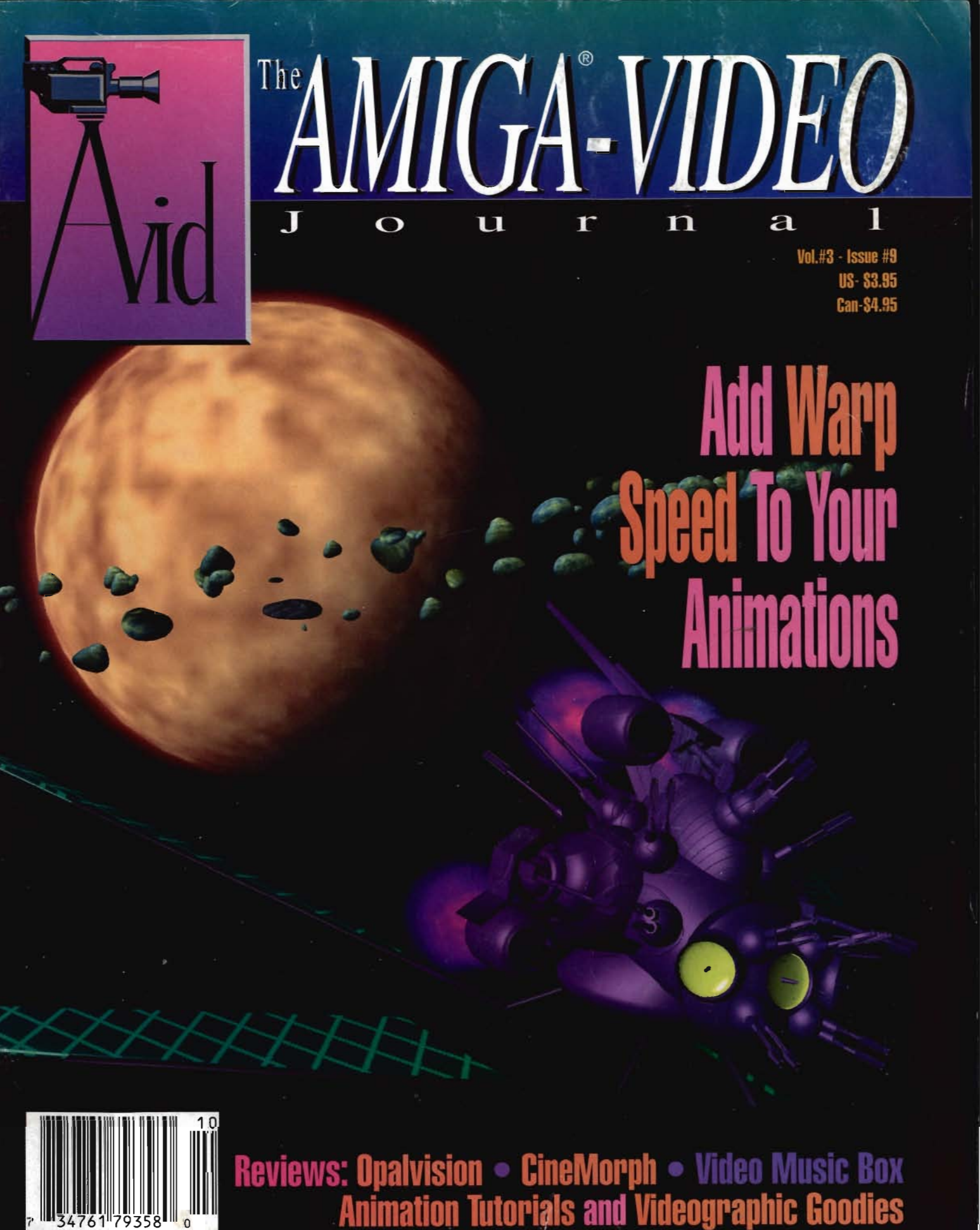
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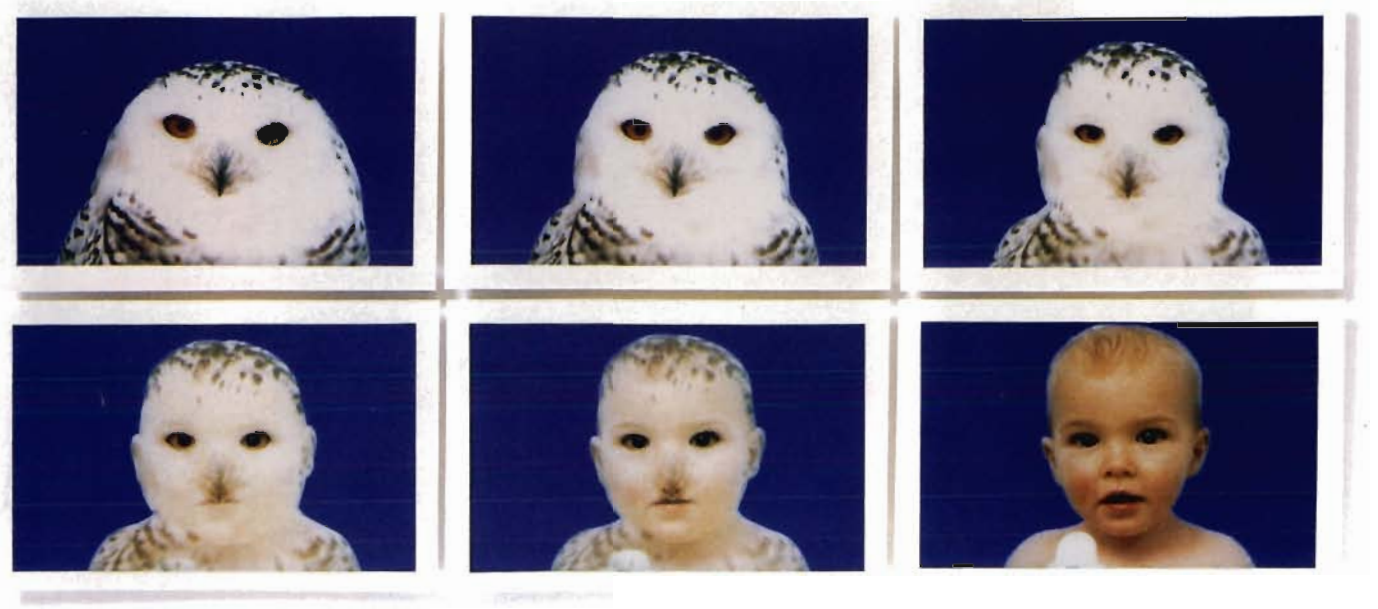

ASDG is not the first to advertise "cinematic quality morphing" for the Commodore Amiga®. Having seen the other products, there's obviously more than one way to define that term.

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(so that it truly *can* be used for cinematic or professional video applications). **MorphPlus™** is already in use in Hollywood productions, replacing high end systems.

