed text editor! Now, you've got LightWave and Modeler on your desk, you go to the movies and see animations that were done with it on the big screen! I mean, some of this stuff looks better than the actual model effects on Star Trek The Next Generation! This whole technology is just mind-boggling! We're very lucky to be able to watch it evolve as we are!

I've seen a lot of stuff on the Mac, I've seen Wavefront, Soft Image—they're putting out some beautiful stuff. But I've got my Amiga right here on my desk! The stuff I'm getting out of it certainly compares with those other systems, and the amount you would have to put out to get one of those others together is insane! It was so funny, at SIGGRAPH last year—I think it was Wavefront guys—were standing there staring at LightWave and the demos for like 20 or 30 minutes. Just staring at it, talking to each other, pointing at things. I sat there wondering what was going through their heads...those guys must REALLY BE NERVOUS! They've got this hundred thousand dollar system sitting there kicking out images, but when you get it down to a TV screen, it all looks pretty much the same! And they know this stuff is catching up, and it's cheap!

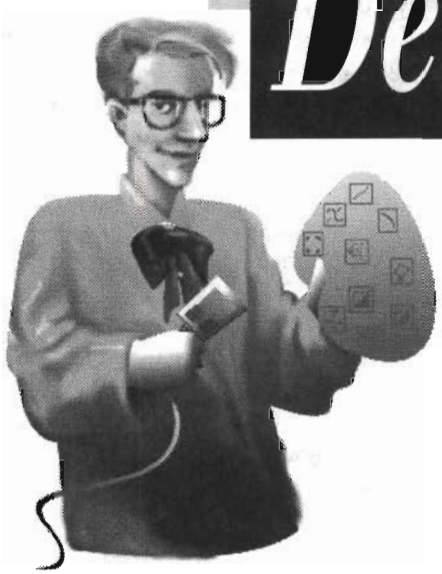
AVID: Are you going to continue doing animation just for the sheer joy of it, or are you going to start going commercial soon?

JR: Well, Mr. Optical Recorder is going have to start paying for himself soon, I'll tell you that much. There are still a few things of my own that I want to get taken care of first, but once I finish those I'll be getting into some things for profit, I'm sure. I'm not really looking forward to that because I don't like to be stuck having to work on a logo or something like that. I prefer designing my own worlds. It's like having Universal Studios on top of a very small desk.

AVID: So I take all this to mean that you feel LightWave is a good choice for new animators?

JR: Absolutely! It's not just for new animators, either! One of the really great things about it is that it's easy for a newcomer and powerful enough for an expert. And it's not like LightWave is standing still, this system is booming! I think what really makes the difference is that LightWave is written by a guy who knows how to make a film. He understands all that's involved in that sort of thing, and designed LightWave to work in the same way. This is definitely the system to beat!

Doug's Deluxe Paint IV Tips



New Features in Deluxe Paint 4.1

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Welcome to Doug's DeluxePaint IV Tips. This issue, I'll teach you a quick way to use the Smear mode along with custom brushes to create reflections. But first, I'll be taking a look at the new revision of DeluxePaint IV; Version 4.1. DeluxePaint 4.1 has a lot of bug fixes and enhancements that really make it worth the upgrade. Here are the major changes.

Turbo Anti-Aliasing

The DeluxePaint 4.1 Brush Anti-alias feature has been revamped to improve rendering speed, with mixed results. Overall, a brush stamped down with anti-alias turned on looks better, as well as being rendered much faster. However, since the new Anti-Alias mode only anti-aliases the edges of brushes, true pixel averaging is impossible. I use pixel averaging to create anti-aliased text (as explained in Doug's DeluxePaint IV Tips #3 in the December 1991 AVID, available as a back issue), and I can't do that now. DeluxePaint 4.1 uses true pixel averaging if the brush is rotated in Perspective mode. Normal polygon anti-aliasing (drawing circles and lines, etc.), has not been changed.

Extended Color Select

One of the most useful changes incorporated into DeluxePaint 4.1 is the Extended Color Select mode. Extended Color Select allows the selection of multiple colors in the palette. To use Extended Select, just hold down the shift key while clicking on a color in the Mixer, Ranger, or Arranger. To select a continuous group of colors, click on the first color with the left button, then hold down the Alt key and click on the last color. Every color between the first and last clicks will become selected. Using the right mouse button with the Shift and

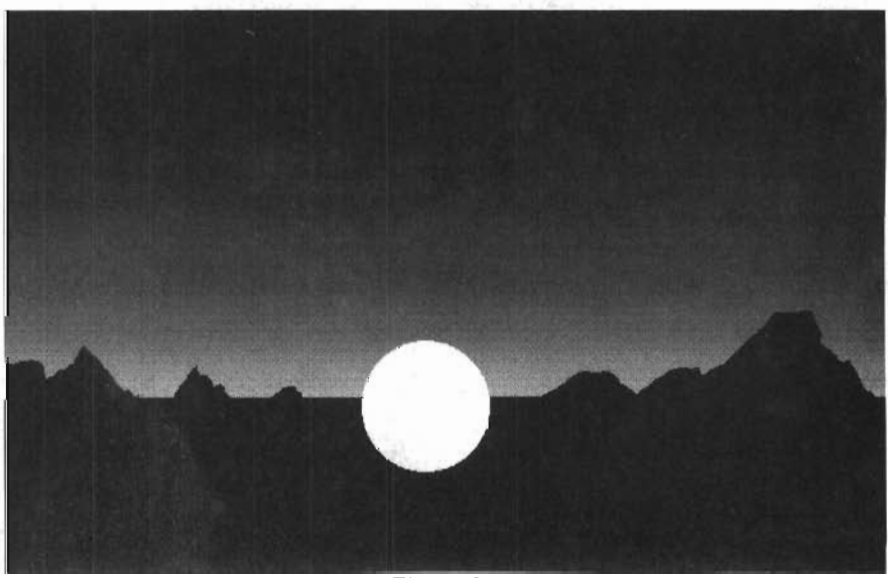


Figure 1

Alt keys will de-select colors. Once multiple colors are selected, they can be manipulated with just about every palette command. This is extremely useful in creating ranges. Use the Alt key to select a group of colors and drop them into the range. Exchanging multiple colors is a snap, and is great when you want to experiment with new colors in your palette, yet want to keep the original palette intact. The only thing I wish Extended Color Select could do is allow RGB/HSV modification of all the selected colors at one time.

And, while speaking of the palette, little ruler-like notches have been added to the Mixer to make it easier to determine register numbers.

Scalable Fonts

DeluxePaint 4.1 utilizes the scalable font technology included in AmigaDOS 2.04. In the text requester, simply choose a CompuGraphic font, and type in the point size desired. Click on Ok to select the new font. AmigaDOS must "build" the new font, and it can take a long time, but the results look great. DeluxePaint 4.1 also allows resizing of non-scalable fonts. Select a non-scalable font and type in the desired point size. The closest point size is chosen, then rescaled to the new size. Remember, these features work only when DeluxePaint 4.1 is running under AmigaDos 2.04.

Larger Morph Brushes

The Metamorph command in DPaint 4.1 has been expanded, with the 256-pixel limit removed. Now, DPaint Morph targets can be as large as your Amiga has memory for. Even though it took a while, My 6Mb system had no trouble morphing between two 16-color hi-res brushes.

Anim Stencil Paint

The new stencil Paint command allows for painting a global stencil for animations. With DPaint 4.0, a painted stencil would last only until the animation was paged forward or backward. Now, with 4.1, a painted stencil lasts until it's turned off. This is really cool for complex, non-color-related stencils in animation.

Improved Overscan tools

New tooltypes have been added to DPaint, allowing you to set the minimum and maximum coordinates in overscan mode for your toolbar. Now, when painting in overscan mode, the tool bar won't be off the edge of the screen.

Hide Anim While Loading

Under DeluxePaint 4.0, I always turned off my monitor while loading an animation when I wanted to show my friends. That way, they wouldn't see the anim load in frame-by-frame. Under DeluxePaint 4.1, the Load Anim Requester has a new option: Show Anim On/Off. When Show Anim is turned off, the screen stays black while the animation loads.

But there's more. I've found some changes that Electronic Arts didn't include with the 4.1 read-me file. Two of those are:

Load Anim in Foreign Resolution

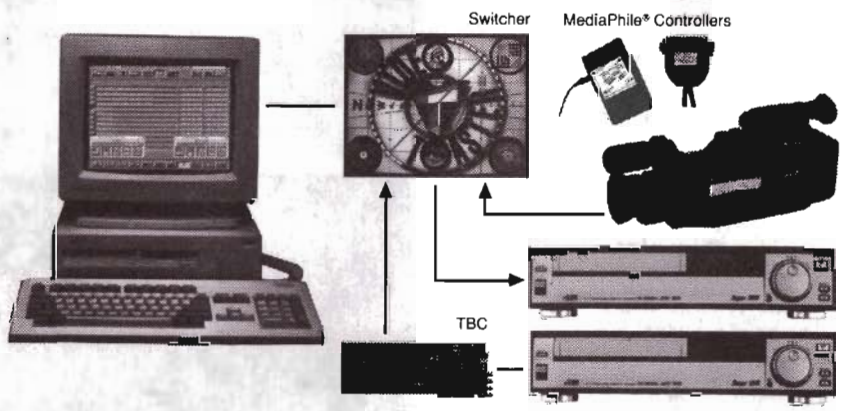
It's possible to load in an animation as a different resolution, but remember, there are some guidelines. First, anims can only be loaded into higher resolutions. Example: A lo-res 32 color anim can be loaded into a hi-res 16 color screen format, but a 16 color hi-res anim cannot load into a lo-res screen mode. Secondly, there is no option to stretch the anim to fit the new resolution. And, finally, DeluxePaint 4.1 won't let you load the anim if the page size is larger than actual screen size.

Remapping of Frames

Under DeluxePaint 4.0, loading a series of pictures, all with different palettes, together into an animation is a very difficult and time consumming task. 4.0's Load requester allows the user to select the number of frames to load, but loads the palette from each picture, causing the rest of the frames to become hidiously disfigured. DeluxePaint 4.1, however, takes the palette from the first image loaded, then remaps each subsequent picture for optimum color balance. This is great for use with programs like ImageMaster and Art Department Professional.

Also, many of DeluxePaint 4.1's Yes/No requesters have added a Cancel button, allowing last second abortion of selected operations. The Caps Lock key doesn't effect keyboard shortcuts, only

Desktop Video Production



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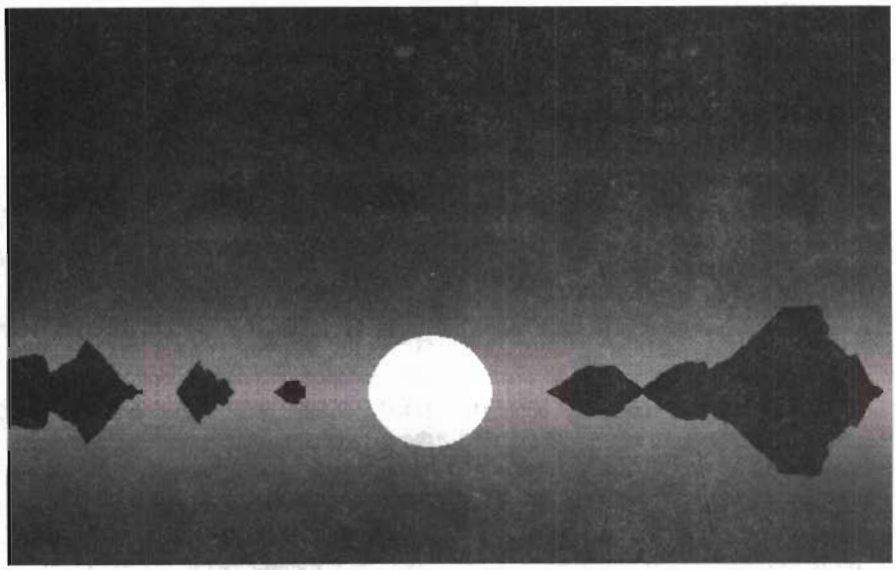


Figure 2

text mode. The Key combination of left Alt and left Amiga doesn't invoke anim painting, it simply emulates the left mouse button. Perspective Mode has a new key combination of Ctrl-0 for a complete reset of Perpsective settings, and there's still more!

Bug Fixes

Of course, DeluxePaint 4.1 also fixes the bugs from 4.0. All the bugs that I know of have been fixed, including:

- The brush tool would not pick up brushes of sizes under 16 pixels when Fixed Background or Stencil is on.
- Anti-Aliased dithered fills would not work correctly when the tool bar was on screen.
- The shade tool would not shade correctly if the current range did not have a color in the leftmost slot.
- Cycle mode would not work if the current range's rate was set to zero.

The New version of DeluxePaintIV can be obtained from Electronic Arts. If you bought DPaint IV after January 1, 1993 the upgrade is free, but if you bought it in 1991 the cost is $7.50. In either case include your program disk with the order. The upgrade cost from DPaint III to 4.1 is $67.00 plus the manual cover or title page. In all cases, you must be a registered owner. I strongly recommend the upgrade to anyone who owns DeluxePaint 4.0.

To obtain the 4.1 upgrade, send your DPaint IV program disk and $7.50 to: Electronic Arts, 1450 Fashion Island Blvd., San Mateo, CA 94404, or call 1-800-245-4525 for further information.

Quick Smeared Reflections-A Tutorial

The Smear Mode is a versatile tool for creating graphics. The smear tool grabs a piece of eye-catching art and moves it a little bit, then grabs another piece of graphic and moves it again, etc. Most people use the Smear Mode only with DeluxePaint's built-in brushes, but its real power comes when Smear is used in conjunction with a custom brush. Using the Smear Mode along with custom brushes, you can create some quick and easy, special effects to your artwork. As an example, I'll teach you how to make an ocean sunset, complete with a rippled reflection. This quick tutorial assumes you know the basics of DeluxePaintIV.

1) To start with you'll need to set up your screen format. You'll need at least 16 colors, so either lo-res or hi-res will work. I'm using hi-res here.

2) Using the Spread button in the Palette Mixer, set up your palette with a spread from a dark red (r1,g0,b0) to a dull yellow (r12,g12,b7). I'm using the second half of my 16 color palette for these colors. Set colors 0 and 1 to black and white, and set up color 2 to a light yellow (r15,g15,b11).

3) Call up the Ranger (Ctrl-R) and create a range from the dull yellow to the dark red. Make sure that each color from the yellow-red spread is in the range necklace, with no empty spaces. Set up the range so that the first dark red is on the left, fading into the dull yellow.

4) Using the Up/Down fill tool from the Fill Type requester, draw a gradient-filled rectangle from the top of the screen to about two thirds of the way down. The gradient should run from dark red on top down to the dull yellow, on bottom. This is our sky.

5) Now for the sun. Choose the light yellow (it should be color 2), and draw a solid filled circle towards the sky, so that some of the sun is overlapping the sky,

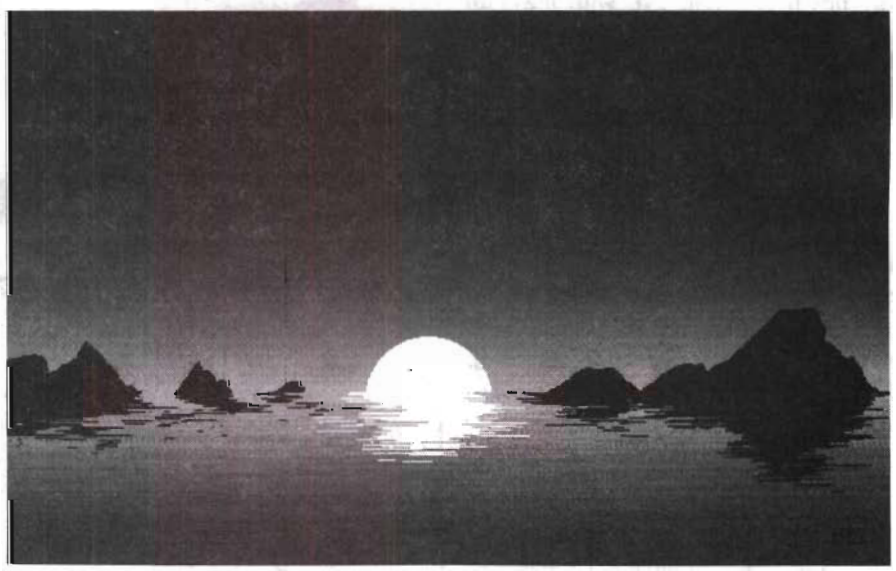


Figure 3

while the rest overlays the black screen. Don't worry about the overhang, we'll wipe that out later.

6) Choose color 0 and draw in some rocky mountains silhouetted against the sky. Use the freehand filled drawing tool (Shift D) with Fill Type set to solid. Make sure that they touch the black bottom third of the screen. Look at Figure 1 for reference.

7) To make the reflection, pick up the middle third of the picture as a brush (press b) and flip it on its Y axis (keyboard shortcut: y). Make sure you pick up enough to fill the bottom third of the screen, and make sure that, when picking up the brush, to pick up only down to the bottom of the sky. This way, you won't pick up the extra part of the sun that has already dropped below the horizon. Stamp down the flipped brush directly below the original, so it looks like Figure 2. To do this, you may need to move your brush handle until you have room. Simply press Alt y until your mouse holds the brush by its upper right corner.

8) Now to add the ripples. Press b to select grab brush mode, move to the very bottom left of the screen and drag a one pixel box out into the middle of the screen. This is our custom brush. If DPaint is holding the brush to its right, press Alt s to center the brush handle. Now select Smear from the Mode menu. Finally, make sure the dotted freehand tool is turned on by pressing s. Run the mouse from right to left and back again over the refelection, moving slowly up and down. Make sure the entire reflection gets rippled, and don't go over the edge and ripple the actual sky. Don't overdo it, moderation is the key. Keep rubbing the reflection until the picture looks done.

Does your picture look like the one in Figure 3? If it doesn't, go back and try again. It takes some practice to add just enough ripples. This picture is by no means finished, but I'll leave it up to you as to what it needs before it is. Keep experimenting.

That's it for this issue, I hope you learned something—I sure did. If you have any questions or comments, write to me, care of this magizine. Until next time, happy DPainting....

About the Cover

Editor's note: These are descriptions of the three images on the cover of this month's AVID, as provided by the images' respective creators. If you'd like to see your Amiga creations on or in AVID, please send us a disk containing one or more images, preferably in 24-bit format, along with a brief description of yourself and how they were made.

Three Pointer

'Three Pointer' is an image by artist Steven Worley. The basketball hoop and backboard were modeled in Imagine. The basketball itself was produced with the help of a custom C program that mathematically determined the shape of a brushmap that would form the proper stripes and bumps when wrapped onto a sphere. This approach is discussed in Steve's popular book, Understanding Imagine 2.0. The basketball net was made with Glenn Lewis' TTDDD 3D object manipulation software. The image was raytraced with Imagine at resolution of 768 by 482 on a 25 Mhz Amiga 3000. The render took about 3 hours and used 8 MB of memory, mostly for storing the basketball brushmap. Design of the objects, the basketball brushmap, and the TTDDD script to produce the net took a total of about 20 hours.

For information about ordering Steve's book, which AVID recommends highly to anyone using Imagine 2.0, contact him at: Apex Software Publishing 405 El Camino Real Suite 121 Menlo Park, CA 94025

Beladron

This image was created by Jim Robinson using NewTek's Modeler and Lightwave 3D. See David Hopkins' interview with Mr. Robinson on page 12 of this issue of AVID. The individual boulders and stars were created with OXXI/Aegis' Easy Geometry Generator (EGG) program as supplied with VideoScape 3D. The scene contains over 18,000 polygons. All polygons display different levels of texture-mapped fractal noise. The image took about 25 minutes to render on an Amiga 2000 equipped with a 50 Mhz 68030 accelerator. Special note: the swirling fog hovering above the ground was created using a single large polygon.

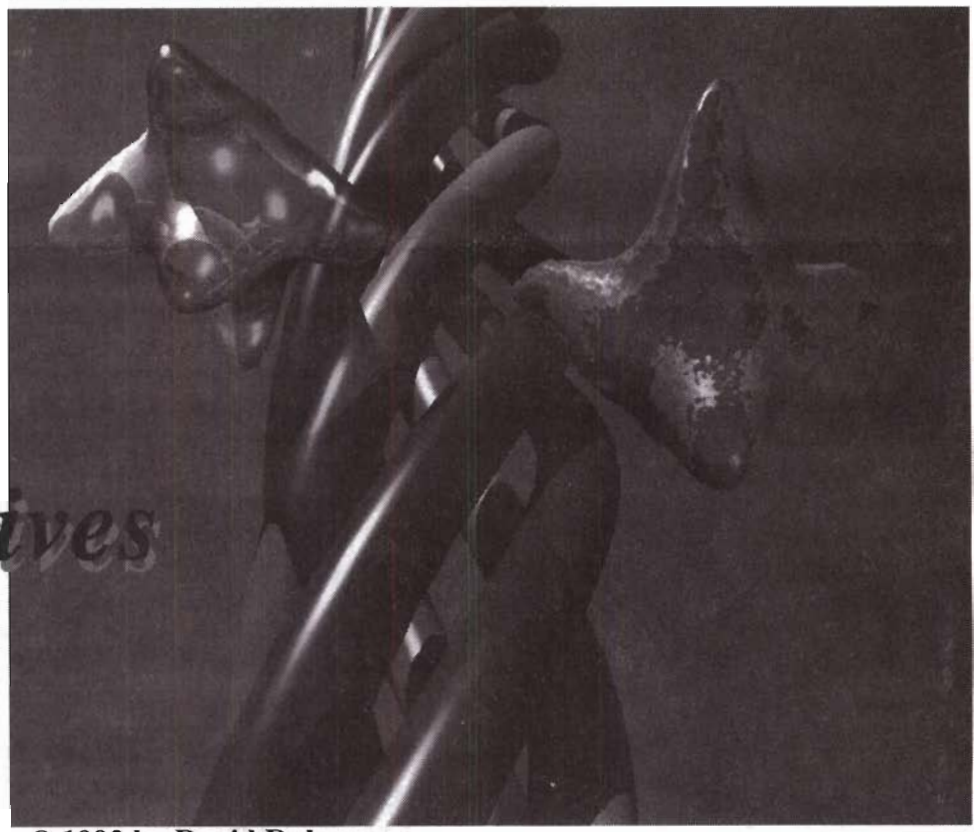
AVID TV

This image was rendered in LightWave 3D 2.0. The 'A' was originally produced in PageStream (Soft Logic) and extruded into 3D with Pixel 3D (Axiom). The 'vid' is from a new character set presently under construction for LightWave 3D 2.0. The 'tv' is from the distribution fonts directory 'Common' (in the LightWave 3D Objects/Fonts directory) and is transparency-mapped with clouds. The organic ground was originally 'Marble-4' on the Photon Paint 2.0 Expansion disks and was converted to 16-color grey. It was then converted into an object with Pixel 3D 2.03 (Marb-4.1wob 32000 polygons). The original image 'Marble-4' was then mapped (Color/Reflection) onto Marb-4.1wob and set to raytrace reflection. The environment image map used in the scene is a desert scene (my secret weapon). Backdrop fog was turned on. The entire scene was raytraced in hi-res (1504 by 960 pixels) in 55 minutes on an Amiga 2000 equipped with a Progressive Peripherals' 25 Mhz 68040 accelerator.