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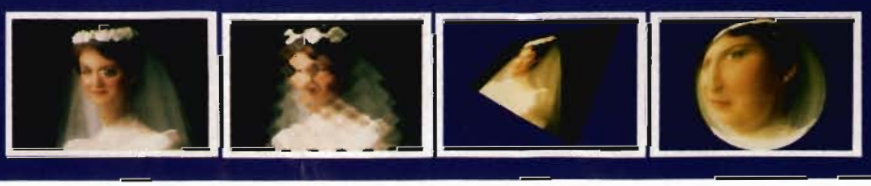

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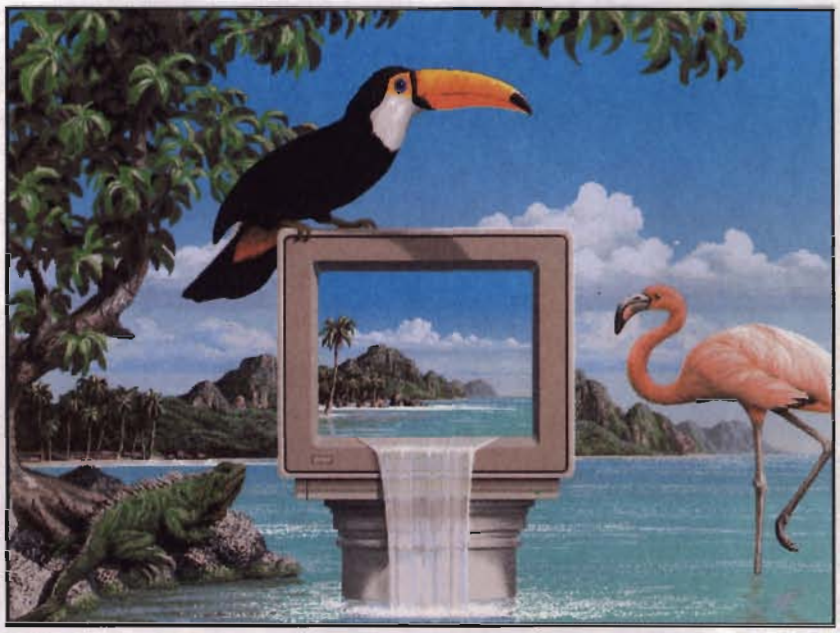

Artwork by Jim Sachs. Created at 640x480 in 256 colors on an Amiga 4000.

A rich set of drawing modes will unleash your full creative potential. Multiple paint and animation buffers can be worked on at once, limited only by memory. The more memory you have, the better Brilliance becomes. Power, features, sophistication, ease of use, Brilliance has it all.

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October 1992
Volume 3, Issue 9

Faster Animations: *by Geoffrey Williams*

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Publisher - Jim Plant
Editor - David Duberman
Art Director - Tom Twohy
Illustrations - Tom Twohy
Administration - Jennifer Torrens
Admin. Asst.-Tina Whaley

Contributing Editors
R. Shamms Mortier,
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Walter Beckham
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Contact us electronically on:
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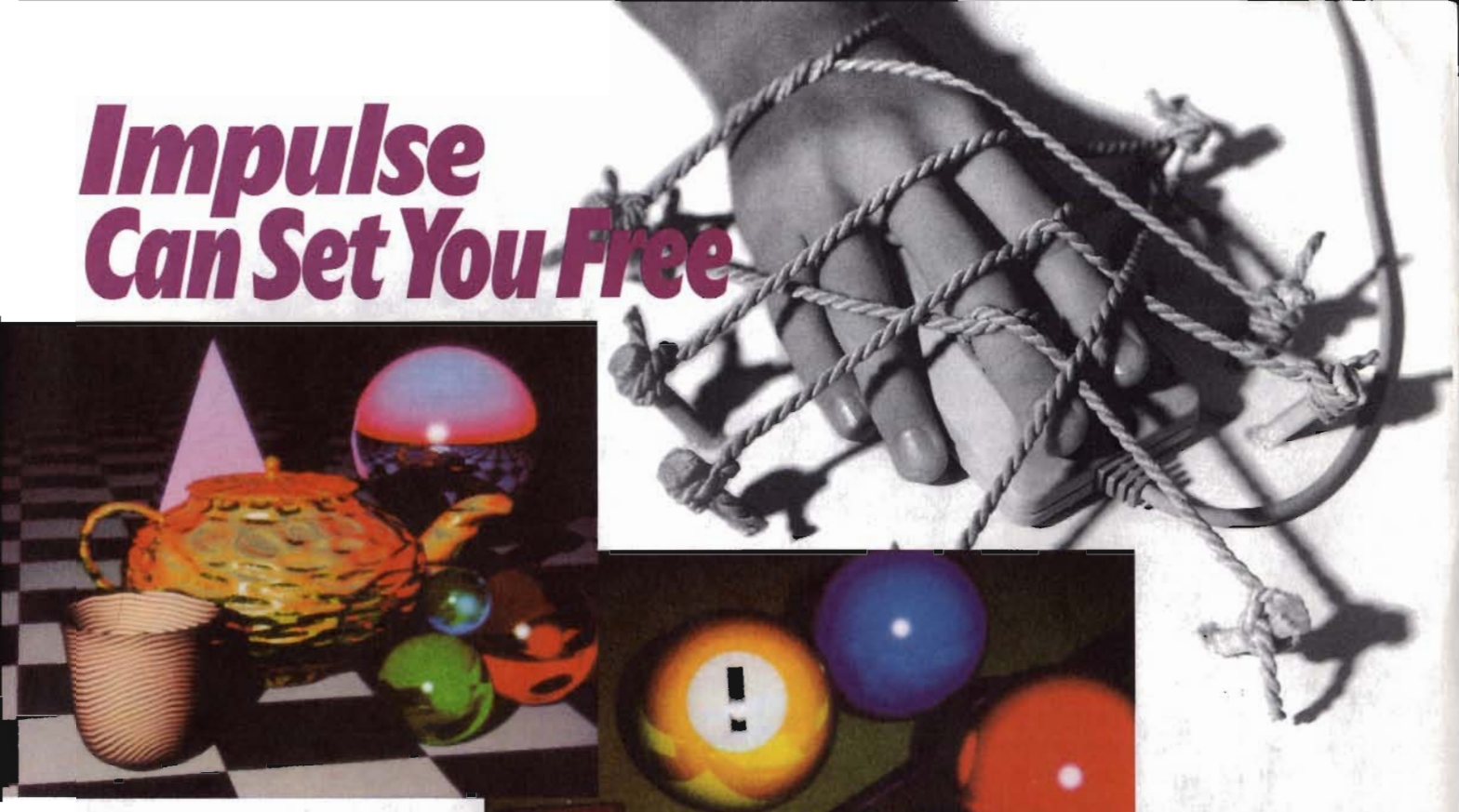

You know the feeling, a deadline only hours away, a client who expects the best creative solution, a blank screen and it feels as if Lilliputians have tied your hand down.