I am a freelance 'music/video/digital fx' producer in Orlando Florida and have a small production group (Larry Mitchell & Associates). We strive to produce the best professional graphics possible. To aide us in our quest, we maintain an edge by designing natural/unnatural phenomenon procedures (fire, water, lightning, novas, 3D clouds & smog) which also results in a unique signature in our animation production.

Larry Mitchell & Associates 1764D Americana Blvd. Orlando, FL 32839, (407) 856-8794

3D Perspectives



© 1992 by David Duberman

Welcome back to 3D Perspectives. This month we have some update news, some new objects, and a mini-review of Real 3D. But first, to get off the subject for a moment, I really must second Dr. Mortier who has raved recently in these pages about ImageMaster's new Morphing effect. The way it works is that you load two images and then are presented with quarter-screen grey-scale representations of both on the same screen. You can set down any number of reference points on the first, and then move them to corresponding locations on the second.

So if you're morphing two faces, the ideal subject for this effect, you'd place points on the eyes, eyebrows, nose, mouth, hairline, and so on. You can even automatically tack down the edges so they don't get pulled in. The more points the better— usually 100 to 150 works best, but the small images can get crowded at that point. You can set any length for the sequence and render in any size and any graphics mode that ImageMaster supports, including 24-bit. This is one of the most spectacular graphics effects available on any computer anywhere, and should help sell more copies of ImageMaster than any other feature. Oh yes, the manual copy protection is gone, making this program now as essential a tool in the Amiga image professional's arsenal as Art Department Professional. Now back to new developments in the 3D Amiga world.

Axiom Update

If you don't know about Pixel 3D you've missed one of the most useful utilities available to the Amiga 3D artist. The original version, Pixel 3D 1.0, was used to create extruded objects from 2D bitmaps, and the new 2.0 version enhances this capability greatly and adds many object format conversion and editing features. If you bought version 1.0, you can now upgrade for the reasonable fee of $40 through Axiom—just send them $40, and if you forgot to register, include the last page of your manual. If you own Interchange, DigiWorks or AutoScript and would like to get Pixel 3D 2.0 at the upgrade price of only $40, send a part of the manual that contains the program name for any of the above products and $40 to Axiom. You can also order Pixel 3D for $130 from Axiom, but it's available on the street for less than $100. Also, Axiom offers a demonstration version for a mere buck.

Scott Objects

Object modeling is one of the most challenging yet rewarding aspects of working in 3D computer graphics. Modelers using Amigas have some powerful tools available via comprehensive programs such as Imagine, Real 3D, and LightWave's Modeler, as well as stand-alone programs such as Vertex and Animatrix Modeler. But even the best of tools may require skill, dedication, and hours of painstaking work to create the object you have in mind for that special project.

So if you're daunted by the prospect of a week-long modeling job on a 48-hour deadline, it's nice to have a source of fine ready-made 3D objects available at individual prices, and that's just what Don and Merilyn Scott of St. Petersburg, Florida have to offer.

The three-page catalog available free from the Scotts (see address at the end of

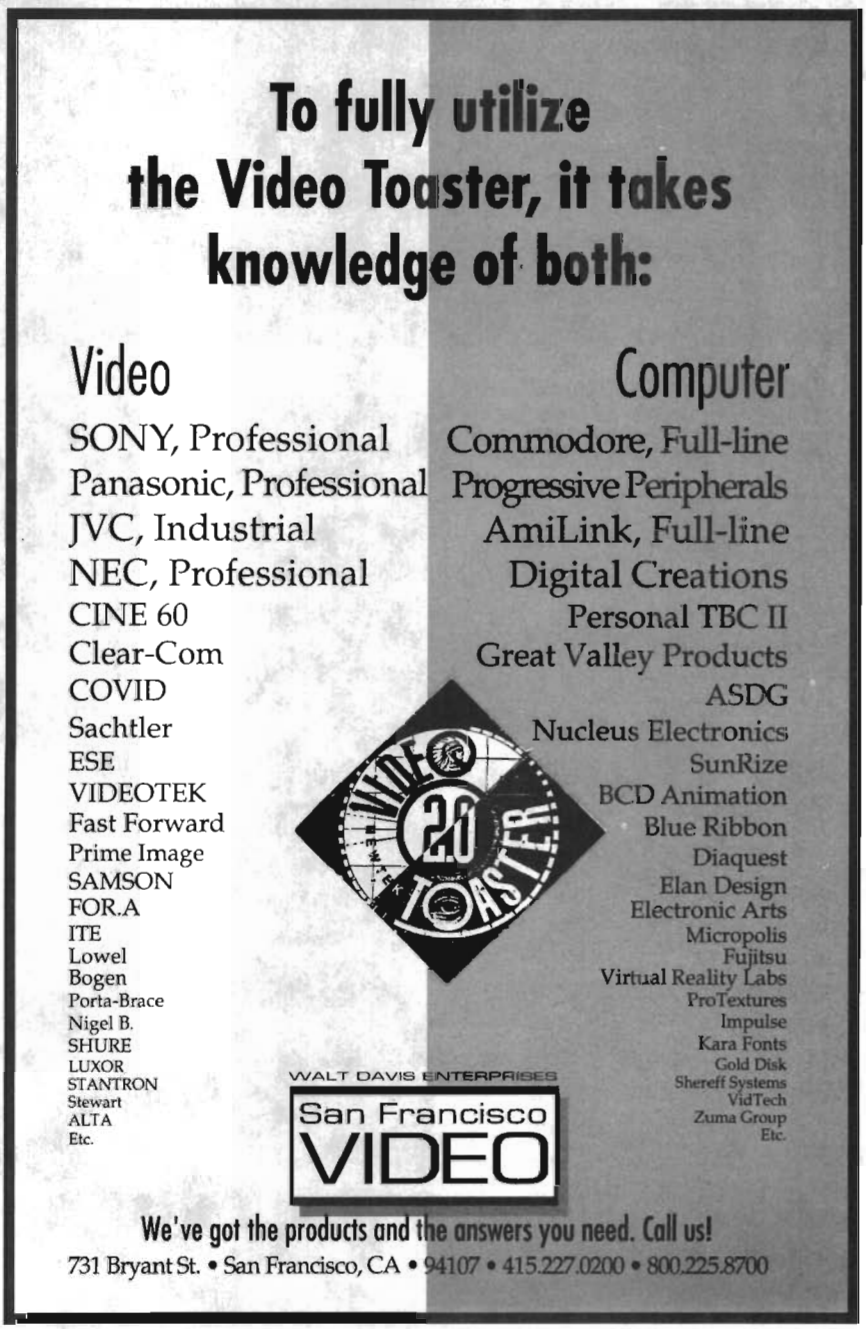
this column) lists a great variety of objects ranging from human anatomy to buildings. Conveniently the file size of each object is also listed so you can get an idea of its memory requirement. The objects are highly detailed, with file sizes starting around 50K, most over 100K, and some exceeding half a megabyte in size. Keep in mind that objects usually require a great deal more space (memory) when loaded into a 3D application than on disk. You can also get an Anatomy and 3D Object Demo Disk for $4.

Anatomical objects are grouped on four disks, priced at $30 each or $100 for the set. Disk One contains spinal nerves, eye cross section, ocular muscles, and spinal cord section, all in Imagine format. The other three are in Sculpt format and contain various skeletal parts including the vertebral column weighing in at almost 600,000 bytes, and the thorax at 334,810 bytes. These are detailed objects, folks! And while I'm no doctor, they look accurate to me.

Most other objects are available individually for $5 to $10, with a couple of more complex objects at $15 and one at $30. Object categories include Animal, with a dog, camel, cow, giraffe, and pig, all modeled in a cutesy cartoon-like style; Communication with different styles of telephones; Foliage (trees); Household; Music (drums, violin, etc.); and Office Stuff. There's also Party Time, People Heads, Recreation, Science, Sports, and Structures with buildings such as a barn and silo, church, and a charming one-room school house with swing and see-saw. The Time category includes a grandfather clock and a sundial; Toys has a jack-in-the-box; and Transportation features a 1920's-style automobile, a helicopter, and a steam engine and tender which looks terrific in the rendered image on the demo disk.

Most of the objects are available in the Sculpt format originated by Byte-by-Byte's Sculpt 3D/4D software, which can be loaded into LightWave 3D without conversion, or easily converted with Pixel 3D or Interchange for use with Imagine. The rest are in Imagine format, including objects you might want to animate such as the animals and vehicles. These are stored as grouped objects, which for those unfamiliar with Imagine means that while the object's parts retain their own identity, they are all "attached" to a single parent object. All group parts have descriptive names, such as LRFENDER and FBUMPER in a car. However, they aren't arranged in the hierarchical manner required by Imagine's Cycle objects, so to use them as Cycle objects in Imagine you must ungroup them and redo the structure.

The fact that they're grouped means that these objects can't be directly converted by Pixel 3D for use with other 3D programs, because Pixel 3D loads only the parent object of an Imagine grouped object. Interchange has no problem though, and converts the group to a single object. You must use Imagine's Detail Editor to prepare a grouped object for conversion with Pixel 3D. If you don't care about animating the object's parts, you can simply load the object into Imagine, pick it, use the Ungroup command followed by the Join command, and then save it. If you want to animate the parts, you must ungroup the object and then save and convert each part separately. Such a task could be eased tremendously were Imagine and Pixel 3D to be made compatible with ARexx.



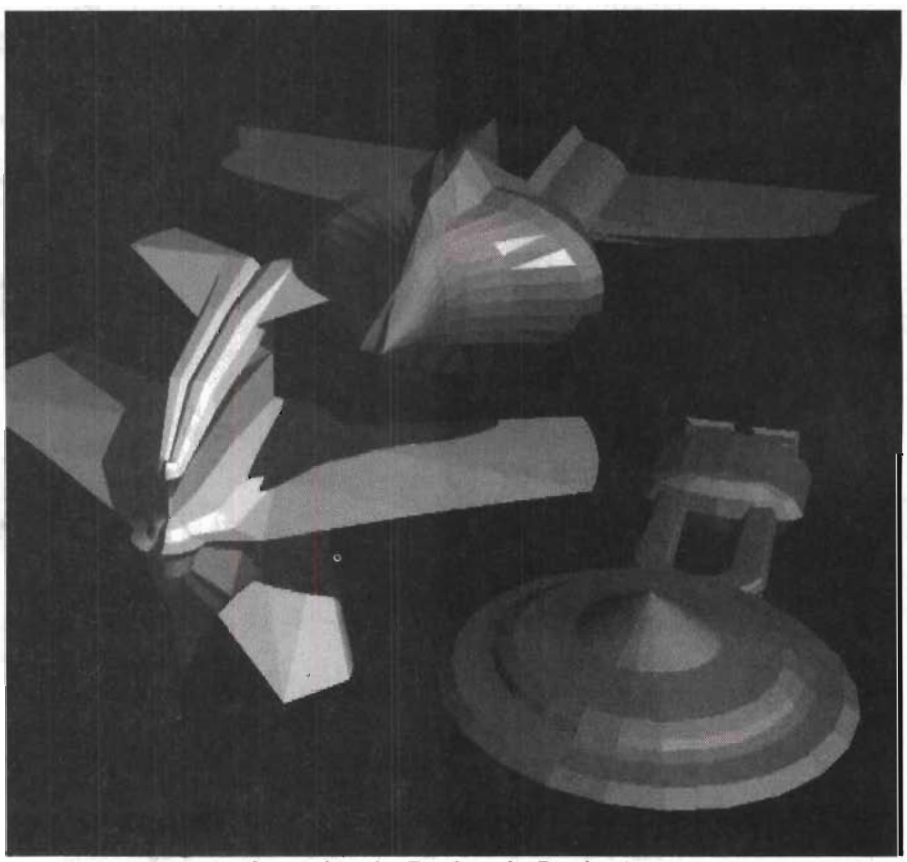
Schoolhouse by Don Scott

CycleMan

If you saw the cover of the recent AmigaWorld special Video and Animation issue you're familiar with the excellence of Tim Wilson's modeling of the human form. Tim's generic male figure, called CycleMan, is the culmination of nearly a year's effort and is now available commercially in Imagine cycle object format. Imagine, for those new to the Amiga, is one of the best stand-alone Amiga programs for 3D modeling, rendering, and animation. Cycle objects are a special form of structured object. A structured object implies a hierarchy, which for example in the human form means that when the forearm moves, the hand and fingers move along with it. CycleMan contains 14 levels of hierarchy, right down to the individual finger joints.

Not only is CycleMan incredibly detailed, but he moves. One of Imagine's special features is the ability to set up a complex sequence of motions for a structured object, use it as a repeated cycle in an animation, and save the object and its

The sample objects I received are for the most part superbly modeled and meticulously crafted. It's obvious from the accompanying illustrations that a great deal of care went into their creation. But they will require modification if you want to animate them. For example, I loaded the 1920's car into Imagine and tried to open the back door, which in those days was hinged at the rear. This required that I first relocate the back door's axis from its center to its rear, then rotate the door on its vertical axis. That worked OK, but since the door's handle is not its child object but is grouped to a different object, the handle stayed where it was. Also, although there's a cutout in the door's corner to accomodate the fender, opening the door only 30 degrees or so caused the door to intersect the fender. Nitpicking aside though, if you're looking for high-quality objects for your 3D rendering and animation, and particularly if you're involved in the production of videos for medical education, throw a few extra megabytes of RAM into your machine and then contact the Scotts—they've got what you need!



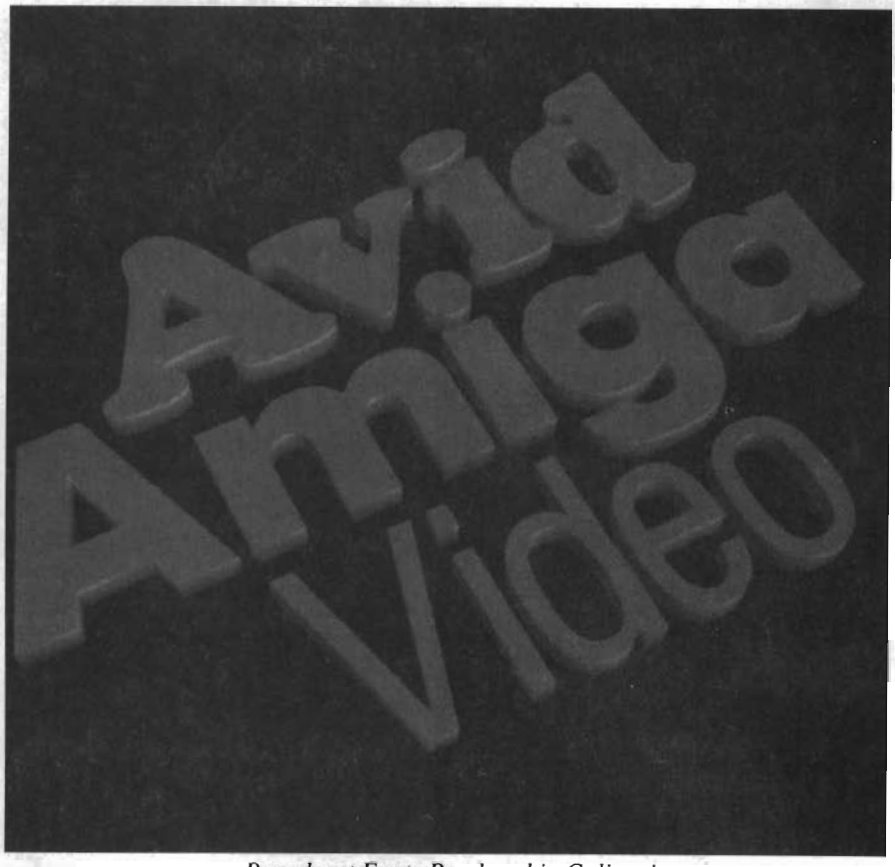
Spaceships by Earthquake Productions

motion together as a cycle object. Tim has created two special versions of CycleMan; one walks and the other runs. To see either in motion, simply load the appropriate object into Imagine's Cycle editor, use the Make command and then the Play Loop command. CycleMan also comes as a simple grouped object which you can modify and then use to create a different motion if you like. Considering the possibilities, some pretty funny antics come to mind—I'll leave them to your imagination. And if you also use other programs that support hierarchical objects you can break up the group, convert the parts individually, and rebuild CycleMan in your target program.

There's also a fine little manual with a tutorial, ideas for realistic movement and other motion techniques, and suggestions for altering a figure's appearance. One warning: as stated on the packaging, these objects are about 200,000 bytes in size, so you should have at least three megabytes of RAM, and if not an accelerator, the patience of a saint. Also, in the manual Tim mentions future cycle objects such as horses, birds, and dinosaurs. No doubt he'll be encouraged by good sales of CycleMan, available now at your local Amiga retailer. If you're using Imagine for character animation CycleMan is a must.

Earthquake Productions

If your requirements for human figures run more to those of the distaff persuasion, take a look at the Male and Female Design Series from Earthquake Productions. I mentioned these a few columns ago, but have recently received an updated version that looks a good deal better, although the male isn't quite up to Cycleman's high standards. The two-disk set contains both figures in parts, leaving hierarchical construction up to you. There's also a drawer of accessories which contains a brassiere, a detailed skate, and skiing equipment. Earthquake has also sent me a five-disk collection of SpaceCraft objects containing an impressive array of spaceships and parts for constructing your own ships, space stations, and so on. Included are various pods, frames, nosecones, solar dishes and arrays, tanks, wheels, and wings. The review copies I received were all in Imagine format, but I'm pretty sure they're available in others as well. Contact Earthquake at the address at the end of this column.



Broadcast Fonts Rendered in Caligari

Caligari Broadcast Fonts

Newly released from Unili Graphics are versions of its 3D Broadcast Fonts for Caligari 2, the Amiga 3D program famous for its friendly interface. This is the same set of nine fonts described and illustrated in an earlier 3D Perspectives column, including four sans-serif, three serif, and two script fonts. All are great-looking and there's a healthy variety of styles, but none are too outlandish.

According to Unili, this is the first release of Broadcast Fonts to be modeled using a system called AQPoints which uses more or less points depending on how curved or straight the section being modeled. Thus curves are smooth even on close inspection, but rendering times are kept down by using a minimum of polygons in straight sections. All characters' front and back faces use one material, and the sides use another. The manual offers suggestions for modifying these as well as for texture mapping, and also includes a great tutorial on using the fonts with Caligari. If you use Caligari 2 and need handsome fonts, contact your nearest retailer or Unili Graphics.

Axiom Software
1221 East Center St. S.E.
Rochester, MN 55904
507-289-8677

Demo Disk $4
Scott's 3D Object File
5618 Kiwanis Pl NE
St. Petersburg, FL 33703

Tim Wilson
P.O. Box 4691
Crestline CA 92325

Earthquake Productions & Publishing
13351 Foothill Blvd.
Fontana, CA 92335
(714) 899-1800

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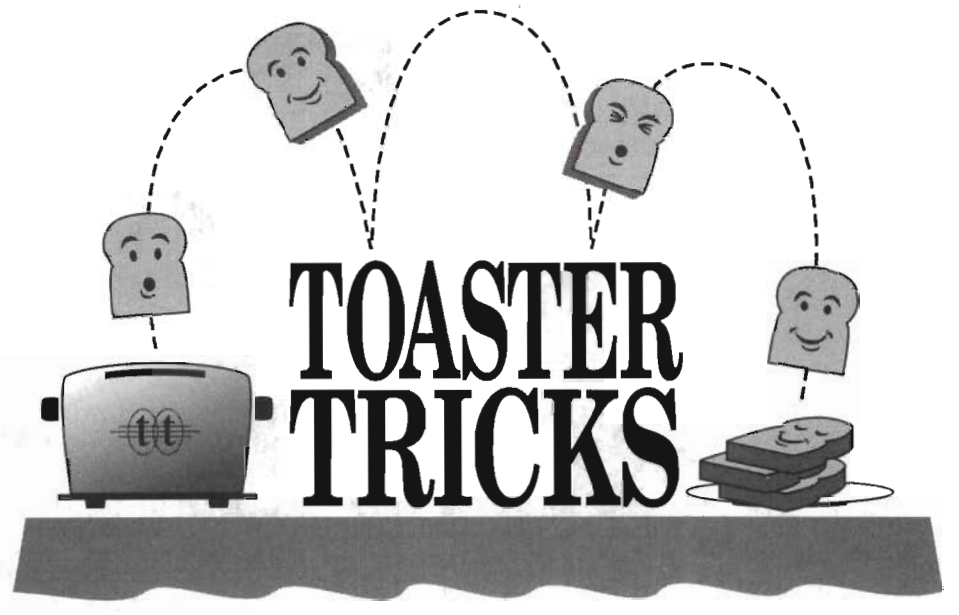

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Let's talk LightWave 3D. Have you ever set up a scene using motion paths for objects, where after making and playing a wireframe preview, your objects tend to 'overshoot' and return to their last key frame? Here's why that's happening: An object in motion tends to stay in motion (I think somebody named Newton once said something like this). Imagine creating a scene in which three darts are thrown into a dartboard. The first dart starts at frame 0 and ends up in the dartboard at frame 30. The second dart flies into the dartboard from frame 30 to frame 60 and the third from frame 60 to 90. Since LightWave has the capability of creating key frames for individual items or all items (including lights and camera) at any given frame, you will overshoot key frames if you always use the 'create key for all items' preference. Let's follow the path of our first dart. The first key frame is at frame 0 (there is always a key frame at 0). At frame 30, the dart has landed in the dartboard, so we need to create a key at this point. If you use the 'all items' choice, you also create a key frame at 30 for all the other items, none of which happen to be moving at this frame.

The second dart has its beginning and ending frames at 30 and 60 respectively. When a key is created at frame 60 for all items, dart number one now has three key frames--0, 30 and 60. This is where overshooting occurs. Since dart one was flying into the dartboard from 0 to 30 and there is another key frame at the same position for frame 60, LightWave assumes (correctly) that it should continue the motion of the dart from frame 30 to 60. So what happens? The dart keeps flying into the dartboard after frame 30 and then it bounces back to end up at the same location in frame 60. Usually this is not what is expected (it can, however, be used for very realistic motion under the proper circumstances). There are two ways to prevent this from happening. The first should be obvious; don't create key frames past the final frame of an item's motion. I generally create a key frame for all items only at frame 0. After that I always create keys for selected items only. The second way works equally well, especially if you desire an item to 'pause' in a motion path--at any key frame for an item, you will notice that you have a Spline Control button located above the parent button. Clicking on Spline Control gives you the option of choosing a linear movement. With Linear selected, you are telling an item to move in a straight path from the preceding key to the current key. Normally LightWave uses splines (curved paths) between frames. In our dart example, selecting linear at frame 60 for dart one would insure that there is no movement between key frames 30 and 60 where the dart is supposed to be just sitting there. Remember that Linear only works from the preceding key to the key that has Linear selected. In our example, we would also want to select linear at frame 90 for dart one, otherwise we will get motion from 60 to 90. It should be obvious that not creating keys for items that aren't moving is the easiest method for making sure there is no movement after an item has stopped.

Logo Creation Suggestions

Let's say you get a job where you need to animate a number of 3D words tumbling onto the screen. How would you go about creating these words? Most people go into LightWave and load all the individual letters that make up the words. Needless to say (but I will anyway), this can be quite time consuming if you have many words. If you choose this method, there are a few tips that should help you greatly: If you have a number of different letters to load (15 for example), click on the Load Object button 15 times. The Toaster will remember that you did this and will bring up the object requester 15 times and allow you to choose objects. You won't need to keep hitting the Load Object button.

Use parent objects. Any object that has another object selected as its parent,

will move, rotate or stretch if you manipulate its parent. Using parents, you can take a ten letter word and make one letter the parent to all the other letters and just move the parent around to move the whole word. The key to using parents is to set your parent objects before you move anything. If you set a parent after moving an object, it will snap to a new position relative to the parent chosen.

Letters will all load on top of each other in the Layout window. If you set your parents first, then turn off y and z movement, you can move all your letters to the right and left (along the x axis) to space them properly. While the above methods work for loading words into Layout, they can quickly become tedious. Sometimes a better approach is to load all the individual letters into Modeler, space them properly, then save them out as a complete word-object. This way, you will have fewer objects to worry about in Layout. Here's a great way to quickly create words in Modeler: a) Expand the back view by dragging the light gray crosshair to the lower right of the screen. b) Click on the Load button in the Disk menu and after going to the fonts directory, select the first letter of your word. c) Choose the Volume select button and draw a square around the letter. d) Now select the Modify menu and then the Move button. Move the letter into the upper left of the screen (you may want to zoom the view out a bit to fit your whole word in). e) Select the Disk menu and Load again. Select the second letter of your word. When this letter loads, it will load into the volume area that you had selected for the first letter. f) Select the Modify menu and then the Move button again. This time when you move, only the object that is in the volume will move. Move it up and into place to the right of the first letter. If you move it to the wrong place, just select undo, and it will appear back in the volume ready for you to move it again. g) Continue this process for all remaining letters. h) Once all the letters have been moved into place, get rid of your volume box by choosing the Select Point button. Selecting Move from the Modify menu will now allow you to move the whole word and center it on the black crosshairs (which represent the

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center of rotation of the object).

Ok, this is fast, but it can get faster. a) Instead of hitting the Disk menu and then the Load button for each object, just press the L key on the keyboard and the load object requester will appear allowing you to choose your next object. b) When the load requester appears, the cursor is positioned in the file name box. If you desire, you can just type in the name of the object. It would probably take longer to type in the name of the letter (eg common.Cap.A) than to scroll through the requester and select it unless the name was really short such as 'a' instead of 'common.a' and 'Cap T' instead of 'common.Cap.T.' Using a directory utility such as Directory Opus or DiskMaster (see AVID review in Vol 3, issue 3, page 32), you can easily rename a large number of files quickly. Doing this will allow you to quickly load and move a large number of letters in Modeler and thus speed up your creation time.

I have renamed all of the objects in my Objects/Fonts drawer. All of the lower case letters use the letter for their filenames while the upper case letters use CapX as their filename (X represents the uppercase letter). Please make sure to keep all the Common letters in a Common drawer and all the Chancery letters in a Chancery drawer, etc. else you won't know if the object d is a Common d or a Chancery d.

Genlock Utility

Included with Toaster System 2.0 is a new genlock utility that allows you to externally control basic Toaster functions such as dissolves and takes between sources. The main purpose of this utility is to overlay Amiga graphics from programs such as Deluxe Paint onto video sources (live or framestores). Here's everything you need to know about the Genlock Utility: 1) Before the Genlock utility will function, you must first start the Toaster up. Once the Toaster has been started, you can either exit it from the Preferences screen or use the Ctrl, Ctrl - Alt, Alt hot key sequence from the Switcher screen to return to the WorkBench. 2) When you first start the Genlock Utility by double clicking on its icon (in the Toaster drawer) you will see a window with button-like icons. These are not buttons you can click on with the mouse. They are only there as a visual guide for keyboard use.

When the Genlock window is activated by clicking on it, you will notice that there are three menus that can be activated by pressing the right mouse button. The main one to be concerned with is the Activate Key menu. 4) None of the Genlock functions can be used

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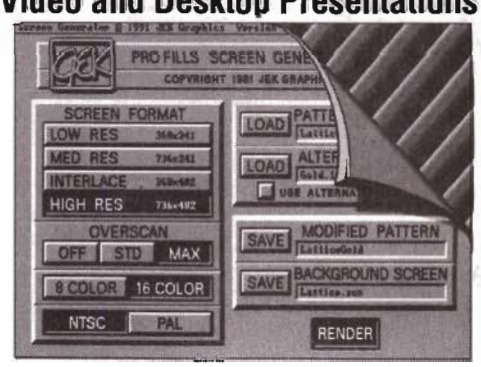

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without holding down an Activate Key. This key can be user-defined by choosing it in the Activate Key menu. 5) You can select different sources on the program buss by holding down your chosen activate key and pressing the appropriate F-key that corresponds to the source you would like to see. Likewise, the preview sources can be selected by choosing the number keys. If your chosen activate key is the CapsLock key, you do not need to hold it down when you make your program/preview choices (assuming the CapsLock key is on). 6) F7 and F8 on program (and 7 and 8 on preview) are the keys that correspond to your Amiga RGB signals. F7 will put the Amiga display on the program buss completely covering up the video source that is currently displayed. If you had a VCR connected to the program output of the Toaster, you could now record your encoded Amiga display. Pressing F8 (remember your hot key also!) will key your Amiga display over the current video selected on your program buss. Any place where color 0 occurs in the Amiga display will be transparent and show your video source. 7) If you were running Deluxe Paint and had an animation running where the background was all color 0, you could play your DPaint animation over full color video! This is a great way of sprucing up your DPaint animations. 8) By holding down your activate key and pulling the right mouse button down, you will fade from program to preview. This way you can be running a DPaint animation and fade it out when it is finished. 9) You cannot access the Genlock Utility's menus if you are holding down your hot key, or if you have chosen the CapsLock key and it is on. 10) If the Amiga program you are putting on top of video with the Genlock uses your activate key for one of its hot keys, you can run into conflict between the two programs. This is why NewTek was insightful in letting you choose among many different hot keys. One of them will work.

Well, that about wraps it up for now. Stay tuned to this space for more tips and tricks next month.

John Gross is a Video Toaster Graphic Artist employed by Alpha VIdeo in Minneapolis, MN.

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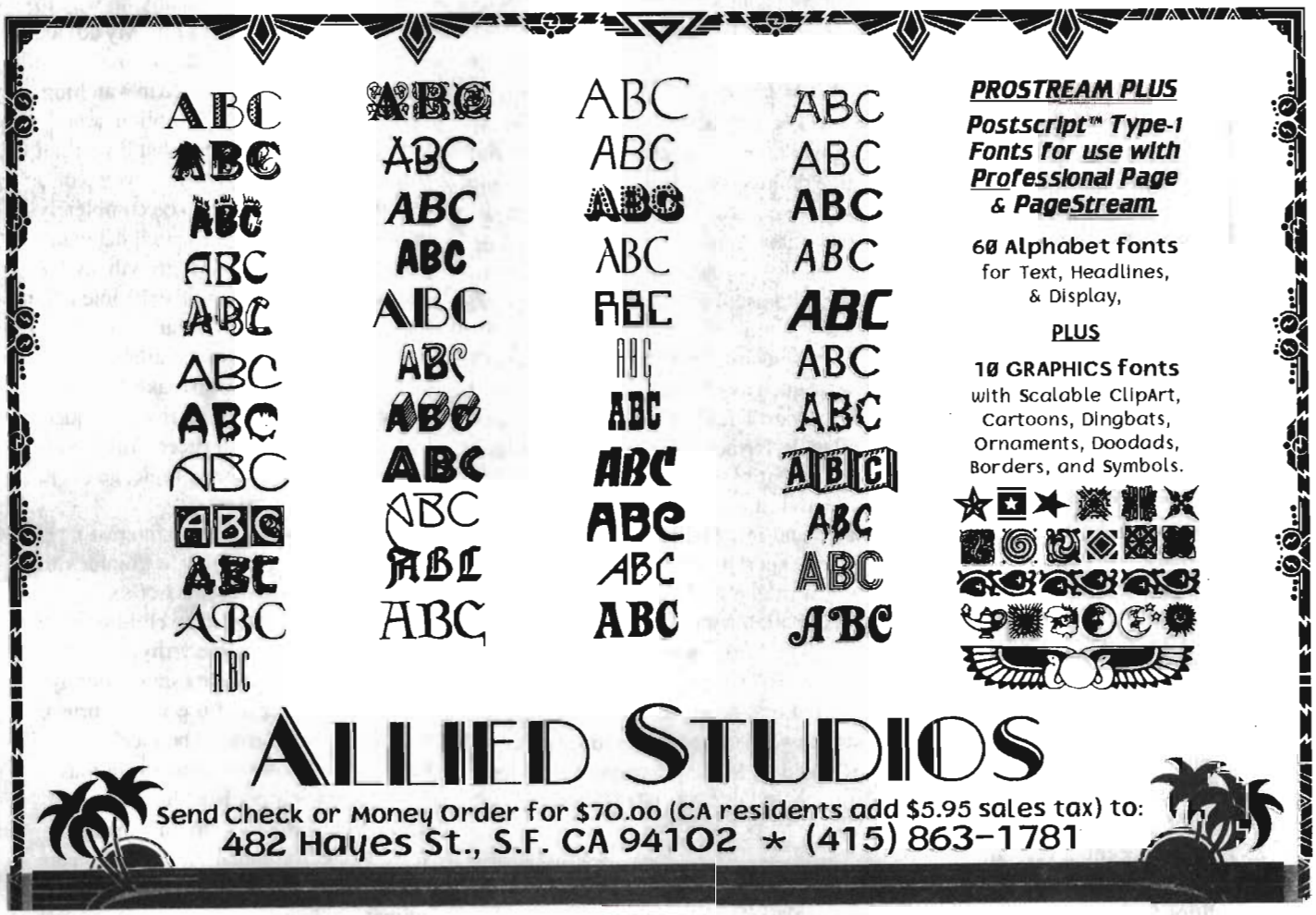

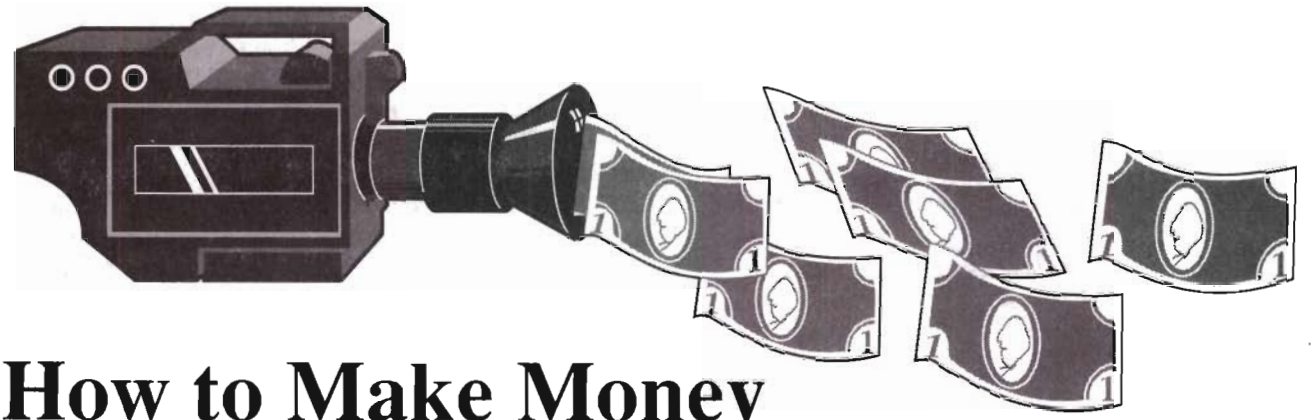

How to Make Money With Your Own "How-To" Video

© 1992 by Frank Kelly

Ask any video rental store owner what the fastest-growing category of titles in his or her store is and they will quickly tell you it is the "How-To" or "Instructional" video. The topics these videos cover are quite varied, ranging from celebrity exercise routines to how to do your own real estate appraisal. The one thing they all share in common, and what really makes them attractive as video store rentals is the fact that unlike a blockbuster movie hit, they don't have a "peak" rental period.

A blockbuster movie title usually has about a 30 to 60 day "Hot" spot on the video want list, and it is during this time that the video rental store has to stock a fairly large inventory of the title. After this "peak" period subsides, there is hopefully another blockbuster or two to help draw rental business into the store, requiring the dealer to once again invest a fairly large amount of money in multiple copies of the same title to satisfy customer demand.

A "How-To" title usually doesn't suffer from the fickle tendencies of the hit movie rental market in that only a single copy or possibly two need be in the store's inventory. Although it doesn't necessarily have the same kind of peak demand as a hit title, it more than makes up for it with a steady long-term shelf life.

Another recent development is that more store owners are feeling the heat of competition from large convenience store and supermarket chains that carry the blockbuster titles. The smaller specialty rental store is now turning to "How-To" video titles to bring rental customers back in to their store. In fact, there is at least one store in New York City that stocks "How-To" titles exclusively and there has been talk of franchising the concept.

What Does It All Mean?

The production budget for a major movie release can climb to over 40 million dollars. The budget for a reasonably well-executed "How-To" video can cost just a few thousand. This is a prime opportunity for the independent video producer to use the wonderful video graphics capabilities of the Amiga.

By using off-the-shelf Amiga software such as Dpaint IV, Pro Video Post, Broadcast Titler II, Can Do, Amiga Vision, Elan Performer, and others (the list could fill an entire page), you can graphically illustrate and animate your concepts with flair and imagination. You may already be an expert in a specific area, or you can enlist the help of one or more "specialists" that know the topic you wish to illustrate.

The truly wonderful thing about "How-To" videos is there is really no set format that needs to be followed. There are however some things to keep in mind if you decide to take on such a project.

- Selecting your subject matter
- Setting a production budget
- Legal requirements
- Packaging
- Duplication
- Marketing/Distribution

Selecting just the "right" subject for your project is probably the single most important aspect of the total production. The biggest hits on the "How-To" list can vary widely from travel videos to child rearing topics. There is really no way to predict what will make a hit. My advice is not to try to make a hit, just make one that you would be interested in watching.

A common misconception among marketing gurus has been that if you can read about it free in the library, you won't rent it. This has proven to be completely untrue; in fact, rental research data suggests that the explosive growth in the "How-To" market means that people who are interested in a particular subject will rent just about anything available. So if you want to show how to make your own home herbal garden, restore antiques, show techniques for a successful job interview, or just about any topic, go for it, just make it interesting.

One sure way to keep it interesting is to use the Amiga to create graphics to reinforce points of interest. Let's say your video was designed to help children read by showing them nursery rhymes set to music. You could create a small "bunny" cartoon character and use it as a brush/pointer, then having it "bounce" across the words on the screen in time to the music.

There are literally endless possibilities, limited only by your imagination. If you don't feel proficient enough to execute the more ambitious types of graphics or animation, I suggest you contact a local Amiga user's group and contract the work

to others. There are increasing numbers of professional graphic artists who are beginning to use the Amiga in their daily business. Perhaps your local Amiga dealer sold them their systems, so don't be afraid to ask for help, you will find Amiga users as a group, unusually helpful and eager to help.

Setting a Budget

To determine a budget for your project you should allow for production on a professional format of videotape. S-VHS, Hi-8, or 3/4 Umatic would be considered minimum requirements; BetacamSP, MII, 1" or D2 would be more desirable if budget allows. When doing a "rough cut" version of your project as a preliminary to a finished product, a consumer format is certainly acceptable, in fact recommended to give you an idea of what needs to be added or removed to the final version.

If you plan to use music in your production, make certain that your selection is "cleared" for that specific use. Bopping down to your local music store and picking out a title you like and using on your video production is not only bad form, it's against the law.

There are several sources of production music libraries that you can select from. They are usually available from recording studios that specialize in commercials and other media production and are charged on a "needle drop" basis usually from $50 to $150 per "drop" used. The term needle drop comes from the days when you would "drop" the phonograph needle somewhere on the record to preview, or review musical selections from a music library. Today most libraries are on CD, but still use the term to indicate a non-specific length of a particular musical theme. There may or not be restrictions or additional fees associated with "retail use" of musical themes, it's best to ask if you are not sure.

Another alternative is to have custom music created for your production. Given the cost of "retail" use fees of library music, this can actually cost less and have the added benefit of actually owning the music at the end of the process. Here again the Amiga can play an important role if you are musically inclined and already use Amiga MIDI music composition and multimedia software. You may wish to hire someone else to do the music for you, in which case a good resource to begin looking at might be a recording studio or perhaps the local musician's union. (*Editor's note: Or check out the review of SuperJAM! on page 30 of this magazine.*)

When considering other sources for your production such as writing, talent (either for on-camera or voice-over), camera people, location sound, post production/editing, etc., you should ask for rates based on hourly usage as well as "Day" or "Half Day" booking rates. There are usually discounts associated with these larger bookings.

Your budget can be quite small or quite large (depending on your perspective) by other people's standards, so it can sometimes be appropriate to have someone oversee the project. This person is usually referred to as the executive producer. You can save a great deal of money in the long run by involving an

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experienced producer in the project, at least in the early planning stages, to help you determine a true picture of your overall budget before you actually start production. Many times an experienced producer will have access to resources such as camera and sound personnel at reduced rates or they might own their own facilities. The only downside to working with an outside producer is the possibility of having them beat you to the punch by producing their own version of your format.

Get an Attorney

The copyright laws don't really protect your creative ideas with respect to something as vague and open to interpretation as a video project. You might want to include a small amount of your budget for an attorney to draw up some sort of non-disclosure agreement for anyone associated with the production to read and sign before you discuss any detail of the project. Most video distributors require that you provide them with talent releases for anyone appearing either on camera or as a voice-over talent, and any required music licenses.

Your materials should also be legally screened to prevent possible liability law suits. Any logos or tradenames you decide to use in your packaging should be registered in the Library of Congress, although you can do the search and registration yourself, it can sometimes be easier and not all that expensive to have your attorney handle it and other related legal needs. The process is not nearly as intimidating as it might sound, but don't wait until the last minute to handle this chore. I suggest you put it high on the priority list since it may have some impact on the final cost of your packaging if you need to make changes in graphics due to a logo or tradename conflict.

Production Values & Packaging

Unfortunately I don't have the space here to go into detail about basic production techniques and procedures such as storyboards, scriptwriting, casting, sound , and camera work. Suffice to say that you should do the best you can on the budget you have to work with. Bear in mind that although the production values for a "How-To" video are not as important as they would be in a feature release; they are nonetheless vitally important to the overall quality of your product. The better the quality, the easier it will be to obtain distribution.

Another very important factor is the actual packaging of your videotape. The graphics on the box displayed on the shelf at the video store are of paramount importance to distribution companies. Professional graphic arts designers can charge several thousand dollars for a jacket design, but with ingenuity and diligence, you may be able to obtain the work in barter clubs or even propose a profit share arrangement with the designer. Here again, the Amiga can play an important role. By using one of the many color printers supported by the Amiga combined with the powerful graphics capabilities of many software titles available at such low cost, you can design a mock-up package that can be used to communicate your ideas of a preliminary design to your graphic artist, or to help persuade investors to contribute support to your project.

Four-color process printing with at least some photographs that depict content along with the synopsis will be a minimum requirement to consider, so it's a good idea to take a few 35mm snapshots from camera view during each phase of the production.

Once you've settled on a finished design for your cardboard sleeve you'll need to bid out the printing. Here again barter organizations can be a great cash saver. But if you're not a member of a barter club, you should check with at least three different printers. Some print shops will send out larger projects to "mill shops" that do larger volumes of printing at discount. These contracts are sometimes referred to as "Gang Runs", and depending on what your deadline is, you can get some real bargain rates if your deadline falls within the time window of an upcoming "run" of one of the volume "mill" shops. The typical run size of a video cassette sleeve will usually be 5000 units or more. Expect to pay a higher cost per unit if you are going to do a relatively small number of individual pieces. Whatever quantity you decide upon, you should also have your spine and window labels done at the same time.