Now Impulse can't promise to make all your projects a success, but we can provide the best graphics, paint and animation tools for the Amiga. And with these tools you will have the power to break free.

It's simple... We were one of the first to bring professional ray tracing and 3D animation to the Amiga and are still the best... Our new Broadcast 3D font objects make using text even easier... We offer a powerful, high resolution, real time, 24 bit true color, graphics display card and the only real time 24 bit paint system. Put them all together and you have one of the most powerful creative tools available on any desk top computer. No compromises, no excuses.

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Bars 'N' Tone

Over the years, with the Amiga's potential constantly eclipsing its reality, becoming and remaining an Amiga stalwart—if you're reading this, you're one—has been no easy task. Buying and supporting this platform in the face of the skepticism of our friends and associates has been largely a matter of faith, but I believe that it's been borne out in spades.

Today the Amiga offers video support unequaled on any other platform for quality or value. For well under ten thousand dollars you can put together a broadcast-quality video workstation, with 24-bit graphics from such products as Centaur's OpalVison, GVP's IV-24, Impulse's FireCracker, and of course NewTek's Video Toaster, and automated video editing via RGB's AmiLink and others. And for a few bucks more you can add advanced 16-bit digital audio capability with SMPTE synchronization, thanks to SunRize's new AD516 board.

Announcements of even more advanced video products coming soon indicate that lots of software and hardware developers have jumped on the Amiga bandwagon or increased their commitment in the last year, which is very promising. Some of the most advanced graphics programs for any computer platform—MorphPlus from ASDG, ImageMaster from Black Belt, and ImageEfx from GVP—are available now, and you'll see regular coverage of them in upcoming issues of AVID. Even Commodore has improved its act—they actually shipped the Amiga 4000, with significantly enhanced graphics and a new operating system, in quantity almost immediately after its debut at the September World of Commodore show in Pasadena.

So despite claims to the contrary, the Amiga is very much alive as the desktop video platform of choice for everybody from Joe Sixpack of Main Street, USA and his kids in school, to Dashing Producers in Hollywood, and its popularity is growing. The future looks bright—to everybody who's hung in there with us, now's the time to celebrate! And if you're hanging on the edges, join the party—it's a blast!

Advertiser Index

Note: (mkt-plc) = "Avid Market Place" found on pages 53-55

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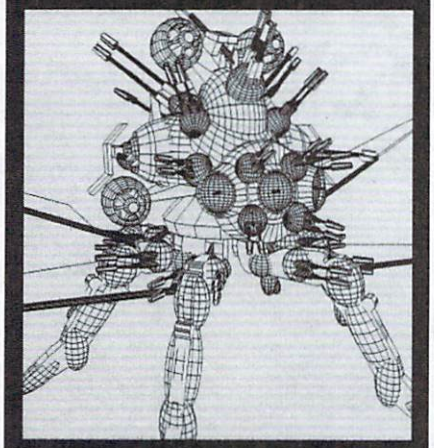


The cover image, by MG Software & Video, is from a four minute animation titled Life. It was created with LightWave 3D on three Video Toaster workstations.

The spaceship was modeled by Matthew McDonald and the planet and asteroids were modeled by Mark Miller. The animation required about six weeks of work and involved the support of programs ranging from DPaint to Pixel 3D to a custom key frame editor written by Mark Miller. Frames were stored on Syquest cartridges and then recorded to a Sony Laserdisc using the Personal SFC from Nucleus Electronics.

The images for print were rendered in Toaster print resolution and transfered to TIFF files using ADPro and saved to Mac formatted Syquest.

The soundtrack and story were written by Dave Hicks (County Line Productions). The animation took the overall Best of Show Award at it's debut during Computer Edge's San Diego Computer fair. MG is currently working on a much larger project which will be released in about 15 months, the details of which are somewhat secret.

MG Software & Video is a San Diego based animation company. Their animation projects range from television commercials to corporate and industrial applications. For further information, contact Victor Gallego at

MG Software & Video
6660 Reservoir Lane
San Diego, CA 92115
(619) 463-0545

InterChange Plus - The only way to get from Here to There.

Syndesis Corporation announces the release of InterChange Plus version 2.0, the upgraded version of its essential system for translating objects between 3D modeling programs.

InterChange Plus includes Converters for LightWave objects and scenes, Imagine, Turbo Silver 2.0 and 3.0 objects (including Terrain landscapes), VideoScape 1.0 and 2.0 ASCII and binary objects, Sculpt 3D and 4D scenes and scripts, PAGErender objects, Vista DEM landscapes, Atari ST CAD-3D models, structured drawing formats such as Professional Draw, Aegis Draw, and ImageMaster ISH custom shapes. Most Converters both import and export.

Now it's easy to move between Imagine and LightWave. Convert a multi-object, hierarchical Imagine object into a LightWave scene for Toasting. Turn LightWave scenes into Imagine objects for raytracing. Each LightWave object becomes a sub-object in Imagine, linked properly to its parent and children. All geometry moves easily between both programs, including lone points and edges, polygons and triangles. All surfaces and textures are translated with great accuracy, including RGB color, reflected and transmitted color, smoothing, specularity, glossiness, refraction and surface names. InterChange automatically generates accurate surface names such as "ROOF: light red" from Imagine triangle colors. LightWave surfaces become Imagine "subgroups," making it easy to select and adjust similar triangles within Imagine objects.

InterChange Plus includes the InterFont Converter, a program that makes it easy to generate 3D text objects. InterFont uses outline-based fonts to make 3D objects, automatically generating precisely aligned text in the size and justification you want. Choose from one of 23 InterFonts, enter the text you want, set its height, curve smoothness, extrusion depth, and destination file format. Click a button and InterChange creates a ready-to-use 3D text object. No more auto-tracing!

It doesn't stop there. InterChange Plus also includes Tools for manipulating and adjusting 3D models, including a Scale Tool for precisely sizing objects, a GridSnap Tool for re-aligning the points of an object, and a Point Reduce Tool to remove excess points from an object. InterChange makes it easy to batch-convert dozens of files at once, too, even if they're in different formats. The new Surface Converter makes it easy to extract and alter surface attributes from one object and map them to another. The Statistics Converter translates any object to a readable text file for detailed study.

All the limits are gone. Converters no longer open windows unless you open them, without gobbling precious graphics memory. InterChange uses less memory to convert an object than it takes to render it. It uses your numeric co-processor and runs under AmigaDOS 1.3 and 2.0.