Duplication

Just because you may have opted for 5000 cassette sleeves to be printed, that doesn't mean you have to have that many video cassettes duplicated and on hand. Duplication rates for cassettes in the hundreds only vary only a few pennies per unit compared to quantities in the thousands. A typical price from one major duplication house for a 30 minute tape is less than two dollars per unit in quantities of fifty to one hundred. The next substantial price break is at quantity five hundred, and then you are only saving fifty cents per unit.

Wait until you have substantial orders in hand before placing a large duplication order. In some cases the duplication house can drop ship your order if the quantity is large enough, in which case you would supply label stock and sleeves for them to complete packaging. Extra service will certainly cost extra, but you might be surprised at just how little it will cost compared to hiring temporary workers to handle the task.

In all cases you should make certain that you receive samples of the duplication run prior to shipment. You are the last step in quality control on your product so make sure that you are getting the quality you are paying for, and that the right tape is going in the box.

Marketing and Distribution

Although you might be able to arrange placement in local stores on your own, it can be a great deal easier and certainly more profitable to have a large distributor handle your title. One distributor that currently handles sales to about 30 percent of the independent video rental store market is Comtron in Des Moines Iowa (800) 621-1333. Distribution agreements are somewhat standardized, but that doesn't mean there isn't room for negotiation. Percentage of sales agreements are often the only way you will be able to get your title "picked up" by the distributor, but don't sign a percentage of sale contract that is in any way exclusive in nature. This type of agreement gives the distributor the ability to "shelve" your title in favor of another similar title they may deem more desir-

able, leaving you with no legal recourse.

Far and away the most advantageous agreement is a simple order by quantity, applying discounts to volume orders. This gives the distributor an incentive to place large quantities in retail distribution thereby giving you a quick return on your investment.

There are other means of direct sale distribution that might apply to your particular "How-To" title depending on its content. For example, if your title deals with a classic automobile restoration such as the Ford Mustang, you can distribute through car club mailing lists, and auto parts stores. You could even place ads in the classified sections of specialty magazines such as Hot Rod, or Road and Track. If you are planning a pet grooming video, you could arrange distribution into pet stores through a manufacturer of products you might be using. This kind of arrangement can sometimes lead to lucrative agreements to produce a series of videos that highlight the use of the manufacturer's products.

Don't Forget Your Old Pal the Amiga!

Whether it's scriptwriting, video titling, teleprompter, making widow dubs, off-line edit decision list processing, MIDI music production, package design, or special effects and animation, your Amiga can help you do all these things and more, and for substantially less cost than on any other computer platform. Every day there are new developments on this computer that make it the obvious choice for the independent video producer.

I own several different computers; Apple Macintoshes, IBM PCs and Amigas. I can honestly say that I owe a great deal of my success in the video business to the Amiga. If you are just considering the purchase of an Amiga for use in video, or perhaps you have an Amiga and you are not using it to its full potential, I strongly recommend you get to know this little wonder a little better before you start your "How-To" video project. Whatever subject you decide to focus on, make it something you really enjoy, you never know, it could be your next career if you have a hit on your hands!

Learn Toaster 2.0

Lee Stranahan, former editor/publisher of Bread Box Magazine (now Video Toaster User) and author of the new System 2.0 tutorials, is holding full-day Video Toaster seminars in three major cities - Dallas, Chicago and New York, In each of these seminars, Lee will teach you all that you'll need to know to get up and running with 2.0. Subjects covered include what is means to be "in digital", tricks with Luminance Keyer, tools that open up the power of ToasterCG and ToasterPaint, and techniques to make your animations and graphics the best they can be.

The Dallas seminar is being hosted by **Metropolitan Computers, 214/702-9119,** and is being held Friday, April 17. **Sonia King** is the contact at Metropolitan.

The Chicago seminar is being hosted by **Ring Software, 708-232-0009,** and is being held Friday, May 1. The contact person at Ring Software is its owner, **Jim Ring.** There is an additional seminar to be held Saturday, May 2, in Champaign, IL. The number to call is **217/333-9436** and the contact is **Jeff Cronenberg.**

The New York seminar has been scheduled for June. Call **818/505-1464** for more information, and leave a message - your call will be returned.

Lee has taught thousands of people how to use their Toasters, and knows what people want to learn to get the most out of their editing or animation experiences.

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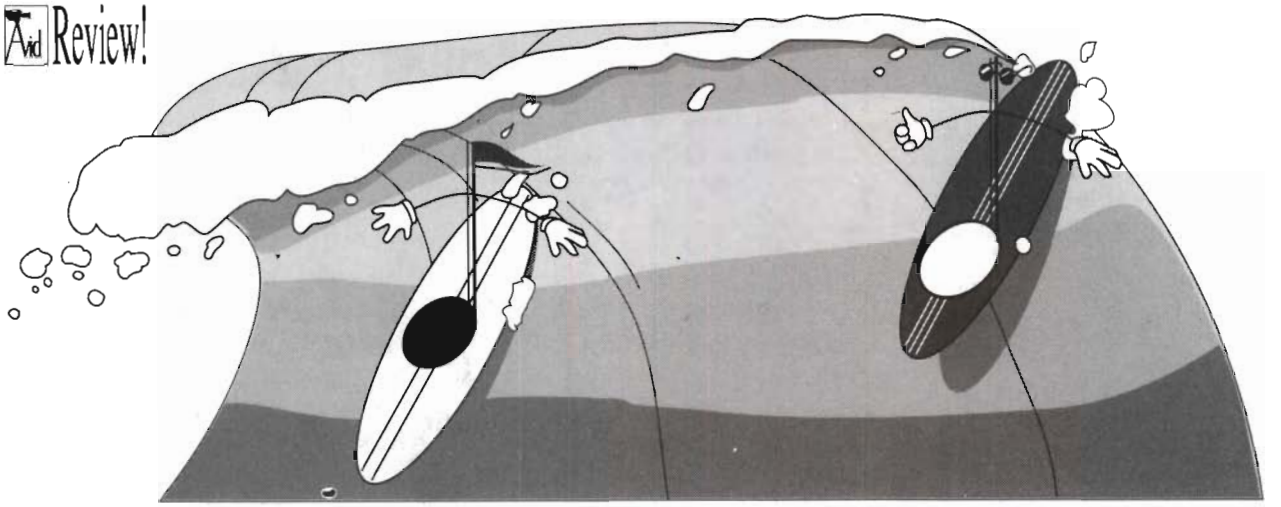
Tape 1 - Toaster Basics
Tape 2 - ToasterCG Essentials
Tape 3 - ToasterPaint Essentials
Tape 4 - Advanced ToasterCG and ToasterPaint

The tapes retails for $49.95 each, and will be available at the end of May. But - you get a 10% discount if you prepay and order all four tapes. Act now- this offer is only valid through the end of April.

*For information and ordering, contact **RAVE Video, 818/841-8277.***



Making Waves with SuperJAM!

© 1992 by Jaxon Crow

This month, we'll look at a new program for the composition of musical themes and backgrounds for video projects - SuperJAM! This relatively inexpensive program, which is produced by Blue Ribbon SoundWorks, Ltd., the makers of Bars and Pipes Professional, was designed for use by novices as well as by experienced musicians. It is an ideal program for any individual who wants to compose quick and easy themes or musical backgrounds with a minimal amount of time and effort spent in overcoming the learning curve so often found in operating a new piece of software. Unlike many music sequencing and composition programs, SuperJAM! is designed in such a way that **anyone** can make some structured music from the first time the program is booted.

The program will work with any Amiga system with a minimum of one meg of RAM and WorkBench version 1.3 or 2.04 (but not a pre-release version of 2.0). SuperJAM! is not copy protected and can be operated from floppy disk, or can be easily installed on a hard disk. For hard disk installation, about three megabytes of free disk space is required for the program and support files.

The current release, version 1.0c, also comes with a version of the program which can be installed as a Tool in the Bars and Pipes Professional program environment. (Updates from earlier releases of the program are supplied free of charge to registered owners.) SuperJAM! can then be operated within Bars and Pipes Professional's PipeLines, allowing its output to be recorded or further treated with other Tools in the PipeLines. The programs operate seamlessly together, allowing compositional possibilities which would not be attainable with either of the programs alone. (For an in-depth review of Bars and Pipes Professional, see the January and February '92 issues of AVID.) SuperJAM! is a program with many layers and many different levels to accommodate the user's musical knowledge and experience and on her/his expertise with the program. This makes the program an excellent tool for enhancing a self-taught musical education! On the simplest and most obvious level, the music that can be produced with SuperJAM! resembles the music composed with the auto-accompaniment functions of some portable electronic keyboards and console organs. The major expansion on the functions of those "automatic" keyboards is in the variety of Styles that are available, and the program variations and interaction possible with the Amiga.

The Main Thing Is Style

The program is structured to simulate a six-member band, with each member able to play chords, melody, or support parts within the specified musical Style, tempo, key, and scale. A palette of over thirty Styles is included with the program, and each of the band members can perform up to sixteen musical variations within each Style. Changes in chords and scales can be introduced "on the fly," and the interaction of the sixteen possible variations played by each of the six band members gives a total of over sixteen million combinations possible within any given Style and key!

Additionally, in the Styles Window, individual Styles can be copied and edited, or created from scratch. These new Styles can be saved to disk, and over time, an entire library of Styles could be built to use as templates in original music scores. (Frequently, producers need numerous pieces which contain different voicings and variations within a single production or series of productions.)

Structure And Operation

When SuperJAM! is first booted, you are presented with the Quick Strip and Keyboard Window. The Quick Strip is a row of buttons across the top of the

screen with the names of some of the other windows listed on them, allowing immediate access to those windows at any time. The Keyboard Window contains a set of controls for tempo and key signature, as well as buttons for the selection of Styles and assignment of chord types to the individual notes (i.e., Major/ Minor 7th, Diminished, Suspended, etc). The window also holds a small keyboard for the input of musical notes and chords. The keyboard indicates which notes are within a given key and scale. Notes and chords can be played in this window in any of three different ways: by using the Mouse, the Amiga keyboard, or MIDI keyboard. The Keyboard Window also holds buttons which open the Band and Section windows.

The Band Window is where the assignment of voices for the six players is accomplished. Each of the six players is labelled with an arbitrary name: Drums, Keyboard, Guitar, Bass, Strings, and Lead. (The names actually have nothing to do with the sound or instrument being played, for example the Strings could be playing a harpsichord or a tambourine instead.) Each Player is represented by an associated icon which is used throughout the program. The Players can be assigned to any of the sixteen MIDI channels, or assigned a TurboSound instrument. The octave can be set for each Player, and a MIDI program number (or name) and relative volume are also assigned here.

The Section Window contains a grid which is used for the assembling of chord changes into Sections. First, the Section must be given a name, and the number of measures is set. Each of the six Players is represented by a row of colored boxes, which are used to activate or mute the playback of an instrument on each beat within the measures. Chord changes can then be entered on the grid in any of the three different methods: Mouse, Amiga keys, or MIDI. These Sections can then be chained together into Songs (in A-B-A, or Verse-Chorus-Verse fashion.)

The Song

The Song Window contains a list of the completed Sections. These Sections are performed by the program in the order in which they are listed. The program selects from the variations within the chosen Styles, and executes the chord changes as they are specified in the Section Window's editing grid. A certain degree of improvisation is provided by the computer in its random selection of different variations within the Styles. If you choose to save a particular passage, a Snapshot can be made of a set of measures, eliminating the introduction of any further variations. Additionally, a single lead (or melody) track can be recorded on top of the finished Song.

TurboSounds

One of the major selling points for SuperJAM! is its ability to exceed the Amiga's four voice limit. Normally, with any other Amiga music software, it is only possible to produce four sounds simultaneously. This is the limitation of Paula, the Amiga's custom four-voice sound oscillator chip. Most Amiga music and multimedia programs will allow a large number of voices to be loaded into RAM for access by the program, but only four sounds may sound at any one time. (The number of voices available in memory in most cases is limited only by the amount of RAM installed in the Amiga, the size, or length of the sounds, and the sample playback rate.)

Normally, each IFF sound sample (or waveform) is reproduced over the span of an entire octave (twelve notes). The pitch is transposed for each note in the octave by either speeding up or slowing down the playback speed, thus, altering the pitch produced by the oscillators. However, SuperJAM! handles sounds in a very different manner. With SuperJAM!, the pitch is set for each individual note as it is saved to disk. Since each note in the octave requires a separate sample to be used, the size of an entire octave of sounds is considerably larger than "normal" IFF sounds. It is therefore necessary to be very conscious of the size of your samples, as they can rapidly devour valuable RAM and disk space.

As each note is triggered, its waveform is summed, or added to the total soundwave which is produced by the oscillator. The major drawback to this method of sound production is that only ONE voice is used, so the output is monophonic. (And the relative signal-to-noise ratio is also proportunately lower.) TurboSounds are useful for sketching out multi-timbral musical ideas, but for your finished productions, MIDI sound modules are highly recommended for clean, high-fidelity audio output. As the SuperJAM! manual states, "although TurboSound Technology offers you the opportunity to create multi-timbral arrangements on your Amiga, it can't compete in sound quality with even the least expensive MIDI instruments." The number of TurboSound voices that can play simultaneously depends upon the speed of your Amiga's processor. A stock Amiga will only be able to produce a portion of the sixteen voices at any one time. TurboSounds can be played at three different sample rates: 4132 cycles, 8364 cycles, 16728 cycles per second. An unaccelerated Amiga cannot play at the highest rate. And there is a trade-off;

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each doubling of the playback speed cuts the number of voices that can be produced simultaneously is cut in half. As is the case in all digital sound production, the higher the playback speed, the better the sound quality. (In digital sound, the frequency of the sound, also expressed in cycles per second, cannot exceed one-half of the playback speed. In other words, a sample which is being reproduced at 8364 hertz will yield a top audio frequency of 4682 cycles per second. This principle is called the Nyquist theory.)

The SuperJAM! TurboSound system includes a full-featured sound editor, which is similar in appearance and function to many other Amiga sound editor programs. (Standard IFF-8SVX samples can be imported and converted to the TurboSound format, but they cannot then be saved in the IFF-8SVX format.) The waveform is displayed graphically, and a full complement of editing features and special effects are available. Samples can be cut, copied, and pasted; they can also be looped, cross-faded, transposed in pitch, fine tuned, and shifted or moved for placement on the keyboard. Special editing effects include: digital filtering, compression, expansion, fade in/out, inversion, and centering of the sample.

TurboSamples

Another unique feature of SuperJAM! is the program's ability to record the actual sound of the performance as it is played by the internal sounds (Turbosounds). This musical performance can be saved as a TurboSample file, and can be played back with the TurboSample Player Program (which is provided with SuperJAM!) on any Amiga computer, even without using the SuperJAM! program. The ARexx-compatible TurboSample player program is also accompanied by extensive instructions for the operation of the program with ARexx scripts. In this way, the sound file can be used in conjunction with any other multimedia program, such as Showmaker or AmigaVision. These TurboSamples can also be recorded directly to floppy disk. A floppy can hold about one and one-half minutes at the standard Amiga IFF sound format (8364 hz.), and about twice that length at the slower sampling rate. Due to the Amiga's disk-drive speed, the highest record/playback rate cannot be used for floppy disk recording, even on an accelerated Amiga.

SuperJAM! and MIDI

It is through the use of MIDI instruments that SuperJAM! really shows its strengths. The number of voices is no longer constrained by processor speed. Each of the six Players can be assigned to a separate MIDI channel in the Band Window, and each is assigned program change and volume/velocity information. Since the Amiga's processor is not taxed by playing back internal sounds, MIDI also offers much greater multi-timbral capabilities and wider sound potential. Songs can also be exported in standard MIDI Song formats, as well as the format which is read by Bars and Pipes (and B&P Professional).

Step-By-Step

A typical session with SuperJAM! begins by booting the program, then selecting a Style (in the Keyboard Window) in which you wish to work. Double-click on the Section button in the Keyboard Window and you're presented with the requestor asking for the name and length of the new Section. A grid appears which represents each of the six players' activity on each individual beat of the Section. Using the Pencil tool within the Grid, chord changes can be assigned to the beats of the measures. (The Pencil tool automatically converts to the Magic Wand tool in order to change chords which have already been entered.) When you are satisfied with the set of chord changes you've assigned, you can again click on the Section button in the Keyboard Window. You'll again be presented with the name and length requestors for the latest Section. Tempos, voice assignments, and Styles can be mixed and matched in the individual Section Windows. Each separate Section can be played in a different Style, at a different tempo, or by a different Band. As each new Section is created, its name appears in the list in the Song Window. These Sections will comprise the finished song.

Open the Song Window and you'll see a list of the Sections you've just created. The completed Sections can be duplicated, altered, and moved, and the completed song is constructed in the Song Window. The Sections are played in the order in which they appear in the Song Window by using the Play button in that window.

SuperJAM! also has the ability to save many of the different elements which are used throughout the program. Some of these are interchangeable with Bars and Pipes Professional. Custom chords and Styles, Band configurations, including instrument names, and Drum Maps can be saved independently, allowing the building of libraries of frequently-used parameters to be called upon in future projects. Numerous preset instrument and drum assignments are supplied with the program.

Users of Bars and Pipes Professional should find SuperJAM! of particular interest. The program is a logical addition to B&P Pro, with its modular design and open-ended system of Tools. The overall look of both of the programs is very similar, and the operation of many of the editing tools (Pencil, Eraser, Magic Wand, Magnifying Glass, etc.,) as well as the chord editing window, and other features are basically identical in form and function in both SuperJAM! and Bars and Pipes.

SuperJAM! should be extremely useful to video producers who may have no musical experience, but who want to compose some **royalty-free** original music in a familiar style. Anyone interested in using the Amiga as a tool in a MIDI music system, but who may be a bit intimidated by the complexity of other sequencers should take a look at SuperJAM!

Jaxon Crow, veteran independent producer of Electronic Music and Video, has just completed AMIGA MUSIC FOR VIDEO, Volume One. He is available for questions or consultation at: Neon Tetra Productions, P.O. Box 876, Hot Springs National Park, AR 71902, (501)321-1198. Call or write for a free catalog of audio and video tapes.

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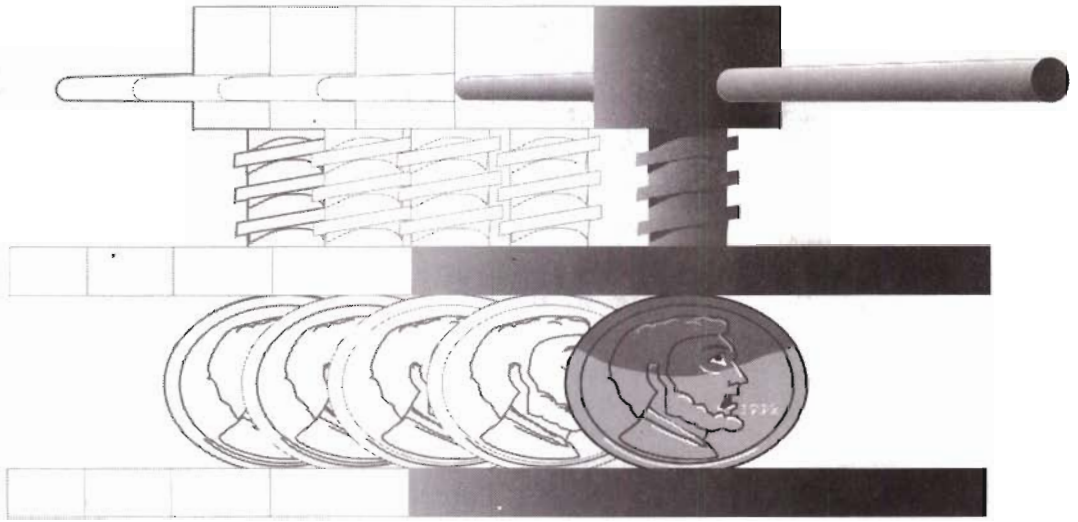

The BCD 2000A Single Frame Controller
Animation on a Budget

© 1992 by David Duberman

3D computer graphics is one of the sexy media stars of the 90s. If you want to get started in this exciting medium without breaking your budget, look no further than the Amiga. There's a real wealth of terrific software for modeling, rendering, and animation out there, starting with the crown-sharing champs Imagine and LightWave, and extending to such contenders as Real 3D, Caligari, 3D Professional, and Raydance, not to mention great support products like Pixel 3D and Interchange, most at prices that won't even pay for a new operating system on other platforms. If you don't have the time or talent for modeling, you have access to a rich assortment of ready-made 3D objects available commercially and in the public domain.

So getting into 3D graphics on the Amiga is a relative bargain. The next step is speeding things up so you're not waiting a day and a half for every picture. Prices of 68030 accelerator boards have dropped drastically in recent months, so if you've been saving your pennies, now's the time to upgrade—values have never been better. Next, there's photographic-quality output with millions of colors. DCTV, Firecracker, and the Video Toaster are proven winners, and there are some promising up-and-comers in the wings, most notably GVP's IV-24 and the Harlequin board from Europe.

Finally, there's the matter of committing your animations to videotape for mass consumption. The various techniques are discussed in this and other forums at great length, but for consistent, professional results, frankly, single-frame recording is the only way to go. Wait, don't turn the page yet!

Doing It for Less

I know you probably can't afford $6,000 or more for an industrial single-frame setup. Would you be interested in knowing how you can get into professional single-frame recording for less than $2,000? If you have an Amiga 2000 or 3000, the BCD 2000A single-frame controller and a good used video tape recorder (VTR) can get you rolling for a good deal less cash than you might have thought. The BCD board, which works with a wide range of parallel and serial VTRs and videodisc recorders and players, retails for about $1000. I used it with LightWave 3D, part of NewTek's Video Toaster system, to perform single-frame recording with an inexpensive used professional video deck.

The Sony VO-2860A videocassette recorder, manufactured in 1980, is a solid no-frills workhorse of a 3/4" editing deck. You can find them used for under $1000—sometimes well under. Check with local video production houses, and ask them if you can try it out first. While not designed for single-frame recording, the 2860A can with sufficient patience and coddling be coerced into performing a reasonable facsimile thereof. An optional parallel remote controller is (was?) available from Sony. But by plugging the Sony into BCD 2000A controller, your Amiga computer becomes a far more powerful remote controller.

Insert Tab A in Slot B

This single-frame controller board is designed to be inserted into a slot in the Amiga 2000, although I see no reason why it wouldn't work with an Amiga 3000 or 3000T. The board only takes power from the slot and connects to the Amiga's serial bus via an internal connector. You could actually mount the board in an separate powered chassis that could also take time-base corrector and V-scope boards and use an optional connector offered by BCD to connect it to the

computer's external serial port. I found that the communications with the BCD board didn't work correctly when I had a modem connected to the external serial port, even when it was turned off—I had to remove the cable. Once connected, you can communicate with the controller (and thus the deck) from the keyboard using the provided special program called BCDComm or any other terminal program.

Commands to the controller usually take the form of a four-letter word followed by an optional space and a number. For example, FIND3000 fast forwards or rewinds to frame 3,000 minus the preroll, and PLAY 3500 means play from the current position to frame 3,500. You can concatenate commands and put them in a loop, for example:

```
LOOP 5;FIND 3000;PLAY
3500;WAIT;LEND
```

which plays frames 3,000 to 3,500 five times, rewinding in between. If you don't use the WAIT command the commands pile up and you only get one play.

You can also specify frames in SMPTE time code; colons and leading zeroes are optional. By the way, SMPTE time code is simply a way of specifying frames in terms of hours, minutes, seconds, and frames, using the convention of 30 frames per second. So the SMPTE frame 00:01:00:00 (one minute) would actually be frame 1800.

Other tape transport commands include FFWD (fast forward), REWD (rewind), REJE (eject tape or disc), and WRIT, which rewinds the tape and sets the frame number to 0 in preparation for SMPTE time code generation.

Single-Frame Recording 101

Before we go any further, a brief explanation of the principles of single-frame recording is in order. When a computer program such as Lightwave is finished rendering a frame, it sends a command specified by the user to the controller via the serial port. The command in BCD's language is APND 1, which means to record one frame and advance the BCD's internal frame counter by one. The mechanics are actually a little more complicated, because you can't just start up the tape recorder and put it in record as you would with a home VCR. First the recorder has to be backed off a number of frames before the frame to be recorded, which is called a preroll. It's necessary because it takes a little while after the motor starts before the tape comes into position on the play/record heads (called threading). The Sony requires a preroll of about 12 seconds or 350 frames, which is quite a bit; most decks require 180 frames or less. That means when you're going to record or play starting at frame 2000, for example, you'd have to first back off to about frame 1650, and as mentioned the FIND command does just that.

When the record command is given, the preroll has already taken place, so the the tape starts playing and frame information is conveyed to the controller. At the precise specified frame, called the edit point, the record circuitry is turned on and then off again immediately. The tape continues playing for a second or so, then stops and is immediately rewound to the new edit point (the old point plus one) minus the preroll, to again await the APND command.

One problem with the Sony 2860 deck is that it can't record a single frame; when instructed to, it actually records two or three. This doesn't hamper ordinary single-frame recording, as you normally lay down one frame after another. As long as you can cut in at a precise point, which the Sony certainly can do, it doesn't matter if it cuts out a bit late. Just keep bumping the cut-in point by one and you'll overwrite the extra frame or two left by the previous edit. However, forget about inserting a new frame into an existing sequence—you'll have to re-record all subsequent frames as well.

Initializing the System

The BCD controller requires a certain amount of setup, which really is no chore thanks to two programs provided on the accompanying disk. The first is SetBCD which gives you a menu format for setting various options and then saves the settings in a script file. Executing this script file from the Shell or CLI invokes the second program, TellBCD which simply sends a string of BCD commands out the serial port. Here's the contents of the setup file I used successfully with the Sony 2860:

```
TELLBCD"TALK1;ERR?;TYPE18;
EDTP5;PROL350;DLYI3;
DLYC0;DLYU2;WTIM70;EDTP
5;INIT;STAT;VERS;FRAM:"

TYPE RAM:BCDREPLY.TXT
```

The first command is TALK1, which sets normal communications with the BCD controller, that is echoing of all typed characters and returning of the > prompt after an edit. The latter apparently causes problems with some 68040-based systems, as it did with my Progressive Peripherals board. Only by issuing the TALK2 command to disable character echoing was I able to avoid intermittent crashes while rendering to tape.

The next command, ERR? returns the current BCD error code and also clears the board's error status, if any. This is a good way of starting off fresh. Following this we have TYPE18, which lets the BCD controller know what type of deck we're using. Because of certain unique

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characteristics possessed by the Sony 2860, 18 is a new TYPE developed especially for that machine, thanks in part to the efforts of your dedicated correspondent.

Next comes EDTP5; Edit Type 5, which means video insert. Other edit types are no edit, audio 2 insert, assemble, audio 1 insert, audio insert 1 and 2, and different combinations of video and audio inserts. After this is the preroll setting; in this case, 350 frames.

Following this are three delay settings, all in 3-millisecond units and used for fine-tuning things. DLYI is delay in; DLYC is delay cut-in; and DLYU is delay cut-out. It's hard to see how these actually affect your recording unless your deck has a jog-shuttle control so that you can easily move between frames and view a single frame. Alas, the Sony does not, so there's a lot of trial and error in determining the proper settings. If you use or plan to get a Sony 2860, try the above settings; they may save you a good deal of time. If the animation playback seems jerky, try increasing both DLYC and DLYU a unit at a time (e.g. 1 and 3, 2 and 4, etc.). There's also the WTIM setting which controls the actual edit hold time in three-millisecond units. 70 worked well with the Sony deck I was using.

The next four commands perform some basic housekeeping functions. The INIT command just plays the tape for a second so the controller can determine the SMPTE code type (BCD supports both drop frame and non-drop frame, plus others) and current frame number. STAT displays the last command sent, current error and frame numbers, whether or not the tape is moving, and the tape ID number. VERS shows the BCD board's EPROM's version number, and FRAM returns the current frame number. Incidentally, BCD offers a useful option in the form of a two-line LED display in an attractive wooden box that continuously shows the last command (or error) and the current frame number in SMPTE time code format.

The last line in the setup batch file uses the AmigaDOS Type command to print the reply from the BCD controller, BCDREPLY.TXT, to the Shell window, so you can see if any major errors occurred.

There's one important command which isn't in the setup file. The EDOT command sets the previous edit-out point, which is the new edit-in point; that is, it's the next frame to be recorded. As you might expect, it's different for every recording setup, so it doesn't make sense to put it in the initializing batch file. But you mustn't forget to issue it before a recording session. Otherwise, it defaults to frame 0, which makes prerolling kind of difficult.

Striped Tape

You might be wondering how the controller knows where it is on the tape. As mentioned, SMPTE time code is used to identify each frame. Most serial (i.e. really expensive) VTRs can read and write their own SMPTE code, so the controller simply gives the deck a frame number and the deck takes care of the rest. Parallel decks in general don't possess this capability, but fortunately the BCD controller can provide all SMPTE time code handling functions for them. A special connector goes between the the controller and the VTR's audio circuits. The board records the time code, called 'striping' the tape, onto one of the tape's audio tracks, then plays it back to determine the current frame number. Because the Sony has two stereo audio tracks, the SMPTE code doesn't interfere with normal audio recording functions.

And finally there's the append command, APND1, which LightWave issues when it's finished sending an image to the frame buffer if Recording is turned on and if you've entered it as the Record Command. Of course, this command can be issued from any software, not just LightWave. If you use DCTV as your frame buffer, you could use an ARexx or AmigaDOS script to display a frame, then issue the APND1 command with the TellBCD program in a loop. As long as you have a way of getting video output to a recorder and a sequence of frames to record, or even an animation with controllable display software, the BCD controller can give you silky smooth animation onto videotape. Naturally, this means that you'll have to render more frames for smoother motion, but all restrictions concerning the number of moving objects or camera movement are lifted, and the feeling of freedom is an exhilarating one.

A few more thoughts on single-frame recording. It places enormous stress on the machine, no doubt about it. When you buy a used machine you may be getting one that has performed thousands or hundreds of thousands of edits; you have no way of really knowing. If it has been well maintained it may last for years, but you must continue to have it serviced regularly. The Sony is a noisy machine, but it's not like the annoying insect whine of a hard drive. Its sound was described to me by an associate as 'a washing machine', and its clunking and whirring really does remind me of one.

In Conclusion

If you're familiar with board installation you should have no problem with the BCD controller; otherwise, have your local technician do the job. It comes with a complete manual in a small three-ring binder which documents both the board and the accompanying software, and several addenda sheets. One program not mentioned previously is VCS, which according to the manual is "designed to simplify the calibration of BCD Video Controllers for animation purposes." It gives you gadgets for controlling the VTR and performing various calibration tasks; I found the keyboard approach more effective for my purposes. You also need a cable set, which can cost up to $150 extra.

The BCD 2000A controller works reliably and once I got the settings right, gave very consistent results with the Sony 2860A VTR. Incidentally, I received friendly and helpful support from Bob Howard, one of BCD's principals, while conducting research for this review. When using products of this complexity it's good to know there's someone to call for help. There's no reason the controller wouldn't work even better with inexpensive parallel decks designed for single-frame recording such as Panasonic's AG7500 recorder. If I can get my hands on one while I have the controller on loan from BCD I'll report on the results in these pages. If you have any questions about the BCD controller or single-frame recording please drop me a line in care of AVID.

Hash's Animation:Journeyman

© 1992 by Dr. R. Shamms Mortier

When Animation:Apprentice first hit the stands a couple of years ago, it was one of the most unique Amiga animation products around. Martin Hash's software has always been focused on allowing the Amiga artist to design and animate organic figures, as opposed to the cliche´ reflective spheres over checkerboard planes. Animation: Apprentice suffered from a very complicated interface and a poorly documented manual at its inception. Hence, even though it rewarded Mr. Hash handsomely and was a major part of his work for a Masters Degree in Computer Programming, I think it fell short of finding the true depth of its potential audience and market penetration. I don't know of many reviewers other than myself who actually bothered to write about it, because it needed a dedicated and time-consuming beforehand study so that it could be written about authoritatively and honestly. It was not software for the faint hearted, which also seems to be true of Animation:Journeyman. So we might ask the question: If Animation:Apprentice earned Mr. Hash a Masters Degree, is the beefed up "professional" Animation: Journeyman comparatively worthy enough to get him a Doctorate? Let's take a look.

The Manual

The manual is very thick and full of detailed tutorials as well as technical references. AJ's (Animation:Journeyman's) manual is thorough and the language is not too technical for even beginning users. In fact, in the Hash fashion, it contains a good deal of general information concerning the art of animating. The table of contents allows access to most needed information, but this software requires that you access the manual frequently, and an index would be a great time-saver. It comes in a sturdy 3-ring binder, so the pages can be opened flat for study (and you will need to study this software!).

General Overview

Previous owners of Animation: Apprentice will have little to give them security in this new Hash country, and might as well resign themselves to starting from scratch. While many of the modular sections of the software follow the same overall conceptual path, the vehicles are totally revised and enhanced. The software comes on two unprotected disks, one holding the program and the other the needed tutorials and graphic "primitives". It's best to use the tutorial disk as a storage medium for your first experiments, though file handling in this product is greatly enhanced from the previous Hash offering. I strongly suggest that potential owners acquire a hard disk and accelerator capacity, unless you enjoy waiting a very long time while the computer renders away. The software displays rendered work in HAM, and will save picture files as HAM ("Preview" frames), and RGB IFF 24-bit pictures. Animations are saved as IFF 24-bit single frames (taking lots of storage space) or HAM ANIM5's. Intermediate files (Segments, Figures, Splines, Morphs, and Choreographies) are saved as editable ASCII files. This software is a perfect candidate for saving to the DCTV ANIM5 format, and a future upgrade hopefully might support that option.

Sculpture/Painter Screens

The goal of Mr. Hash and of this software is to allow you to create and animate organic shaped beings, a process called "character animation." We might

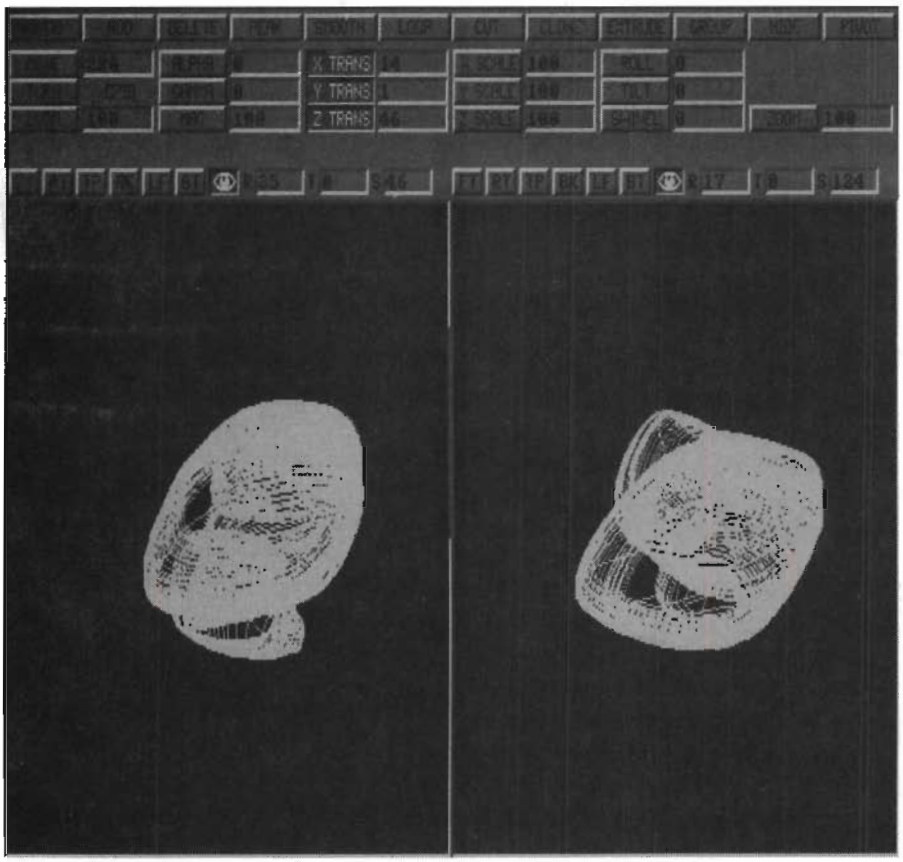


Figure 1

define "organic" here as "curved surfaced," because that is where this software shines. I have seen no other Amiga packages that assist in the production of 3D character animation as well as this one does. With practice, you could wind up creating animations for broadcast cartoon episodes here, which is Martin Hash's avowed desires for his customers.

The "Sculpture" screen is where it all begins. This is actually two beautifully integrated screens, each dedicated to specific ways that 3D objects can be constructed. The first is a "Painter" screen, and the standard "J" option (for accessing an alternate page) gets you to the Sculpture screen (See Figure 1). The Painter (see upper left of Figure 2) screen is used to design partial figures which are translated into "splined" surfaces, and which appear in full 3D at the touch of the J key. But there is much more to the Painter screen. You can also import or design full color texture IFF brushes and wrap them on these 3D surfaces! There is some limitation as to which colors of a 32-color palette can be used, because some palette positions are reserved for telling the program to generate 3D shapes; but you are left with 20 colors, enough for most texture maps. Besides, you get to preview the 3D results right there. These brushes can be mapped as standard wrap-arounds, transparent maps, or "bump maps" which use the brightness of comparative colors as indicators of "thickness" data, like a contour map. All of the usual drawing/painting tools exist on this screen, with the exception of a fill mode for the tools, though the standard bounded area fill tool is present.

The Sculpture screen allows you to work with splines, curving bezier lines that are used to construct 2D and 3D surfaces. Splines are used in every module of AJ, so it is best to become accustomed to their use if this software is to be one of your major animation engines. Getting splines to form the 3D surfaces you want may take practice, but to help, various splined primitive shapes are included in a library on the tutorial disk. Shape information is also stored as an ASCII text file which can be examined in

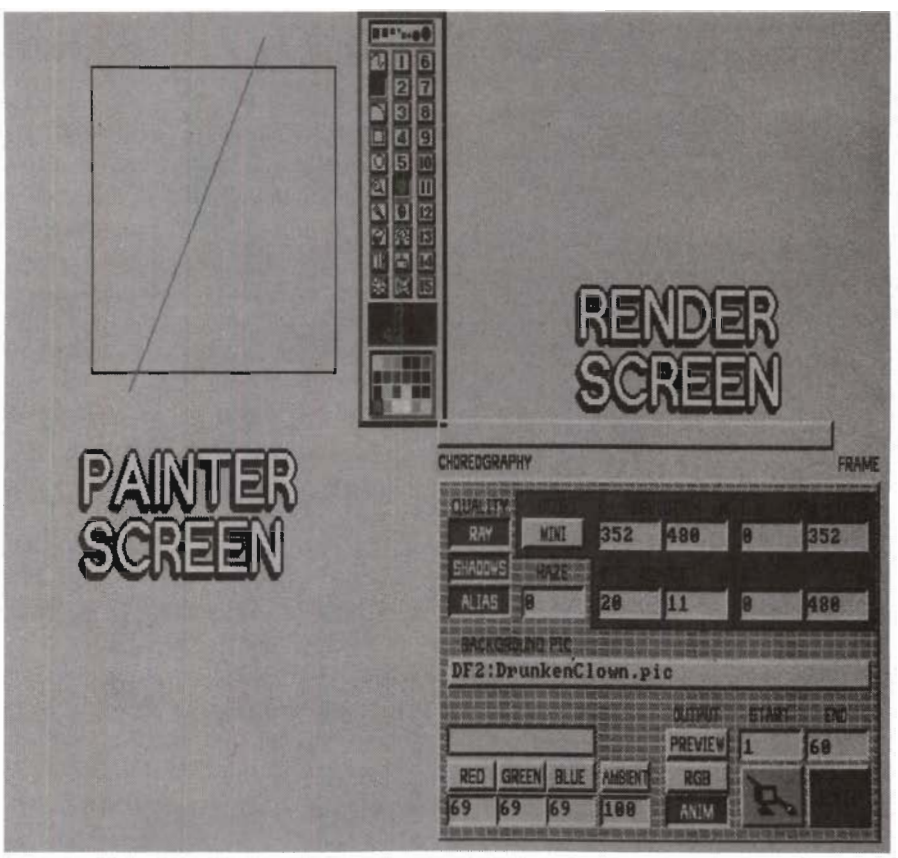


Figure 2

a text editor, and if need be, refined and revised. Finished splined objects are later connected in a hierarchical fashion as "parent" and "daughter" objects, so care must be taken to create them with this in mind. Once a spline is set on the screen, it can be pulled, rotated, and resized in several ways, so that very complex shapes can be created. All of this is mouse interactive, though numerical input areas are also provided for fine tuning. When the skeleton of a shape is underway, its polygonal 3D surface can be previewed at any time by simply toggling the Painter screen to the front and "rendering" the preview. IFF images can be decaled to various parts of the rotatable 3D surface a step at a time, and the previewed results can be seen very quickly (see Figure 3). Other Amiga modelers focus upon a three or four view choice, but in AJ you can view your creations instantly from any of seven views: Front, Right, Top, back, Left, Bottom, and Orthogonal. "Orthogonal" angles can also be changed, giving you unlimited options. Whichever you choose will be the way your previewed fill looks on the Painter screen. All spline curves can be adjusted in real time by dragging the mouse. This module alone is a class act, and an indicator of some of the most option oriented and creative computer graphics programming this artist and writer has seen on the Amiga to date. It takes advantage of those features that the Amiga does best. But wait, we've only begun...

The Character Module (see Figure 4)

The character module allows you to define the hierarchical relationships of various elements (segments) of an animated character, so that movements connected to a "parent" structure pass on their movements to "daughter" structures. At the end of this a full character figure can be saved out. You can choose to make individual segments invisible when the screen looks too complicated. The main segment that causes all others to move is called the "Patriarch" segment. In a standard character, this might be the torso of a body. At any time, new parental roles can be reassigned in a character. A series of attributes can be targeted to a segment in this module. Among them are: Ambient Lighting, Degree of Transparency, Perceived Roughness, Specular Highlights, Mirroring of light sources, and Index of Refraction. All of these have ranges on a 1 to 100 scale. A full 24-bit color range can also be set for each segment in the character chain.

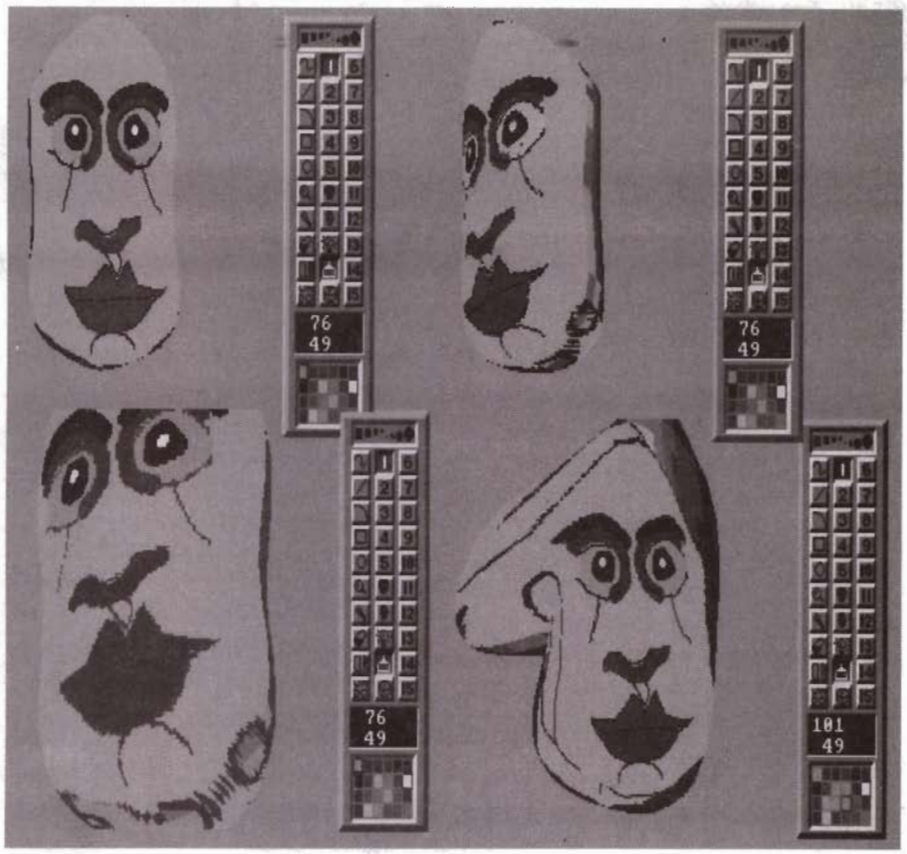


Figure 3

All this would be sufficient in itself, but Hash doesn't stop here. There are also twelve algorithmic textures that can be edited and applied to any character segment. They start as wood, marble, brick, and other surfaces, but can be altered to an almost infinite variety of textures. You can apply Wave Perturbation techniques to alter them further by interactively adjusting a texture's wave plots. You could no doubt apply these textures to large flat planes, render them, and have a myriad of 24-bit background textures or IFF textured wraps at your fingertips! OK, Martin, you're on your way to a PhD.