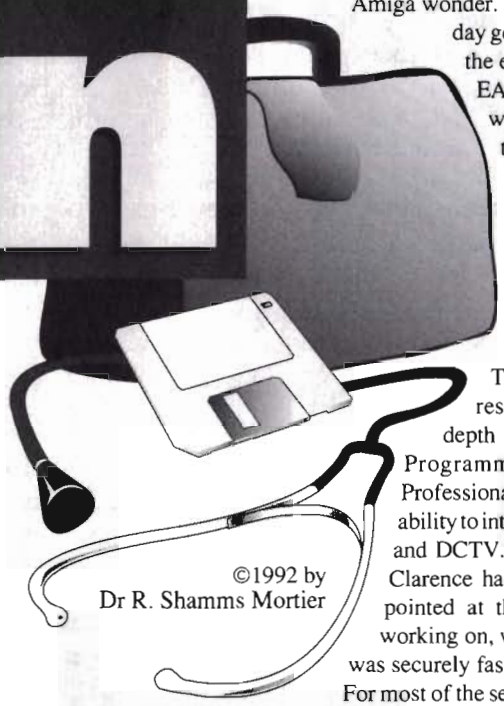
Syndesis also sells Converters for AutoCAD DXF, 3D Studio, Wavefront .obj, and Digital Arts .AOB objects, with more formats to come in the future. Are you curious about converting AutoCAD DXF objects? For $10, we'll send you the manual for the DXF Converter manual plus an article that describes some of the ups and downs of converting DXF drawings. It's refundable if you buy the DXF Converter.

Can you depend on InterChange Plus? Is it a professional product? NewTek, Inc. chose Syndesis Corporation's products to be part of the Toaster 2.0 system. LightWave now loads AutoCAD DXF, Wavefront .obj, Swivel 3D and 3D Studio objects because of Syndesis conversion technology. InterChange Plus is the perfect complement to LightWave and Modeler, making it possible to import *and export* objects in other formats from clients, friends, or add-on 3D object collections.

InterChange Plus retails for $99.95. Look for it this summer at your Amiga dealer. Upgrades are available to registered owners. For more information, write Syndesis, N9353 Benson Road, Brooklyn, WI 53521, or call (608) 455-1422, or fax (608) 455-1317. VISA and Mastercard accepted. International orders welcome. Dealer and distributor inquires are welcome, too.

Avid Column!

The DOCTOR is in



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Dr R. Shamms Mortier

When I received a letter from AVID reader Clarence DuBose some months ago requesting my availability for some Amiga tutorial sessions, the timing made it impossible to bring to pass. Clarence, a pharmacist and free-lance video producer in Moss Point, Mississippi, wanted to travel to Vermont to spend a couple of days working on specific Amiga software. Well, in real life as well as in digital reality, things have a way of coming to pass. Let me explain...

I have a jazz ensemble (Science Fixion) that is beginning to tour the country fairly widely. We had a date booked for Cincinnati that fell through at the last moment, and in remembering Clarence's letter, I decided to suggest a barter that was a long shot, but that also seemed somewhat possible. I suggested to Clarence that instead of him coming my way for Amiga help, that I come to Mississippi. The bargain was this: I would provide him with a couple of days of dedicated Amiga tutorials in return for his willingness to put up my ensemble (seven musicians), and also to find a booking for the then empty dates in his area. Well, Clarence came through like a trooper. He put us up in Southern splendor, and arranged a two night performance at "The House of Jazz", a local community club that we found to be one of the best venues on our tour.

As for what Clarence and I did on the Amiga side of things, which is obviously the reason I am reporting this to you, I can only say that the days were soaked in intense Amiga wonder. We spent the first day going through all of the esoteric aspects of EA's DPaint IV software, with attention to its animation capabilities. Then we focused for some hours on the ins and outs of Digital Creations' DCTV Paint package. The second day was reserved for an in depth look at ADSPEC Programming's Draw-4D Professional software, and its ability to interface with DPaint and DCTV. All of the while, Clarence had a video camera pointed at the screens I was working on, while a lapel mike was securely fastened on my shirt. For most of the sessions, there were several young people in attendance who were video students at the local high school. They were working with Macs in their classroom, but because of what we were doing in front of their eyes, no doubt a few Amiga converts were made. Most of Clarence's video work centers upon local broadcast videos for his community and church, though his professional aspirations range beyond his present services. I doubt that he has had much time to sleep since that tutorial, as evidenced by the "ooohs" and "ahhhhs" that greeted the exposure of the techniques we covered. One of the points of this story is to tell you that the Amiga has embedded itself firmly in the American heartland, making it possible for small communities to take visual control of the public broadcast airways, promoting what individual communities see as important to their constituents. Another point worth mentioning is that with a little effort and some bartering, we can help each other to master the magic and promise of the new video technology, the Amiga, and public broadcast access.

The Doctor is Inflamed

The last week of October can now be securely marked on your calendar as the release date for *ALADDIN-4D*, the software that replaces ADSPEC's Draw-4D Professional package. I have already been using it to do some instructional animations, and you would be very wise to at least give it a look. The documentation is taking about a month to produce, so that's the reason for the waiting period. The latest word from those in the know is that one of its attributes, the ability to design and animate true gaseous objects, is in fact available on some of the powerful mini-systems as an add on module...for about $40,000! ADSPEC is initiating an aggressive trade-up policy for Amiga animators dancing with other software packages. For those folks, the new ALADDIN-4D will cost only two-hundred plus dollars. For the Gas effects alone, that a savings of..let's see...about $39,800? And wait till you see what else it does. ADSPEC can be reached at 216-337-1329 from about noon to five EST.

The Doctor is Involved

Speaking about new releases, my man Godfrey (Adam Godfrey of Programs+ and Video in Canada, 519-436-0988) says that the new version of *REAL-3D* will be coming our way in late autumn. Programs+ is the North American distributor of Activa's REAL-3D. From his description, though I haven't seen a copy yet, the program and its interface have been entirely rewritten. I'm supposed to see a poop sheet soon, and a Beta copy in a while, so I'll keep you informed. According to what I've heard, many of REAL-3D's features emulate those of the new LightWave 3.0 package, another package whose rumored attributes are causing quite a stir in the Amiga video community.

The Doctor is Interred

New from Central Coast Software (PO Box 164287, Austin, TX 78716-9922) at a cost of $549.00 (with Quarterback 5.0)is the *Touchdown 100* hard disk backup system, a tape drive that can store up to 250 megs of data on a single tape. Amiga Video users store many megs of artwork, and to be on the safe side, hard disks have to be backed up. This looks like a good deal.

The Doctor is In(m)pulsed

Impulse's great animation and design software, Imagine, has just gotten a boost from Apex software with the release of a library of algorithmic textures and other stuff called *Essence*, by author Steve Worley. This package, which lists for $79.95 and requires that

CONSTRUCTING

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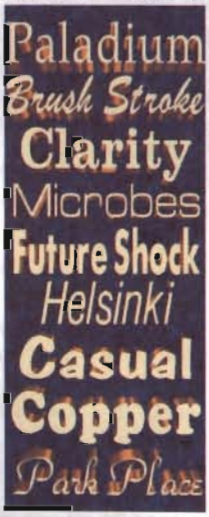

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you have Imagine or Turbo Silver, contains over 60 3D textures that are useful as wraps, bumps, transitions and other effects, and none have the commonly perceived pixel artifacts. Contact APEX software at 405 El Camino Real, Suite 121, Menlo Park, CA 94025 or call 415-322-7532.