The Action Module (see Figure 5)

The whole process by which you create your figures builds as you go along. In the Sculpture/Painter module, you can spend time creating a library of parts or segments. You can combine these segments into many different figures in the Character module. Then each separate figure becomes the basis of an infinite number of separate animated actors in the Action module. Each separate animated actor can then be targeted to an infinite series of dances in the Direction (Choreography) section. Get the idea? You can build a whole movie in a step-by-step fashion, at each step saving out parts and pieces to an expanding library of possibilities.

There are three parts to the Action module; the Control Panel, and the Skeleton and Morph Windows. The Control Panel is the home of the Frame gadget, which is used to select the frame number that will be the "keyframe" of an animation. The software generates all of the "in-betweens" or "'tweens" between keyframe movements. Like other first-class Amiga animation packages, this allows the animator to concentrate upon the central movements of a figure while

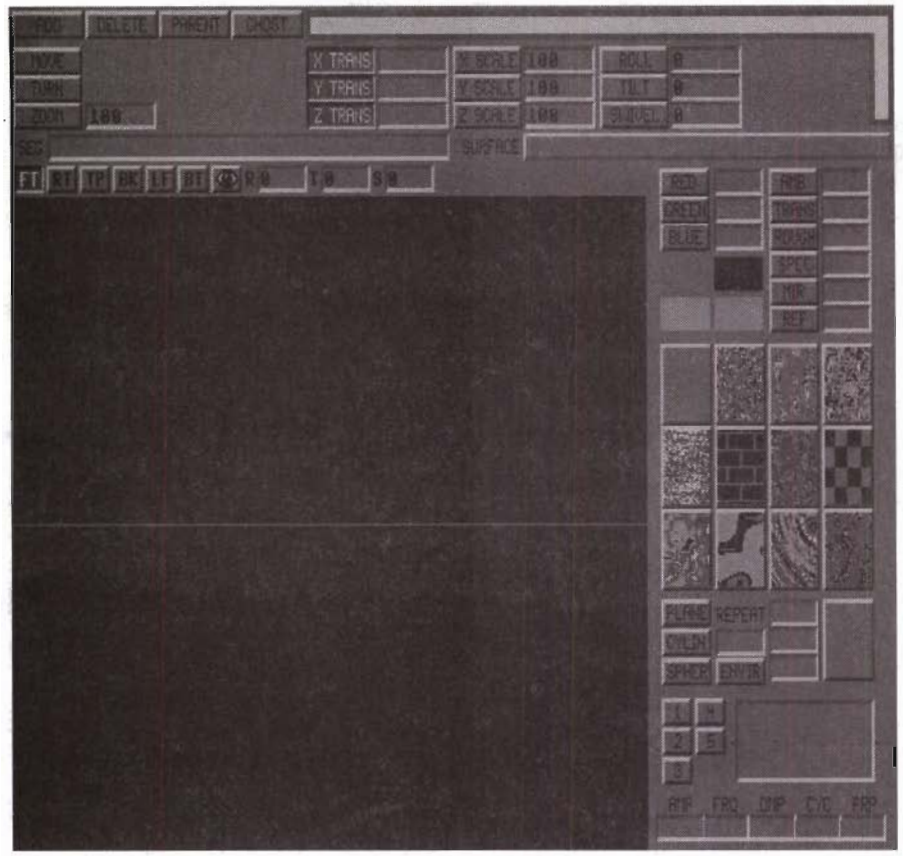


Figure 4

each, where parameters are entered graphically. Compressed wireframe renditions of the total animated movements, including Channel manipulations, are saved in a RAM:test file, and can be previewed in real time by accessing the "Display" module which is on the WorkBench screen. Two types of "Morphing" or distortion of a figure can be targeted to various segments in an animation: Muscles and Spines. With "Muscles" activated, you can make muscles bulge and distort as the figure moves. "Spine" morphing adds great perceived flexibility to an animated figure. Spines are drawn as Splines, and require the same control over spline drawing that other AJ spline modules demand. One constant use for Spine Morphs is the stretching-squeezing motion that plastic elements exhibit when coming into contact with a surface, like a bouncing ball that hits a floor. Morph files are automatically saved to separate directories inside the appropriate segment's directory.

the computer does the drudge work. The Skeleton window displays a figure (character) with all of its segments attached in whatever hierarchy they were saved in. In this window, one moves segments to keyframe positions, realizing that all movements of a parent segment will automatically move its "daughters" as well. If the skeletoned character has the same number of segments as another skeletoned figure, they are said to be members of the same "class," and all characters with the same number of segments in that order can utilize the movements of the same skeleton. A segment's scale and rotation can be altered here, as well as the targeted placement of the segment's position.

Mr. Hash has added "Channel" capability to this module as well. Channels are ways of fine tuning skeletal movement in a number of alternate ways. There are four channel movements made possible in this module: Skeleton, Spine, Muscle, and Bias. A Channel window opens for

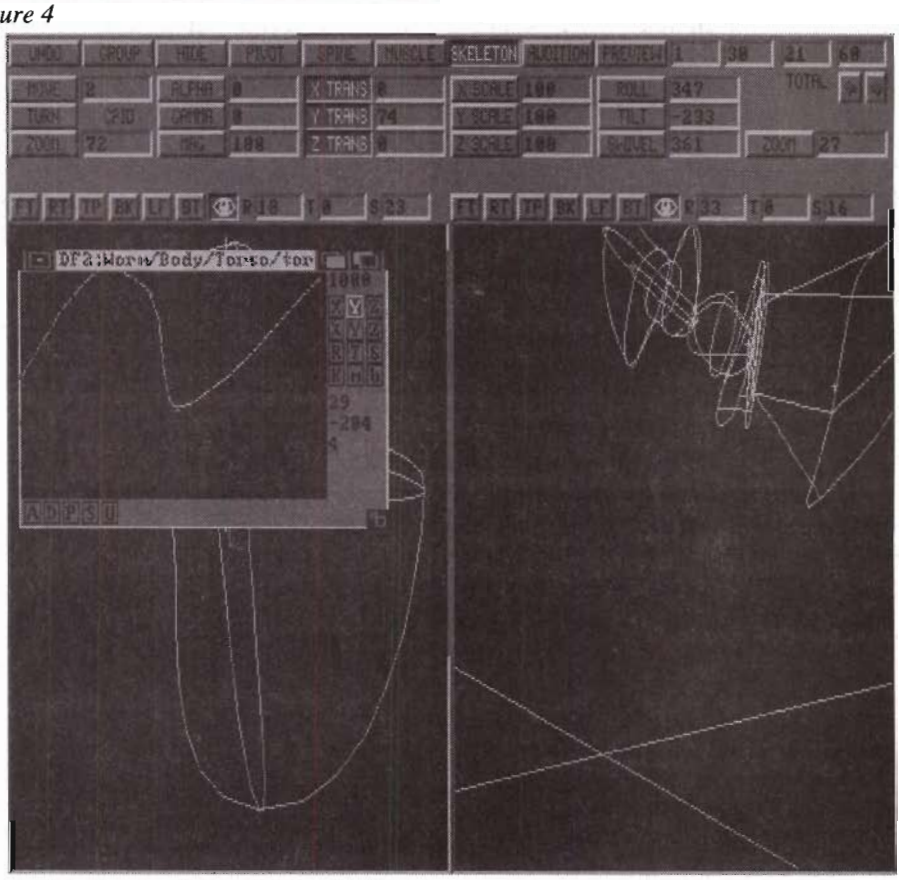


Figure 5

Direction (see Figure 6)

The Direction Module is the stage upon which a fully developed and action oriented character moves. You can add other 3D non-animated props and place them in the scene. Spline creation is again used in this module, this time as a path indication. Once completed, the choreography can serve several animated sequences, because you can change the view of the path in an infinite number of ways. Not only may characters follow a path, but also the Camera (your looking point), the Target (the point the Camera is aimed at), and the Light Sources. Lights can be added to give the scene more realism and reflective capabilities. Completely finished and animated "subfigures" can be attached to main or central control figures and set to paths. A series of Channel windows exist for this module as well, making the smooth motion of whatever is attached to a path possible.

There are two types of Lights possible; Bulbs and Suns. Bulbs cast shadows and Suns do not. Bulbs and Suns can be multicolored, and only Bulbs can have their width and focal length altered as well. The Camera has a whole list of expected and useful controls.

And Finally,..RENDER! (see Figure 2, lower right)

When all of the animation and its separate characters have been fine tuned and previewed, it's time to render the finished sequence and save it to disk. Rendering in Animation:Journeyman is painfully slow, because splines have to be calculated for each frame. A single frame can take hours to render if it is being fully raytraced with shadows and anti-aliasing set. Hopefully, a faster method will be added in an update of the software in the future. You can add an IFF HAM background picture in this module, though I would suggest genlocking it later to save time in the rendering process. Full raytracing is possible, as is the addition of shadows and anti-aliasing, but each requires more rendering time. The size can be set to "mini" if desired, which will generate a much smaller version of the animation. Haze can be added to the background to increase the perception of depth. Animations can be saved as "previews" (in HAM), as RGB IFF 24-bit single frames, and as ANIM5s (in HAM). The best results are obtained by using the IFF 24-bit option, and then using DCTV to recalculate them, and finally by loading them in DPaint or another suitable editor to apply the ANIM5 operation.

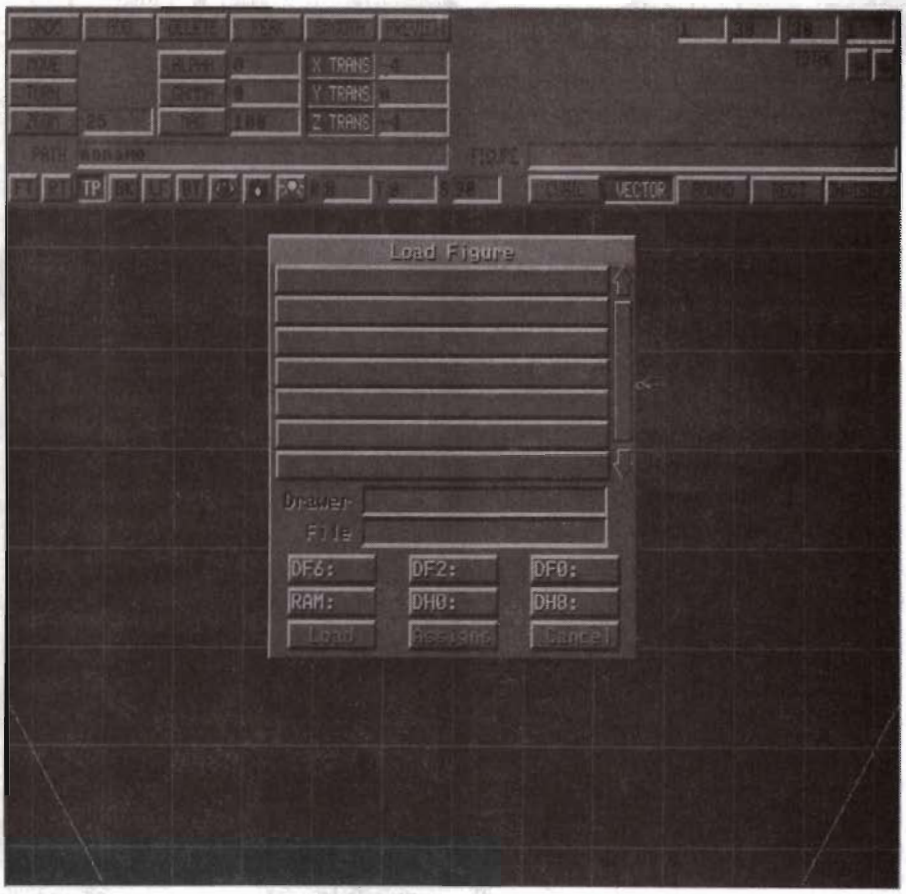
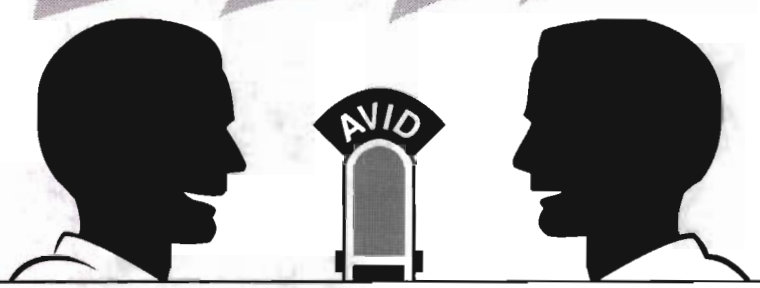


Figure 6

And So...

Hash Enterprises does very little advertising in the trade magazines compared to its competitors, and many potential reviewers of Journeyman's capacities (as well as that of the other Hash Amiga animation products) are somewhat hesitant to go through the necessary learning curve in order to write about it knowledgeably. So, the result, is that exposure to the wealth of possibilities that this software offers is less informative and prominent then it could be, effecting the size and depth of Hash's market penetration. Experienced Amiga artists and animators, however, are quite aware of the existence and power of the whole Hash Amiga product line, and many are avid (and even rabid) devotees. I have all of the Hash products, and dip into their toolboxes from time to time as projects require. Of all of the Hash animation products for the Amiga, this is the most feature-laden, useful, and promising. I would like to see more attention paid to explicit tutorial help in the Hash newsletter (and I'd like to see more Hash newsletters!), and I would ask Mr. Hash and his crew to try to develop a more time expedient way of rendering finished animations. There is a lot here to experiment with, to have fun creating, and to utilize in professional applications, from organic feeling logo animations to full blown character animated features. By the way...I'm awarding him a doctorate Cum Laude for the extensive man-years of effort it must have taken to even dream this software along, much less getting it to market. Bravo, Martin!

An Interview



WITH DAVID PAIGE OF VIRTUAL IMAGE LABS

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Virtual Image Labs in College Park, Maryland uses the Amiga to produce computer graphics and three-dimensional animations for video and scientific engineering applications. David Paige and Kevin Yorke originally started as a retail Amiga dealership in February, 1989,but the need to provide hands-on training and technical assistance while helping their clients produce computer graphics led to the business becoming a full-time graphics production company. Clients include the Defense Nuclear Agency, the CIA, the Office of Assistant Secretary of Defense, and the Department of the Army. Virtual Image Labs specializes in providing quality technical and engineering support as it relates to visualizing scientific and technical applications.

With a staff of eight people and ten Amigas, Virtual Image Labs has four NewTek Video Toasters, four Firecracker 24s from Impulse, one IV-24 from GVP that is being beta-tested, and one DCTV from Digital Creations. Most of their Amigas have 400 megabytes of hard drive space, 10 to 20 megabytes of RAM, and GVP accelerators. Both Amiga 2000s and two 3000s are used to produce graphics. Three video edit suites, equipped with Panasonic AG-7650 and AG-7750 Super-VHS VCRs are available for clients without video editing capability. One of the edit rooms will be upgraded to Betacam SP by the end of year. Animations are ultimately recorded to Super-VHS unless the client needs a better format, in which case Virtual Image Labs goes to a post-production house and records to either Betacam or one-inch.

Unlike some other computer graphics shops, Virtual Image Labs doesn't record their animations directly to videotape. Instead, they use an optical disc recorder for single-frame recording. According to David Paige, "We did a lot of looking at the ways to do single-frame recording and we came to the conclusion that videotape is not the way to do it. And the reasons specifically are, it beats up tape. Even if you've got a three-second preroll it means that every frame has been over the heads ninety times, and any video professional will tell you that you can't use tape that's ninety times old. And the second thing is it's going to beat up the machine. Any machine that's got to pre-roll that many times is going to beat up the transport mechanism. Sony does sell a high-end, one-inch machine that doesn't need to pre-roll, the BVH-2500, but that's a hundred grand. So what we decided to do was use optical disc recorders, so we use a Panasonic TQ-3031 (list price $18,995) which is an optical disc recorder. It is not rewritable, however, it's a write-once device or WORM technology, and it is wonderful. We record to that and of course there's no pre-roll. It's instantaneous recording and then we use that to dump to tape."

Besides avoiding the wear and tear on a VCR used for single-frame recording, the cost of buying an animation controller is avoided as well when using the TQ-3031. "The TQ-3031 has an RS-232 port," explains David Paige. "There is absolutely no requirement for an animation controller. We control our TQ-3031 with a null modem cable that costs $15.00. You do not need an animation controller with the TQ-3031. It accepts normal ASCII strings as its control. We have set up a way using DiskMaster. You select a bunch of files, then create a record command and that's it. Send it out to the Firecracker and it tells the recorder to record the frame." And because the optical disc recorder accepts RGB input, the RGB output from the Firecracker can be sent directly to the optical disc recorder without the need to encode the RGB signal into composite or Y/C video and losing image quality.

While rewritable disc recorders do exist, Virtual Image Labs presently has no plans to buy one, cost being the major factor. "Panasonic has a rewritable disc recorder called the TQ-4000, Pioneer has one, and Sony has one," relates David Paige, "and we're looking at those. But right now those units are in the $40,000 range, and the media, the disc itself is four times the price of the one we're using. A disc for us, double-sided, is about $300.00. A disc for the rewritable unit is $1200 to $1300. Right now we don't see that as cost-effective. "Of course, with a rewritable disc recorder the occasional mistake can be easily corrected. According to David Paige, with a rewritable device "you can fix mistakes. Let me tell you how that can happen. There are a lot of ways to preview an animation in LightWave or Imagine or whatever. But a lot of times you've just got to record it and watch it to know if it's what you like.

And once you've done that if you want to redo it you've got to use a new section of the disc if you have a write-once device. Whereas with a rewritable you can erase it and write back over it again, and that would be the advantage. The disadvantage in addition to the cost would be once you do have a good animation down (in our case we feel that it's a good idea to have that as an archive) that we can go back to time and time again without losing quality. If you have a rewritable device you're likely to rewrite it, rather than buy new discs. So you may lose a lot of material that the next day the client will call back and say 'Can you re-record it with this new title over it?' So the cost of rewritable is going to have to come way down to convince us that's the way to go. One of the new devices that we're looking at is a new HI-8 recorder from Sony (the EVO-9650) that is specifically designed to do single-frame recording, and while I generally don't believe in tape I am certainly curious about a machine that has been specifically designed for it."

In addition to government agencies, Virtual Image Labs provides computer graphics for a number of civilian companies. "We just finished a job for Waste Management Corporation. Waste Management Corporation manages landfills all over the country. And one of the projects they have is returning the space used by the landfill to the community when they're done, when the landfill is full. They cover it over and turn it into a recreational park or something like that. So this recent job was an animation to show what the landfill would look like after it had been turned into a recreational park. They went to a video production house in Philadelphia to have a video tape produced to show the community (what the park would look like). The video production house contacted us to do the animation. So what happened then is we get drawings, landscape drawings, from Waste Management Corporation as to what the landfill will look like once it's done. So we've got a terrain model, we've got buildings, we've got tennis courts, soccer fields, and so on laid out on this drawing. The drawings look like floor plans, the typical blue and white floor plans. So we need to get information from them about scale and the countour lines of the terrain, such as, what's the difference between contour lines, two feet or twenty feet? From that information we then start building three-dimensional models, first of the terrain, then of each building, the cars that are going to be in the parking lot, the basketball courts, the lights for the soccer fields, those kinds of things."

Both LightWave 3D and Imagine 2.0 are used for 3D rendering and animation. According to David Paige, each program offers advantages over the other. "I truly believe that LightWave 3D is probably the best program for doing very technically oriented animations, and part of that is the background of Allen Hastings. I think Imagine has far better, far easier object building capability than LightWave. The big advantage of LightWave that we have discovered is we can take motion data that's in ASCII text file format and put it into LightWave 3D. There's no way I know of to do that with Imagine. We are working on a proposal for the FAA and the National Transportation Safety Board for doing aircraft accident recreations on a microcomputer. We can take the data that comes from the flight data recorders on the aircraft and what we'll get back is a bunch of numbers and we stick that right into LightWave and use that to create a motion path. We're doing the same thing for the Navy's David Taylor Ship Research Center—it's their full-scale trials office—and they'll take a submarine out with sensors on the submarine, they certainly can't put a camera out on the submarine. Even if they could get it out there they probably wouldn't see anything because the water is so murky, so they get data back in ASCII text format. They want a program they can stick it into and watch how the submarine behaved based on the control input. And we can do that with either VideoScape 3D or LightWave 3D, both written by Allen Hastings. It wouldn't be as easy to do with Imagine."

Virtual Image Labs takes pride in the quality of the models they produce for their animations. "Our primary work is three-dimensional animation both for video applications, which can be flying logos and that kind of thing, or like the landscape animation for Waste Management Corporation or other kinds of technically oriented animations. Where we specialize is having the knowledge to transfer technical information into some sort of visualization. One of the guys that works with us is a full-time consultant to the FAA. Do you remember the old VideoScape where you had to build models by hand by typing in numbers? We found that to be the best way to build truly high-quality models with high fidelity. We've got a model of almost all of the Boeing aircraft, 707, 727, 737, 747, and will soon have a 777 which Boeing hasn't even built yet. We do that by getting drawings from Boeing and also going out and buying plastic models. We then type in the numbers the old VideoScape method, but I have not seen better models anywhere in the Amiga community. We even built a complete airport, and with that airport all of the runway markings are right from the FAA standards book. So any airport engineer who saw that would know that's a real airport, complete with the terminal building, fire house, tower, the whole thing. I think an important aspect of our work is the high fidelity of the models that we build. I think model building is one of the bottlenecks in producing good-quality three-dimensional animations. There's not enough good-quality models out there on the market. And we're seeing a lot of models being built that are really nowhere near anything like their real-world counterparts. I guess we are fanatical about building high-quality fidelity models from real-world models."