The Doctor is In Touch

New products continue to make their way to the market for the Amiga visualist. For instance, video professionals are often in need of communication by fax, perhaps to send storyboard ideas from one part of the country to another. For this reason, GVP's excellent new FAX on a board product, *Phonepak VFX*, may be just the ticket. Contact Sheila Kirby at 215-337-8770 Ext.244 for more info.

ASDG (speak with the creative and beautiful Gina Cerniglia at 608-273-6585) sets the pace for new Amiga products and a high standard of service that other developers would be wise to follow. I expect to see a copy of their new *Morph Plus* software soon. Certainly we've all seen their beautiful and mesmerizing ads in the magazines, showing an owl being transformed into a human child. ASDG has again invited me to their Wisconsin location, and I hope to be able to visit them in late October, reporting back to you all that I see (unless I'm sworn to secrecy concerning a project or two). On other ASDG newsfronts, ASDG's ADPro now has a software link (for $200.00) to the ABEKAS Digital Disk Recorders, upgrading again the Amiga/video standard and making more professional applications possible. It's reported that full overscan broadcast frames can be read or written by ADPro in the ABEKAS file format in as little as 11 seconds on a stock 3000. Also available is the new "TruePrint/24" software, a standalone printing program for the Amiga that outputs high quality 8 bitplane (256 gray level) and 24 bitplane (16,000,000+ colors) printing. TP/24 lists for $89.00, and it supports most Preferences printers without the need for custom drivers. Images of any size can be printed from disk as well as from memory, complete with 11 dithering and halftone techniques. Are you a video producer in need of creating large printed backdrops for a set, or some posters for your latest enterprise? Contact Gina now.

The Doctor is In Motion

There are some interesting conferences/seminars coming up for those Amiga Videoids with the time and initiative to travel.

AMIJAM '93 is being planned for May 14, 15 of 1993. It's being put on by the Amiga Users of Calgary, Alberta, Canada, and it will take up about 15,000 square feet of display space. For info, contact AMIJAM '93, 144 Strathbury Circle S.W., Calgary, Alberta, Canada T3H 1P9, or call 403-246-2861.

And here's how you can get in motion without going anywhere: Club Amiga, Commodore User's Group #00131 (c/o Frank Burek, PO Box 751942, Houston, TX 77275-1942, 713-481-4704) is holding an animation contest, and the judges are all SIGGRAPH people. Request information at the above address, including a list of prizes.

In New York, October 23 to 25, the Fashion Institute of Technology will host Robert Bordega's "Nuts and Bolts Production Seminar" ($425.00/person). Robert Bordega has been a professional production manager, assistant director, and budget consultant for such films as Tender Mercies, The Warriors, and Tales from the Darkside. Video and film producers swear by this seminar as a way of gaining insight into budgeting and assigning rates and work rules to their creations. Contact: On Budget Features, Inc., 163 Amsterdam Ave., Suite 315, NY, NY 10023.

The Doctor is In Full 24 Bits

Where once there was paucity there is now plenty. The newest 24-bit library of images that I have seen and experimented with is called *Full 24* (17 disks), and it's from Airstream Graphics (PO Box 291090, San Antonio, TX 78229-1690, 512-436-1354). This library, which comes in a nice three-ring binder, takes over 15 megs on your hard drive if you install the complete set. I would advise taking a look at the images first and installing only those you have a direct and more immediate use for. There are 50 files, many of which are JPEG compressed, and 40 of which are a full 752x480 24-bit. Special "Bump Map" images are 8-bit. There are five categories of quality images in this library: Nature Backgrounds (10), Textures (Clouds, Wood, Fungus, etc. for a total of 10), Space and Star Backgrounds (10), Bump Maps (Bark, Cracks, Wrinkles, etc. for a total of 10), and special Brush Maps (Woods, Water, Patterns, for a total of 10). My personal favorites are the Bump Maps, which are especially useful for LightWave, Imagine, and Aladdin 4D users.

Whereas Full 24 may be seen as satisfying some general needs of Amiga video users, two new sets of images from CV Designs (at $30.00 and $35.00 a set: CV Designs, 61 Clewly Road, Medford, Mass 02115, 617-391-9224) are targeted at Amiga wedding and special occasion video producers. *VideoMaker Volume 8* (version 2.0) comes in both DCTV (704x480, which I have) and 24-bit JPEGs. Images include excellent backdrops for Bar Mitzvah, wedding, and other videos. The second set is *Wedding Bits 24*, which comes in DCTV animation format only. Many of these have a high quality 3D appearance, and include a spinning heart, toasting glass, flying Cupid, rotating cake, dancing Bride and Groom, and more. If you are in the Amiga-assisted wedding/special occasion video business, this set could add a lot to your creative endeavor and help your income in the process.

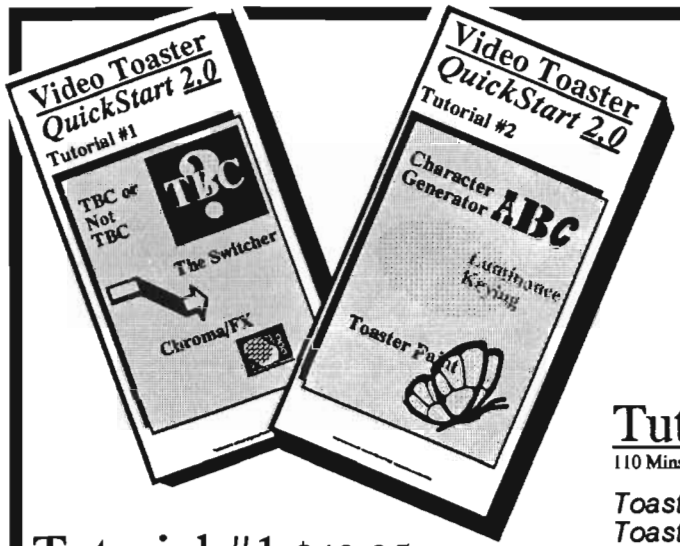
Also new is Volume 2 of the *Animates Wedding Series* disks ($59.95: Electric Crayon Studios, 3624 N. 64th St., Milwaukee, WI 53216 414-444-9981). Though not in 24-bits, these made-to-genlock animations are perfect for adding to the wedding videographer's library. The animations were actually created with Lightwave, then reduced to non-24-bit files with ADPro and edited with DPaint. A sample disk can be purchased for $5.00 offering point-and-click animation samples (works with the ShowAnim utility). The sample disk contains a great selection of reduced sample animations, all of which are professionally created. All of the finished animations are in full overscan. The 3D blocks title is my favorite.