More than just a computer graphics and animation house that produces flying logos and simple graphics for their clients, Virtual Image Labs is on the cutting edge of computer animation, creating realistic models and animations with innovative methods and techniques. With an impressive list of demanding clients, Virtual Image Labs is proving that the Amiga is one of the best computers for producing high-quality animations at a reasonable cost.

Virtual Image Labs
David Paige, co-founder
College Park, MD
(301) 220-0072

To Key or Not to Key

© 1992 by Myke Muller

How often have you had the irresistible urge to pick yourself by the scruff of the neck and give yourself a good talking-to? This might be difficult to do in real life, gravity being what it is. But thanks to the amazing Chroma Keyer device by Perfect Video Productions (PVP), it is now possible to represent such a scene as this on your video screen.

My awareness of and interest in this new Chroma Keyer device came about one snow-less December weekend here in Southern California, as I was reading a wonderful article about it in AVID's October "Elvis" issue (Volume #2 Issue #8, see pages 45 - 48).

Prior to this time, I had been playing with the MicroSearch Chroma Key, and was getting some creative satisfaction and unbending some learning curves. I knew that any videographer/computer-user worth his or her blank tapes and disks needed to add lights to their inventory anyway, but, it was this device that ultimately led me to purchase (actually take advantage of a great deal by a good friend) a Lowell lighting kit as this was required for the best results. Still, I couldn't do what I call 'insert-ME' editing as there was no way to record my image over live or pre-recorded video—only computer generated scenes and animations—but not real life or footage of the places I've been.

Enter the box of electronic manipulating apparatus that will indeed allow you to live out and record your irresistible urge to pick yourself up by the scruff of the neck and give yourself a good talking to or better yet, give yourself a pat on the back. Enter the Chroma Keyer CK-1 by PVP - Perfect Video Productions, 1000 Escalon Avenue, Suite #2063, Sunnyvale CA 94086, (408)732-0161.

Yes, it's an American product definitely worthy of support, especially in light of the quality of support they have continued to demonstrate. The story you are about to read is about myself in a very particular situation. PVP apparently, and logically so, doesn't encourage this acquisition method (unless orders are for five or more units), as they have distributors to handle this now, still, I appreciated having the second WJ-AVE5/CK-1 modification in the country, it was an envelope pusher's privilege, and I'm very grateful. One of the distributors that can direct your inquiries to your local dealer (located in 26 states) is Vinny Bruno at Comprehensive Video Supply from North Wales NJ, (800)526-0242.

My unit (along with the first hundred units, was without a serial number) found its way into my editing bay, (which by the way has a name - Bay "B"), via an unusual route. Here goes:

Monday morning after reading about the CK-1 my call to PVP revealed the distressing news that their box would not work with my Audio/Video mixer - the marvelous WJ-AVE5 by Panasonic. Dejected was I because the CK-1 had the four distinct advantages that would have made it worth the three times cost of the other Chroma Key. #1 - it didn't require professional lighting, #2 - it could 'key' off any color, #3 - it had 'S' in and out capacity, and #4 -it could 'key' over live or pre-recorded video.

This incompatibility news caused my day to be unmade or at least clouded, and made for some mental conniptions and rationalizations. Tuesday I called and again spoke with Alex Dondysh, the president of the company. I had intended to implore the company to reconsider adapting their product to work with Panasonic's WJ-AVE5. This video mixer is still fresh on the market and **hot,** as it's not only extremely useful and affordable for digital desktop video DTV, but is also being used as a pseudo-TBC with

NewTek's Video Toaster. PVP could make lots of envelope-pushing DTV people happy, and profit while doing it. All this became instantly moot as he excitedly informed me that they had R&D'd and come up with a way to make the marriage work. Overnight! Here is a company that deserves my word for this kind of service - DEVOTICATION!

The Panasonic WJ-AVE5 (as well as other mixers that PVP can/will make adaptable to their CK-1) needed to be sent to them for modification. Keep in mind that this most certainly will void the one-year Panasonic warranty of your AV mixer. However, Perfect Video Productions is both qualified and able to carry the remainder of your unit's warranty themselves. They also include a one year warranty on their CK-1. This is confidence-building to be sure.

It's still Tuesday, and the time was now twenty minutes to 5:00 p.m., and I politely but emphatically stated that I needed to hang up. At 5:00 precisely, my transaction at the local post office was just being completed and I was assured that PVP would have my unit by noon the following day. Only moments earlier the Panasonic was being used to edit with. I wish I could get myself ready for a trip that quickly.

Wednesday afternoon revealed that they were working on the WJ-AVE5, and planned to send it out the next day.

Thursday, Alex Dondysh called and said that it was completed later than they expected, but that if UPS picked it up within the hour as scheduled, I'd have it Friday. Or, if I so chose, since he was to attend a meeting in Anaheim on Friday, he could bring it by personally, save me the postage, and help hook it up to make sure everything worked correctly. How red was my carpet?! Certainly Mr. President of Perfect Video Productions!

Friday all went well and he accepted my cash - even without a cash guarantee card - $995.00 plus tax, for the unit, the modification is $185.00 - for an AVE5, other mixers vary in price. This was service with an in-person smile! Thank you sir! By the way, the price will be coming down in about seven to eight months, but by then you'll probably be more interested in their next model which is so much more everything that I'll have to wait until another article to tell about.

Saturday afternoon with permission from SIG leader-par excellence Geoff Williams, I was showing the members of AMIGA Video-Graphics Guild how one could travel around the world without leaving the room by showing some volunteers keyed over footage of mine from Nepal and Hong Kong. Sunday afternoon I was showing similar wonders with the Chroma Keyer to the members of Upper Crust, the Los Angeles-based Video Toaster user group which Lee Stranahan founded.

By now, I'd had enough fun for a week, besides, I had to get busy with a project that was years in the 'someday-I-want-to-do' stage, yet was getting down to the do-it-now or wait until next year time-frame—my 'video Christmas card'. My rationalization for missing the Christmas mailing deadline was that it would be worth the wait by the recipients (especially since they weren't even expecting anything like it). Also there was the thought that it would actually continue the holiday spirit by it arriving just before New Year's Day and offer a kind of cure for the 'is that all I got?' holiday syndrome.

In this project, I again used footage from my travels in the Himalayas, Hong Kong, Singapore, even Disneyland behind me alternating with Amiga 1000 screens displayed by VidGen 2.0 of Christmas clip art - Chroma Keyed, while a screen blanker called Blizzard was running on a second Amiga 1000 to keep genlocked snow flakes falling in front of me. Afterwards, I audio-inserted the Christmas music.

This was intense fun, but, due to the time constrictions and other considerations, I must apologize, the ending wasn't what I really had in mind. I was going to try what they call 'layering' (to further demonstrate the CK-1's prowess), by making several passes of video recording each time adding something different. I had intended to have myself in three distinct and separate positions, perhaps one even sideways or upside down appearing at each stanza of "We wish you a Merry

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Christmas". It could've been cute, and with my Toaster delivery imminent, next year's should be even better!

But it went well overall and sixty copies were either handed or mailed out in time. The main critique concerned my impromptu narration. Some people call it stagefright—I say it's being scared scriptless— but the CK-1 performed admirably.

Speaking of better, the first modification that I made to my already modified Panasonic WJ-AVE5 was to add a Right Angle BNC Adapter (Radio Shack Cat. No. 278-116B $3.99) to which I attached a BNC to composite video adapter (Radio Shack Cat. No. 278-303 $3.99, gold plated). This was because the BNC jack that PVP had installed on the front left side plate, which is just behind their on/off toggle switch, is in a bit of an awkward position. It's a straight BNC and the cable when attached can't be bent too close to the AVE5. This alteration is also more aesthetically appealing by allowing the composite video cable to follow the contour of the AVE5 front to rear. I did the same with a right angle adapter for the front panel microphone jack so the cable there follows the contour of the AVE5 right to left.

Now that I had this unit ready to hook up to the rest of Bay "B", the realization hit of needing more cables. I use only the 400 series by Monster Cable - there are better cables, but for uniformity, ease of finding for sale, and their cost/quality, these meet my needs. I don't even unwrap the cables that come with my new equipment anymore, and I also immediately make a photocopy of the manual for personal use, this lends to a more acceptable appearance when resale time arrives.

On the back of the CK-1 four cables can be attached, (the permanently attached one is the hefty 22 watt A/C power cable). On the two jacks marked VIDEO OUT (the top right one), and the one underneath, it marked KEY OUT, I attached the BNC-to-composite video adapters (Radio Shack Cat. No. 278-303 $3.99, gold plated). These spared me the hassle of finding BNC ended cables as I had just purchased different lengths of Monster Cable composite video cables. Perhaps purists or wave form monitors can tell the difference, I can't. A note here about jacks and cables; Y/C versus S - they are for all intents and purposes on the 'Pro-sumer' level, the same animal.

To the VIDEO OUT jack of the CK-1, a composite video cable is connected to the EXTERNAL CAMERA IN COMPOSITE jack on the AVE5.

To the KEY OUT jack of the CK-1, a composite video cable is connected to the Chroma Keyer IN jack of the AVE5, this is the added modification jack from PVP and conveniently labeled by them.

To the S-VIDEO OUT jack of the CK-1, an S or Y/C cable is connected to the SOURCE 2 Y/C IN jack of the AVE5.

To the S-VIDEO IN jack of the CK-1, an S or Y/C cable is connected to the VIDEO OUT S jack of your camcorder.

To the SOURCE 1 Y/C IN jack of the AVE5, an S or Y/C cable is connected to the S-VIDEO OUT jack of another camcorder, VCR, VTR, VDP, encoded Amiga video out, or whatever signal source you desire to have projected behind you or whom/whatever will be the subject/victim of your creative cranial capers.

Here, you may substitute any composite video source signal feed with a composite video cable, also. Keep in mind that an 'S' video signal source will override a composite video signal source, meaning that if you have both entering the same channel, as is possible on the AVE5, the S video will be the one viewable. There are other black boxes on the market, such as the Sony XV-C900 Video Multi Color Corrector, and the Sony SB-V3000 Video/Audio Selector, that will allow you to select either the S or composite video source signal coming into the same input row.

An important notation on switch positions is in order here. The WJ-AVE5 must have its WIPE MODE REVERSE switch ON, and the Chroma Keyer modification ON/OFF switch ON. With the Chroma Keyer modification ON/OFF switch in the OFF position, the WJ-AVE5 will behave as normal. With the WJ-AVE5 WIPE MODE REVERSE switch in the OFF position, the subject and back-

ground will be reversed.

The S6, S7, S2, S1 numbers over a back panel on the CK-1 are used by PVP to fine tune match your Mixer with the CK-1, and the recommendation is to leave set well enough alone.

On the top of the CK-1 there are three square buttons on the far left side from top to bottom which light up green when pressed. These correspond with the round potentiometers (knobs) to their right labeled RED GREEN BLUE, top to bottom. On the far right side of the instrument are three more potentiometers (knobs) labeled KEY HUE SATURATION, top to bottom.

A recommended starting position, assuming that you're using a blue cloth behind the subject, is to press the left side square blue button (noticing that it's now glowing green), then set the RED GREEN BLUE knobs to the nine o'clock position, and the KEY HUE SATURATION knobs to the noon position. Fiddle from these positions to maximize the image quality.

For the question of why use a BLUE cloth or backdrop, instead of any other colors, I quote Kirby Carmichael, "-because it does not appear in flesh tones and can be easily left out of clothing." However, this is where the CK-1 can make itself and you shine. I've used a pure white and a pure black backdrop with good results, but these require more controlled lighting. Remember that the backdrop and the subject each require their own lights for best results.

Now for the 'hold yourself by the scruff of the neck and give yourself a good talking to' effect, the SOURCE 2 Y/C IN jack of the AVE5 will need to be connected to a second camcorder's S VIDEO OUT and be zoomed in on yourself. If you were now to go through the correct motions, with some practice and props it could look convincing. The SOURCE 1 Y/C IN jack of the AVE5 in this instance would have its feed coming from the other camcorder which would be at a different angle and pulled back to make this 'you' appear larger than the other you, ratios depending on your script and/or imagination.

For 'other' results with two camcorders hooked up and aimed at yourself or some other talent, using the SOURCE 1 Y/C IN jack of the AVE5 and the DIGITAL EFFECT A channel selected with the strobe, mosaic, paint buttons tried in different positions, while varying the MIX setting, the sixties just might be remembered.

A more 'practical' use is in an industrial setting. Take footage of your local neighborhood nuclear power plant and superimpose yourself in front of this situation. If you've preplanned this and have some appropriate effects cued up ready for instant playback on your Amiga (try Elan Performer 2), in the genlock mode, you could safely show some 'what-ifs'.

Keep it in mind that whenever any of your video/computer projects bring in monetary rewards, the 'toys' can now be re-categorized as 'tools'. Therefore these are worthwhile endeavors, just don't let on that it's so much fun.

Which brings me to this segue point of leaving these pages and getting on with commencing another article about "How to Save Money at all Costs". Although that's not ready yet, another product of mine is just about to be nationally advertised.

You special people reading this article in this wonderful magazine are privy to know about the WJ-AVE5: a professional quick reference tool that will remove the what-button-combination equals what effect memorization burden. This quality tool will let you get on QUICKLY with using and enjoying your investment in your Panasonic AV Mixer. This should have come with the manual, didn't, but is now available for $15.00 (which is about 1/100th the cost of your WJ-AVE5!). Plus, the WJ-AVEnue5 incudes tricks and tips also not included with the manual. You're on the right road with the WJ-AVEnue5. Remember that "Time is Money", so send me your money, and this will save your time.

My closing thought is on describing technology that is not up to current standards, which by the way the Panasonic WJ-AVE5 and Perfect Video Production CK-1 don't suffer from. The word is "YESTERTECH!"

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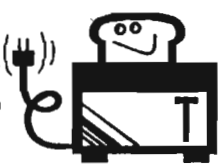

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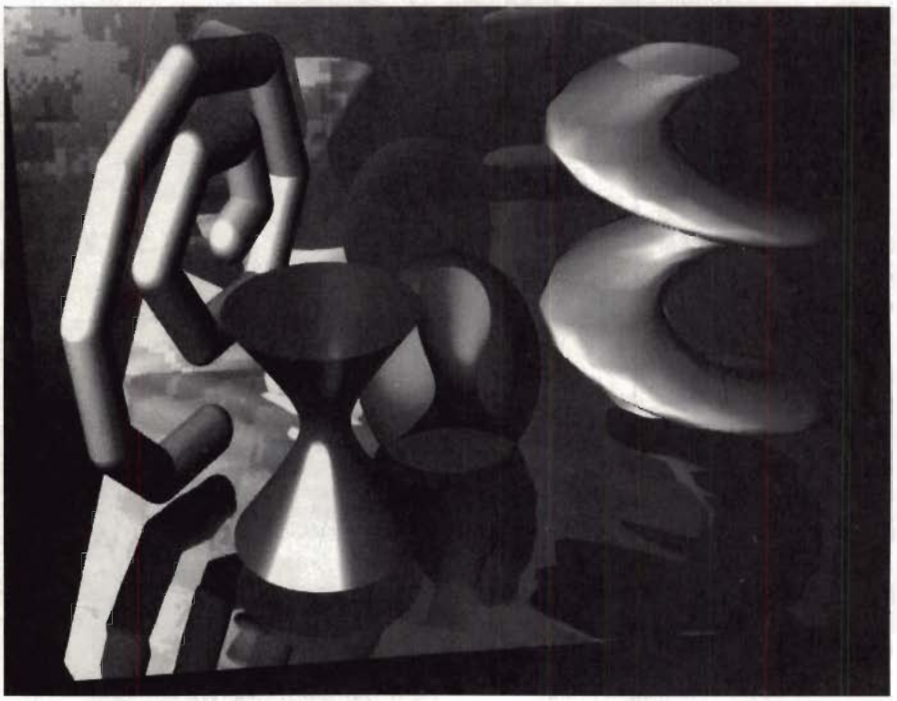

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I've been wrestling with Real 3D off and on for the last six months, and while I've been impressed with the program's overall ease of use and fast rendering, I've yet to come fully to grips with the thing. I really want to like the program—you've seen the rendered images in magazine articles, which look just terrific. It's got a real wealth of modeling tools but I still have no idea of what some of them do. The program is undeniably powerful, yet its quirkiness prevents me from really feeling at home with it. I must admit though, that the more I use Real 3D, the more I like it.

Here's an overview of the program. Developed by two brothers in Finland originally as a technical school project, Real 3D version 1.4.1 is now a full-fledged commercial modeling, animation, and ray tracing program available world-wide. It consists of three modules all present simultaneously in memory; a tri-view editor, a perspective wireframe view for animation setup, and a solid rendering section.

The User Interface

Most of the time you'll spend with Real 3D is in the editor module, which is well-designed for the most part. The tri-view shows orthogonal hidden-line-removed views from the top, front, and side respectively, but unfortunately the windows aren't labeled. The lower right quadrant contains a hierarchical list of all objects and an array of button gadgets for many common object creation and editing commands. It's too bad the oft-used commands for moving, rotation, and resizing of objects weren't included.

The editor's standard Intuition drop-down menus show various types of keyboard equivalents, involving the right Amiga key, or either Shift key, or for many commonly used commands, single-key commands (no Amiga-key hand stretch required). So for example, if you're in the editor and you want to render a solid test image, you need only press q, then r. During or after the rendering you press q to return to the solid rendering screen (undocumented), then e to return to the editor. Becoming familiar with these will save you a lot of time.

The editor uses solid modeling in addition to the vertex/polygon approach used by most other 3D programs. Among the benefits of using solid objects are easy and accurate Boolean operations, an example of which is 'carving' one object's shape from another, and smooth curved edges at any distance. The disadvantage is limited malleability of shapes, although the Boolean operations go a long way toward correcting this.

The first set of button gadgets in the editor interfaces lets you create the built-in solid shapes, or primitives. The flat shapes are triangle, rectangle, and circle, and the solid ones are prism, cube, pyramid, sphere, cone, cylinder, hyperboloid, and cut hyperboloid. You define all of these except the sphere in two dimensions in one of the tri-view windows and the shape is projected into the third by a depth set in a requester available from a menu command—this process could have been made more interactive. Other tools create more complex objects from combinations of the various solid primitives, including lathe, circular and rectangular tube, and fence.

Hierarchical Object Structure

There are also buttons for setting lamps—lights are point-source only—and positions for the observer and aim point, or target. Another creates a new object at the current hierarchical level. Speaking of which, because the program was designed for hierarchical object structure from the ground up, setup couldn't be easier. A window in the editor screen lists all objects at the current hierarchical level, and you click on an object to select it and to display its children if any, or click on the button gadget above the list to move up through the hierarchy. It only takes a few clicks to reposition an object within the hierarchy, and you can create new root objects with ease. In case you're wondering, hierarchical objects are most useful in animation so that, for example when you move a figure's arm the hand doesn't just hang there in mid-air but moves along as you'd expect. And the editor makes it easy to rotate an object at the precise point you want, as you

must specify it for each rotation.

If you need more control over your object shape, or morphable objects, the program has many powerful tools for creation and editing of polygon-mesh or 'freeform' objects, and you can import but not export Sculpt-format objects with a supplied utility program. You can perform Boolean operations on but not with freeform objects. You can also perform point-by-point editing on them.

Among the mesh-object creation tools are several for creating and modifying curves, including a fast easy spiral creation tool and another that creates a curve a set distance from another curve. There are Orthogonal and Coplanar Sweep, comparable to Imagine's Path Extrude with and without alignment to the Y axis. I couldn't get the latter to work reliably, though. There are also lathe-type tools and a skin function called Join that lets you define an object's cross-sections as curves and then connect them with meshes one by one.

There are a number of powerful tools for modifying curves or freeform meshes. Remap lets you change the number of points in an object. Smoothen can be applied repeatedly until an object's kinks become curvy. You can break or join meshes and add or remove points. Then there are the bending functions; four different ways to bend and six combinations of bend modes for a total of 24 ways of bending things. The bend functions are Local and Global, which bend part or all of an object in a U shape, and End Point and Linear. You can Bend & Move, the normal mode, or Bend & Size, which gives an anti-magnet effect. You also have a choice of 2D, 3D, or Radial bend mode. The manual illustrates all these pretty well, but I still had trouble getting a cylinder to bend 'all the way over', as it's so easy to do in LightWave Modeler 2.0.

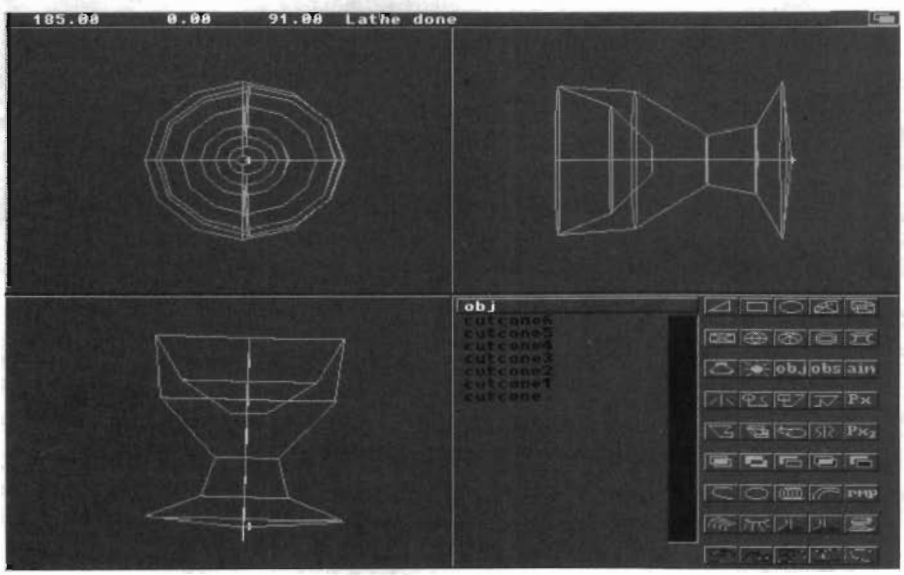
As for object's surface attributes, Real 3D takes a unique approach here as well. A set of attributes is called a Material, and is bunched together with other materials in a file. The material definition includes brilliancy or reflectivity, transparency, speed of light or refraction, turbidity (used to simulate fog), specularity and specular brightness. A material can include a single image in IFF format, including 24-bit, for mapping in a variety of ways. There's the standard color and bump mapping with variable size bumps, but there's also Special mapping which uses each pixel's green component to define transparency and the blue component to define reflectivity. And there's also Clip mapping, in which parts of the object not painted with the image are invisible. These techniques can be freely combined, but with only one image at a time.