Amiga LightWavers should greet the new *Bisclips Fantasy Fonts* library with glee. It contains a Chiselwax font (looks like melted wax), Planar font (sort of IBM logo-like), and a "Chips" font. There is a fluffy "Scruff" texture, and a metallic "Tread" texture. Duplicate objects from the Bisclips library are also included. You need 3+ megs of storage space to decompress the files. By the way, this volume is also chock full of wedding video material. Contact: Animatics, PO Box 158, Oakhurst, NJ, 07712, or call 908-493-3630. Bob Cohen, the president of Animatics, also makes a plea to all Amiga Lightwave artists to share their object files (barter or sell).

By the way, all Amiga 24-bitters should investigate a newsletter that comes out of Australia (at $18.00 per year: Visual Services, 120 McGilvray Ave., Noranda WA 6062, Australia, 09-276-7850). It's called "24 Bits and Pieces", and is concerned only with 24-bit work. The first issue had some very knowledgeable stuff on OpalVision and other software and hardware keyed to 24-bit work.

The Doctor is In the Sound Studio

Attention videographers needing professional soundtrack enhancement: Sunrize Industries is now shipping the *AD516* sound studio board ($1495.00). This is a true SMPTE based 8 track 16 bit audio board, the first on the Amiga. It records, edits, and plays back direct to hard disk. It can plug into an Amiga 2000 or 3000, and comes bundled with the new Studio 16 2.0 software. The features are awesome: non-destructive editor, fades, play from multiple hard disks simultaneously, SMPTE cue/chase/preview/reader, 8 track



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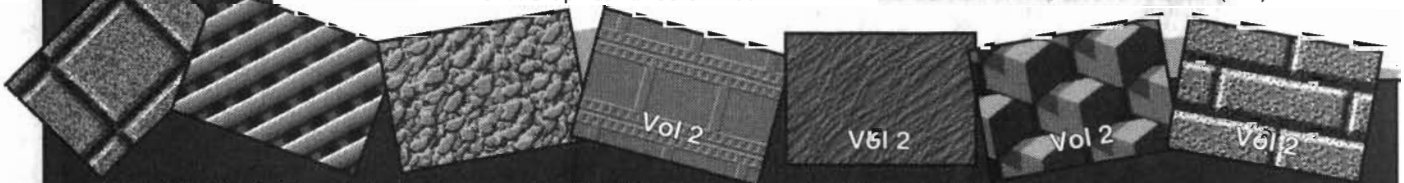

playback and 2 track record, multi-track mixer, VU and LED graphic meters, realtime effects, and an ARexx port. Contact Anthony Wood at Sunrize Industries, 2959 S. Winchester Blvd., Suite 204, Campbell, CA 95008 or call 408-374-4962.

The Doctor is In the Toaster

Owner/users of The Byte Factory's *Toaster Toolkit* should know that version 1.1 and new manual pages are out. This is a free upgrade. Contact Sean Riddle at The Byte Factory, PO Box 891771, OKC, OK 73189-1771, 405-631-BYTE. Of continuing interest with this software utility is the following: the creation of custom Project files by rearranging, adding, and deleting effects, compressing Toaster 2 FrameStores with no image degredation, converting DPaint animations to real Toaster Effects. The new manual supplement is much clearer then previous pages.

The Doctor is In Anim

Having previously mentioned the *ANIMATRIX Modeler* from DuBois Animation, I am pleased to inform you that version 1.02 is now available. Animatrix allows you to do some 3D object design and then to port the results to different Amiga modelers for rendering and animation. The new version comes with 3D glasses, and offers two new stereoscopic viewing options: Haitex X-Specs and RBStereo. Other changes include on-line help, a zoom feature, keyboard equivalents, a WorkBench toggle, new face selection modes, new hide and show options, screen depth gadget, speedier single point editing, and other changes. We are assured that the next version will be a major upgrade, and that the interface will change drastically. Contact: DuBois Animation, 1012 N. Chartrand, #F, Edmond, OK 73034, 405-348-4670.

The Doctor is In Calibration

What a great idea: The *Video Calibration Set* from VIDIA (PO Box 1180, Manhattan Beach, CA 90266, 310-379-7139). Included for $49.95 is a manual, a disk containing much needed monitor calibration screens and various tests (41 images), 3 superlatively designed and plastic wrapped ready-for-binder NTSC camera test patterns, and (my favorite) two sets of screen rulers for both vertical and horizontal measuring in both Lo and High Res (calibrated in pixels). I would suggest cutting out a set of the rulers and mounting them on a sturdy background, and even having them laminated in plastic. Included are HAM and non-HAM color bars ("legal" NTSC colors), contrast test screens, electron gun tests, overscan tests, phosphor tests, RGB tests, and flicker tests. Everything has been designed with thought and attention to quality, and I would suggest that this product find a place in every Amiga video producers toolkit. Well done!

The Doctor is In Caligari's Cabinet

Octree Software, the developer of the prestigious Caligari design and animation packages, now offers a deal to its customers on the well known *DynaCADD* professional software. DynaCADD normally sells for $995.00, but can be purchased through Octree at only $529.00. DynaCADD is actually a wonderful module to use in connection with Caligari, as there is a transparent interface that exists between their file formats. DynaCADD offers some design options not found in Caligari, two of which are bezier curve design and the full manipulation and reworking of font parts. I am set to receive a review copy of DynaCADD soon, and can't wait to tell you about it. You can write to get more info on DynaCADD direct by addressing DynaCADD, 2800 John Street, Unit 15, Markham, Ontario, Canada L3R 0E2, 416-479-1990. Or contact Octree for deal details. Octree has moved from NYC to sunny California, and can be reached at 415-390-9600 or by mail at Octree Software, 1955 Landings Drive, Mountain View, CA 94043. By the way, Roman Ormandy, the CEO of Octree, says that there are new versions of all of their product line on the way "soon" (he remained very secretive about details). What he did assure us, however, was that each new version of the lower end program would be consecutively "better" then the last issue of the higher end software. This means that Octree's broadcast technology is step-by-step being translated over to the non-broadcast versions, and that both versions are steadily being upgraded to keep abreast of the latest advances in computer graphic technology,..a welcome word to all Amiga Caligari professional users.

The Doctor is Input

Many Amiga video producers are involved in medical technology and other scientific pursuits, and in addition to the standard equipment (video cameras and decks, standard Amiga peripherals, etc.), they need access to specific data acquisition devices for their work. The results of this data acquisition are often displayed as part of an instructional video, as has been my perception here at the University of Vermont. There is a company that the aforementioned producers should know about that serves the Amiga community with a host of needed data acquisition products. They're called ezAD, and they have a nice catalog for you of their wares (Boone Technologies, Inc., PO Box 15052, Richmond, VA 23227, 804-264-0262). Among their products are: Measureport DAC's, Multisensors, Thermocouples, InfraRed Thermocouples, Temperature Probes, Sensors, and Voltage Referencers. They have a full line of Amiga software that supports their hardware, including real-time plotting, panel/vertical/digital metering, speech synthesis, data saving to disk, and ARexx communications.