As well as the standard wrap methods of flat, cylindrical, and spherical, there's also a unique spiral wrap method for that barber pole you've always wanted to create. Other material options include gradient, no 0-color (background image color is transparent), tile, flip, angle, unshaded, and smooth. Interestingly, there's no setting for an object's basic color here; that's done through another requester that, alas, only allows setting from a 4,096-color palette. Also done via a different command is application of a mapped texture. This isn't documented at all, so if you've been wondering, here's a hint: In flat or 'parallel' mapping, the Paint command lets you draw a straight line that represents the image's top edge. In cylindrical or spherical mapping, the image's upper edge should first be specified by clicking in the desired position in the front or side view. Then the Paint command should be invoked and the line should be drawn in the top view from the object's center to its edge, that is as a radius. This requires some experimentation, so be patient. And remember that the Fast rendering mode doesn't show any Material attributes.

Real 3D's Wildcard function is something you just don't find in other Amiga programs. You can color, replace, or delete objects in a hierarchy depending on name, material, color, or any combination. Real 3D also lets you define one macro at a time which is a combination of commands, and this can also be applied using the wildcard pattern search criteria. So for example, if you've built a human figure and want to change the color of all parts that use a certain material to red, it's a one-step operation.

Animation setup in the editor module is easy—just load your objects, set the number of frames, and go to each key frame and change things as desired. When you 'expose' an altered object in a key frame, the program remembers the new setting and gradually changes it from the old. There's also path animation, and a neat morph animation function for freeform objects with a curve setting found nowhere else in Amiga 3D software. The problem with it is that a separate copy of the morph object is created for each frame of the morph, which can run you out of memory and/or disk space in a hurry.

You can also perform a certain amount of animation setup in the



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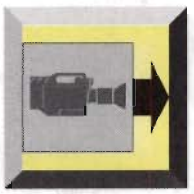

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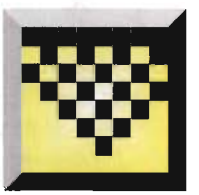

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wireframe animation module, but this is primarily limited to camera movement through and around the scene. Camera movement here is accomplished by an intuitive sliding gadget that can move up, down and sideways in a box for moving the camera in different directions. You can click in the box for small movements or drag and hold the gadget for continuous movement, and you can opt to have these movements recorded continuously or singly for animation setup. You can also preview your animation in wireframe mode here.

Finally we come to the rendering module which lets you see your objects in their fully glory. The default mode renders to the screen in 320 x 200 dithered HAM mode, with 4096 colors. Options for rendering mode include interlace which doubles vertical resolution, greyscale which doubles horizontal resolution but limits colors to 16 shades of grey, overscan, and IFF-24 or TARGA, the latter two always forcing rendering to a disk file in the respective format. Likewise, if you specify a size for any format larger than the screen, the image is rendered to disk rather than the screen.

In the Fast rendering mode, the program automatically supplies a light source even if none is present in the scene, but object shading is done only on a non-smoothed polygon basis. Other modes that show all object surfaces as defined by their materials are Shadowless and Normal, while Lampless uses an automatic light but shows materials. There are a number of other settings here, including ones that let you set the aspect ratio and define a record command for single-frame rendering to tape.

If in the Solid Render interface you turn off the Single gadget, the program renders the specified frame range, saving image files as specified in the Name field and appending the file name with the frame number. Unfortunately, it doesn't pad the number length out to three or four places with preceding zeroes, which makes using it in conjunction with programs like ADAM (formerly DAAM) difficult. If, however, you enter a filename with a number at the end, like FRAME24, the program doesn't override it.

Rendering is usually speedy, but if you abort there's no way to recover the partial image. If you're rendering to disk, the screen shows you the percentage done so far. If you're rendering to the screen, at any time during or after the process, you can confine rendering to a rectangular area by simply dragging out a box. There is some frame buffer support, and support for DCTV should be included with Real 3D 1.4.1 shortly. There will be an upgrade to 1.4.1 available from PPV—contact them for information. PPV also sponsors a 24-hour Real 3D electronic bulletin board, whose telephone number is (519) 436-0140. The modem is a US Robotics dual standard which handles both V32.Bis and HST protocols for high-speed data transfer. You'll find much of interest on the board, including animations, objects, tutorials, as well as conferences with participants from all over the world.

There's much more to Real 3D than I've managed to cover here. Once you take the time to get to know it, Real 3D is fast, responsive, highly functional, and renders great-looking images. There are some frustrating aspects to the program. For example the file requester has a parent gadget that goes all the way up to a list of available disk volumes, but isn't labeled as such; it's the horizontal bar immediately above the file list window. Furthermore, the requester doesn't alphabetize files, which makes finding a specific directory in a long list of hard disk files a bothersome chore. And the manual has more holes than a case of Swiss cheese—better documentation with lots of tutorials is badly needed.

But the best thing is you don't have to spend the $399 or so it takes to buy Real 3D just to try it out. There's a two-disk demonstration version widely available in the Amiga public domain that contains almost all of the commercial version's functionality. The demo version doesn't let you save objects or animations, or render 24-bit images, but everything else is there and the on-disk documentation actually fills in a few holes in the manual. If you can't find the demo in your area, contact PPV without delay. If you're interested in Amiga 3D, you owe it to yourself to give Real 3D a try.

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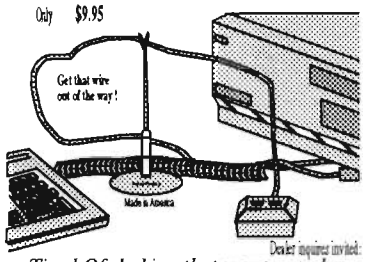

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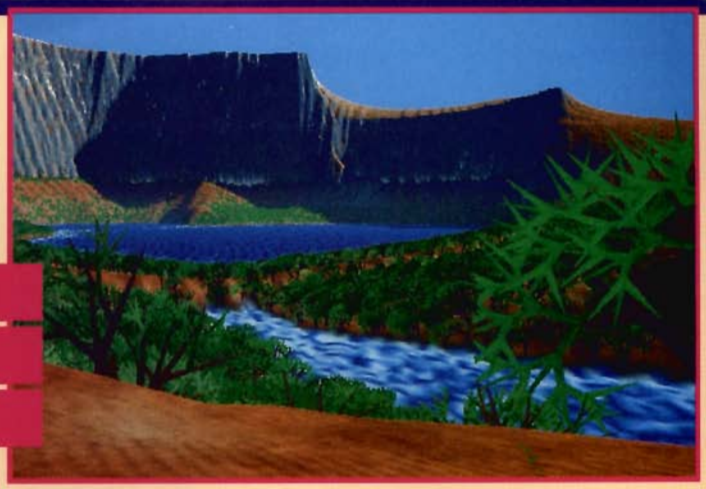

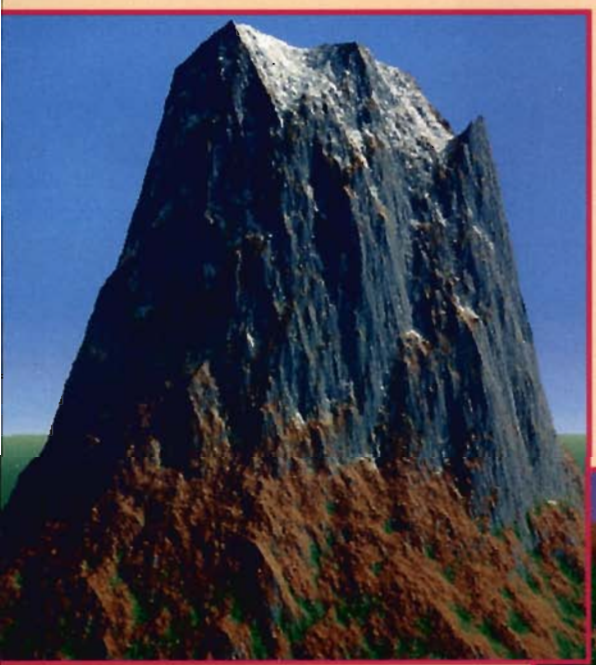

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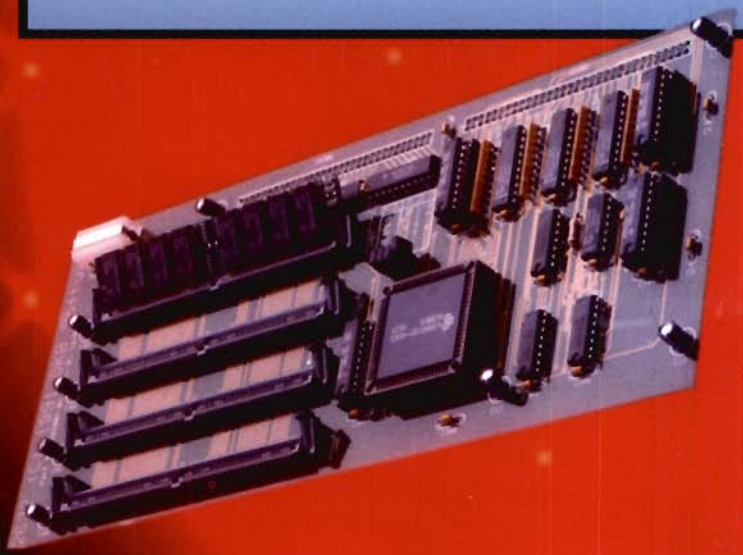

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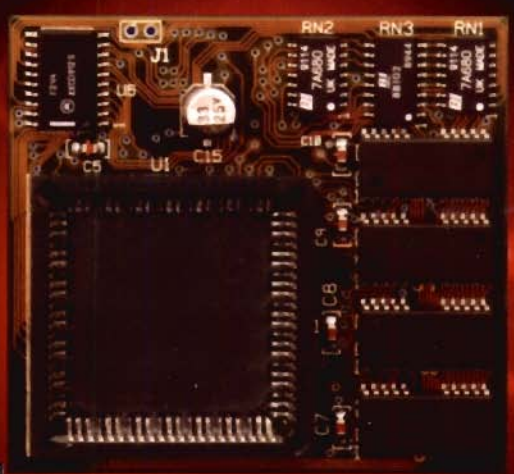

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AVID LETTER

An AVID Subscriber Supplement

April 20, 1992
7:45 AM
Silicon Gulch

Welcome back to the AVID LETTER, a monthly supplement for AVID subscribers only. I just returned from NAB in Las Vegas where we successfully launched the new "Video Toaster User" (formerly Bread Box). Because of the tremendous interest in the Video Toaster at NAB, the magazines were quickly snapped up. Our entire 4-day NAB allotment was gone in just 2 days, forcing us to have another batch shipped overnite to meet the demand. The magazines were distributed directly from NewTek's popular booth, and we benefitted greatly from the crowds that came to learn more about the Toaster.

Besides NewTek's imposing presence, there were quite a number of companies on the exhibit floor touting their "Toaster Compatible" products. Digital Processing Systems (DPS), Cardinal Video Products, RGB Computer & Video, I.DEN Corporation, Allen Avionics, CCI Electronics, ESE, Sundance Technology Group, Videomedia, Digital Creations, and Technical Aesthetics Operations (TAO) were among the firms I remember showing Toaster-related products. There was even a Toaster in a small corner of the vast Panasonic booth showing Toaster control of Panasonic equipment via Gold Disk's ShowMaker.

Of all the Toaster-stuff I saw, the item that intrigued me most was made by a small company called Cardinal Video Products. Cardinal is comprised of a couple of guys who left the Grass Valley Group about 10 years ago. One product they were showing at NAB is called the "BreadBoard", and as I far as I know, it is the first Toaster-compatible product on the market that connects directly to one of the Toaster's internal connectors. The BreadBoard is a card that mounts inside the Amiga in one of the PC expansion slots. It is useful, primarily, to folks who are integrating their Toaster Workstation into an existing production facility. It provides delay buffers, extra program and preview buffers and key signal access. I get the feeling you will be seeing more interesting Toaster products from this company. For more information about the BreadBoard contact Cardinal Video Products at P.O. Box 2617, Grass Valley, CA 95945 or call 1-800-356-8863.

There were several companies at NAB that were also showing traditional Amiga-Video products. While Digital Creations was showing their Kitchen Sync TBC for Toaster users, they were also highlighting their popular DCTV unit as well. I bragged about my prophetic DCTV prediction in the last AVID LETTER, and what I saw at NAB did nothing to diminish my enthusiasm for this hot little paint box. David and I agree that DCTV is a product worth covering on a regular basis in AVID, so you'll start seeing more and more DCTV coverage in issues to come. If you are already using DCTV and feel you have some valuable techniques to share, contact David for editorial guidelines.

Great Valley Products had a very nice booth at NAB, as well. They were showing off their new ADDI system. The ADDI system is a stand-alone 24-bit graphics workstation based on GVP's IV-24 board and some outstanding paint/animation/effects software from Europe. Coupled with GVP's obvious strengths in the harddrive, controller and accelerator markets, they have a strong foundation on which to build a unique and powerful videographics syste is a system that we plan to keep a close eye on.

Two longtime Amiga competitors, Shereff Systems and Innovision Technologies, were showing their latest CG software at NAB. But, sadly, neither was showing any Amiga products. Both Shereff and Innovision were showing their PC-based character generation programs and, I have to admit, their software looked very, very nice. I think both of these companies will do quite well in the MS-DOS markets.

One thing I noticed about this year's NAB was the growing number of PC-based video hardware and software. These machines are growing more and more powerful all the time and the stronger systems have more than enough muscle to handle the heavy processing demands of videographic hardware and software. There were a couple of interesting companies showing complete video production systems based on PC's and compatibles and even Macs. Next year's NAB will no doubt show this trend in even greater numbers. Read the May issue of AVID for a more complete discussion of the 1992 NAB exhibits by David Hopkins.

NAB is a great place to meet people who you talk to on the phone all the time, but never meet face to face. One of the people I enjoyed meeting was Jim Flinn. Jim is a guy who I've talked to many, many times (usually at about 1 or 2 in the morning) but never had the opportunity to talk to in person. Jim is the man responsible for the 3D ala LightWave videotapes and he also runs the ToasterNet BBS. But, the reason I most wanted to meet Jim was to thank him for the excellent job he did on the AVID Animation Tape. This tape is the result of the animation contest that we ran last Fall. Jim Flinn edited the best entries into an hour-long tape and then outdid himself by creating an outstanding LightWave 3D animation of the AVID logo that kicks off the tape. This piece has to been seen to be appreciated. We are making the tape available for only $10 (the cost of duplication, packaging, shipping and order processing). To get your copy call 1-800-388-3696 and have your VISA/MC ready. If you'd like to pay by check, send $10 to Avid Publications, Attn: Animation Tape, 21611 Stevens Creek Blvd., Cupertino, CA 95014. If you'd like more information about ToasterNet or the LightWave 3D tutorial tapes, call Jim at 414-789-1570.

Another person I enjoyed meeting at NAB was Eric Ortlieb from Classic Video Products. Eric is the inventor of a neat little piece of equipment called the Action Boom. Classic Video Products didn't have an official booth at NAB, just Eric walking around with his video camera attached to the Action Boom. The Action Boom is a device that allows you to exend your camera away from your body in a variety of ways to create rocksteady, unique camera shots. Eric attracted a lot of attention from NAB show attendees and he drew a crowd wherever he stopped to demo its many features. For more information about the Action Boom contact Classic Video Products at (714) 650-1636. Don't forget to mention that you heard about them in AVID.

While I found NAB to be both educational as well as enjoyable, I'm really looking forward to a new show that kicks off this year in my own backyard. This new show, called DeskTop Video '92, ignores the high-end stuff that I can't afford anyway and focuses on video production from the desktop. It will be a multi-platform show with companies showing the best Amiga, Mac, PC and NeXT video production products. For more information about DTV '92 contact Computer Performance, Inc. at 1-800-322-6442. We'll be exhibiting there along with many other companies that sell products and services to the desktop video market.

David and I have spent a lot of time over the past month plotting the editorial direction of AVID. We recognize that there are a lot of Video Toaster owners among you, so we will still continue to provide a healthy dose of unique Toaster coverage. By unique I mean information that is not duplicated in Video Toaster User. One way we will do that is by slanting the Toaster coverage towards unique applications involving traditional Amiga-Video products. For instance, when discussing a product like Imagine, we will discuss how it could be used in conjunction with LightWave. Some of the savviest Toaster power users have learned how to compensate for certain Toaster weaknesses by using traditional Amiga-Video products. Some people use DCTV as their paint program. Others use alternate modelers. Still others use Broadcast Titler II as their CG program. That's the beauty of the Amiga/Toaster combination and the IFF graphic standard.

David Hopkin's "Lighten Up" and John Gross' "Toaster Tricks" will continue to run in every issue of AVID along with whatever Toaster references are appropriate in other articles. Besides the Toaster coverage we will begin sharpening our editorial focus on a number of "classic" Amiga-Video products. These include project-oriented tutorials on Deluxe Paint, Imagine, DCTV, and the CG programs from Shereff Systems and Innovision Technologies. Additionally, you will find more coverage on specific projects using programs such as Art Department Professional, ImageMaster and Pixel 3D. Another area where we'd like to make some changes is in our handling of reader letters. Over the next 2 to 3 issues you will see these changes begin to be implemented. Let us know what you think. You can write to myself or

David Duberman at AVID Publications, 21611 Stevens Creek Blvd., Cupertino, CA 95014. That's all for me, take it away David.

ImageMaster Morphing

One of the most impressive animations to appear on any screen recently is the face morphing sequence in Michael Jackson's 'Black or White' video. This highly memorable segment from the video featured a series of closeups of moving performers whose features merged into each other smoothly and convincingly. The computer graphics used to create the animation were remarkable enough to warrant an article in a recent issue of Computer Graphics World, not to mention the cover of the same issue.

Amiga users have had access to a sort of image morphing since the release of Deluxe Paint IV, but DPaint's implementation leaves a lot to be desired. Now there's a superior alternative in the form of ImageMaster, an image processing program from Black Belt Software. ImageMaster provides a tremendous variety of image altering functions, but it lacks support for the wide range of image file formats featured by Art Department Professional. If you've been reading 'The Doctor is In' in AVID you know that ImageMaster undergoes regular updating, and that the latest versions include true image morphing. This program is now a **must** for anyone working with images on the Amiga.

As I mention in my 3D Perspectives column in the current AVID, ImageMaster's morphing requires placement of control points. So to morph faces, for example, you place control points on the first subject's eyes, nose, mouth, ears, hairline, and so on, and then reposition the corresponding points on the second subject to match the placement on the first. I recently created a morph sequence between five AVID staffers and in the process learned a few more things about morphing that I'll pass along to you. Firstly, in placing control points more is always better. Unfortunately accurate placement of many points can be difficult because both pictures are shown simultaneously on the screen, which means that neither can be larger than quarter-screen. If you set the display to Interlace, however, things become much clearer.

In an ideal situation, the two faces you're morphing between would have as much as possible in common in terms of the size and position of features. A Video Toaster is ideal for setting this up. Start by positioning your first subject in front of a video camera plugged into the Toaster, use Freeze to grab a snapshot, and save it as a framestore. Then use the Dissolve transition and use the T-bar to dissolve halfway between the frame buffer containing the first snapshot and the camera image. Now pose your second subject in front of the camera, and adjust zoom and camera/subject positioning so the two images are matched as closely as possible. Finally hit the spacebar to kill the dissolve and click on Freeze to grab the new snapshot, and hope that things haven't moved too much in between.

The object of all this is to get as natural a transition as possible. Ideally, each step of the transition looks like a real person, although one who's never existed, of course. The program has problems creating transitions between large disparate shapes, such as hair. So if you're morphing between someone with big hair and someone else with short thin hair, the program creates interim steps by fading one area of color into another, which can look somewhat strange, although it's not so noticeable when viewing the animation.

ImageMaster can create the morph sequence in any graphic format supported by the Amiga, including 24-bit IFF, but it only generates a sequence of stills. To create the animation I single-frame rendered the frames to tape using the BCD controller/Sony 2860 VTR combination I wrote about in the April AVID. Since each transition used only 20 frames (you can set this to any length in ImageMaster), I placed each transition frame on tape twice, causing each transition to last 40 frames or 1 and 1/3 second. Then between each transition I placed the actual digitized frame of the appropriate AVID staffer for 30 frames or one second. So in the final taped sequence you'd see each staffer for about a second, followed by a morph to the next staffer for 1.3 seconds. If you're not set up for single-frame recording, you'd probably get the best results by having ImageMaster render to HAM Interlace Overscan format, then loading the resulting images into Deluxe Paint IV and saving them as an animation. Not only is this great fun, but having an example morph animation on file will probably get you more work! For more information about ImageMaster, visit your local dealer or contact Black Belt directly at 1-800-852-6442.

Enjoy AVID,

Jim Plant
David Duberman

ANNOUNCING...

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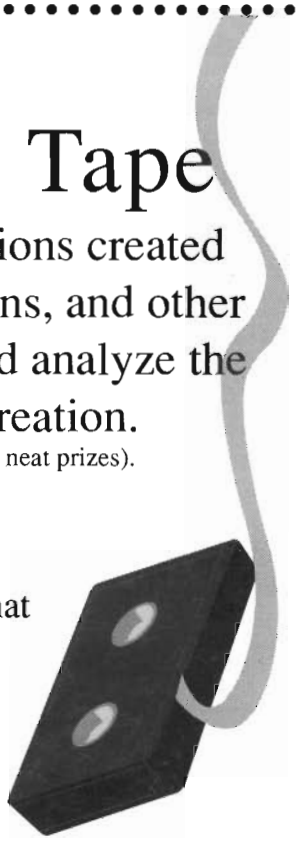

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