The Doctor is Investigating

I am on the track of finding out more about the *Lightworks Graphic Synthesizer* for those Amiga video people who have a need for performance site Amiga interaction. It's not available for testing as of this writing, but I have been sent the manual. According to the data on it, it'll work on any system with 2 megs or more of memory, and will accept all IFF graphics. It is fully MIDI compatible, and allows you to "play" your graphics like music. The results, of course, can be either taped or can be used in an on-the-spot live presentation. For more info contact: Euphonics, 138 N. Main St., Suite 111, Sebastopol, CA 95472, 707-823-1380.

The Doctor is Invertebrate

Speaking about curved surfaces like spines, don't forget to investigate *Lissa 1.2*. Lissa is a lissajous curve generator for the Amiga, a small but powerful $35.00 program that allows you to generate all sorts of amazing curved surfaces, and then save the results as 3D object files to your favorite Amiga 3D rendering and animation program (including Lightwave, Imagine, Caligari, and Aladdin 4D). Changes in the present version over the last issue include: a near doubling of the size of the code from 37kb to over 67kb, an increase of 2x on the spline points, and more. The graphics can also now be saved as animation paths. (Editor's note: See this month's 3D Perspectives column for more on Lissa 1.2) Contact Technical Tools, 2 S 461 Cherice Drive, Warrenville, IL 60555, 708-393-6350.

The Doctor is Inanimate

Ah...the end of another edition for all masterful AVID subscribers (you are a subscriber, aren't you?...). So, what's left to say but "that's all for now. See you in ROMulan space. ENJOY!"

The Power Of The Toaster...

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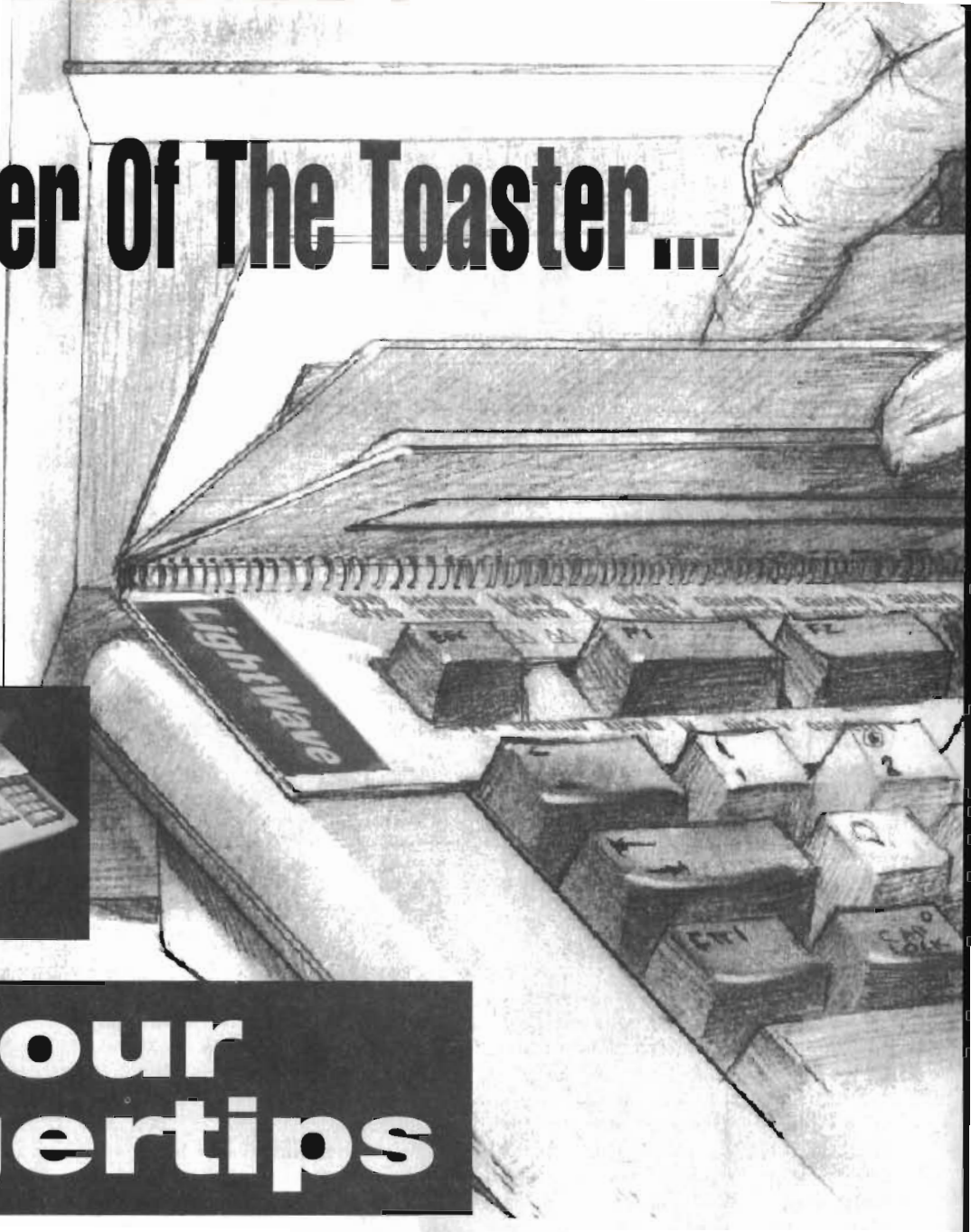

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Lighten Up

Techniques for LightWave 3D Users

Alright, people, we've got a Modeling adventure for this installment of Lighten Up, so let's get right into it.

It seems that the big thing right now is beveled edges. It's much more subtle than morphing, but still extremely visible. When most people think of beveling, however, they think of a single, diagonal drop. There's a lot more to be done with beveling , but even that can be difficult at times.

This tutorial will teach you how to make bevel templates. These templates could be any shape or size you desire, but they all must have two things in common; they must be flat and they must face only one direction. Keeping a template flat makes sense, but why does it have to face only one direction? If I generate a flat shape with Modeler's commands, it has two sides! How do I deal with that?

We'll learn the answers shortly, but first I'll finish explaining what we're going to do. We're going to make a square template with round beveled edges. Then we'll see what sort of things can be done with this template.

Before we really get into it, however, I want to solve a problem before it happens. Due to the nature of Modeler, each of the three views is marked with a label: Bottom, Back, and Left (at least in default). Many options take into consideration which view you do things in and work differently based on that information. While the instructions outlined here are certainly not the only way to work or only item to produce, but make sure to follow each step carefully the first time. It may seem like this tutorial is rather long and complicated, but after you do it once it'll become quick and easy for you.

Getting Started

The first thing we should do is start with a fresh Modeler. If you haven't loaded Modeler in your current LightWave session, go ahead and do so now by clicking the button marked "Modeler". When the text on the button turns from gray to black, click it again. Now you're in Modeler and all of the layers are empty. If you already have Modeler running from earlier in your session, click New from the Disk options. This will erase anything you currently have in all of the layers, so make sure that you have saved things you wish to keep.

Initiate making a box by clicking that button in the Objects options. In the view labeled "Back", use the left mouse button to drag out a box from X=-1, Y=1 to X=1, Y=-1. This is a perfect box enclosing four grid squares. Click the Make button to accept the shape.

Now, go to the second layer by pressing the "2"-key on your keyboard. Put layer 1 in the background of layer two by pressing "ALT-1". Our square is visible in solid black lines, but press the "A"-key to make it fit in the windows properly.

Now we'll make a disc to build the corners of the box. Click the Disc option under Objects, then click Numeric. You can decide how smooth the curves will be by adjusting the Segments amount. Make sure that the number you choose is a multiple of four, or else this technique gets messy. For a nice smooth curve, use 32.

Since we're only making a sort of template which can be extruded, we don't want any depth to the object yet. Remember, just build one "slice" of a surface and then extrude it. Set both the Bottom and Top to zero so it will create a paper thin disc, then set the Axis to Z. This will place the disc so that it appears round when seen in the Back view.

We'll set all the rest manually in just a moment, so click OK, then press the "/"-key on your keyboard. Now, in the Back view again, draw a box defining the disc's shape from X=-1, Y=1 to X=-.5, Y=.5, the upper-left grid square inside our square. When you have the box in position, click Make. It should look just like Figure 1.

Click the Point Select button to turn off the disc frame. Place your pointer in the center of the disc as seen in the Back view and press the "g"-key on your keyboard to make that the center of the view. Use the ">" key to zoom in until the circle fills the Back view. Using the right mouse button, draw a lasso around the points shown in Figure 2. You should end up with 23 selected. Click Cut.

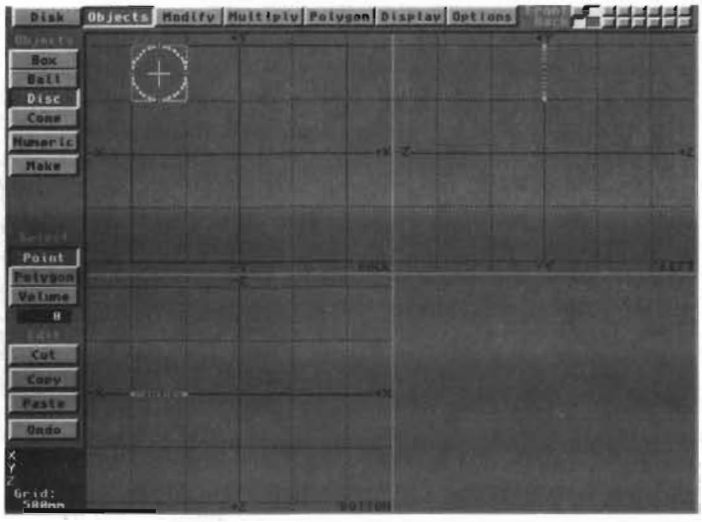


Figure 1

You'll be left with a quarter circle. Enclose these points in a lasso, with the right button again, click Cut and then Paste. Now the points for the curve are there, but the polygon that was connecting them is not.

Press the "A"-key to make both the disc and box fit in the views. Choose Mirror from the Multiply options. Place your pointer along the Y axis in the Back view and click to place the mirror there. Click the Make button to accept the mirror. This should give you a picture like Figure 3.

We're going to mirror it again, but this time we want the mirror to run along the X axis. Just click on the X axis in the Back view to place it there, then click Make. Click the Point Select option to get rid of the mirror.

Surprise! We have a frame for a round-edged box. Just connect all the points in a *clockwise* direction as viewed in the Back view. Be careful, because getting just one point out of order will mess up the polygon. Here's the simplest way I've found to do it:

(Note: All of this is done in the Back view.) Place your pointer on top of the upper-left set of points. Press "g" to center there, then use the "<" and ">" keys to zoom out or in, respectively. When the points nearly fill the view, hold down the left mouse button and glide over them from the lower-left to the upper-right, aka clockwise. Release the mouse button and press the "A"-key to fit all of the box again. Place the pointer on the upper-right set of points. Use the same system to zoom in to them. Hold down the Shift key on your keyboard and roll over them from the upper-left to the lower-right. Press the "A"-key.

Repeat this for all four corners, always following a clockwise direction of selection. Make sure that you have 36 points selected when you've finished. If you don't, press "/" to deselect all of the points and start over. When you've got them all, press the "p"-key on your keyboard to make a polygon out of them. You should have the same thing as you see in Figure 4.

An alternate way to do this is to connect every pair of points into their own polygon. This is a reasonable method, except for the fact that once the object is extruded or lathed or whatever, it has polygons inside and out. This may be what you want for a glass item, but I think that situation is best solved by using LightWave's DoubleSided option.

Also, if for some reason you decide to break your template into more than one polygon, remember that the dividing line between polygons tends to become one as well. Keeping a careful eye on the operations you do can save you a lot of rendering time if it results in fewer polygons.

You can save this template if you like, but, if nothing else, you should copy it to another layer and play with it from there. This is just in case anything should happen to not quite turn out the way you expect. Simply press the "/" key to deselect the points, click Copy, press "3" to go to that layer, then click Paste.

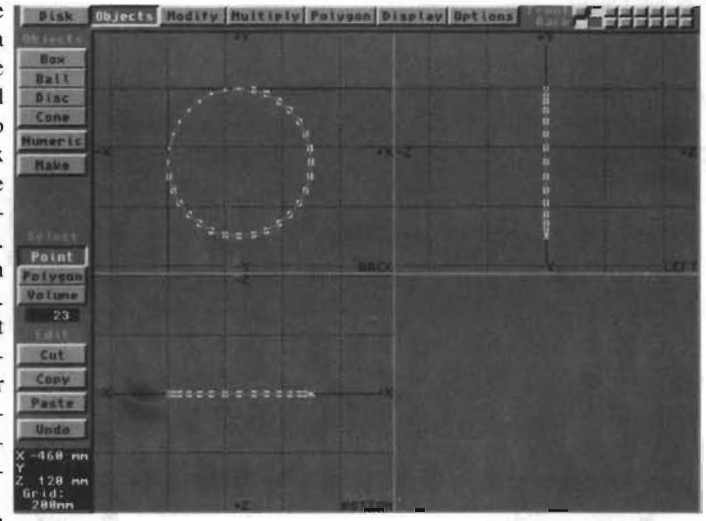


Figure 2

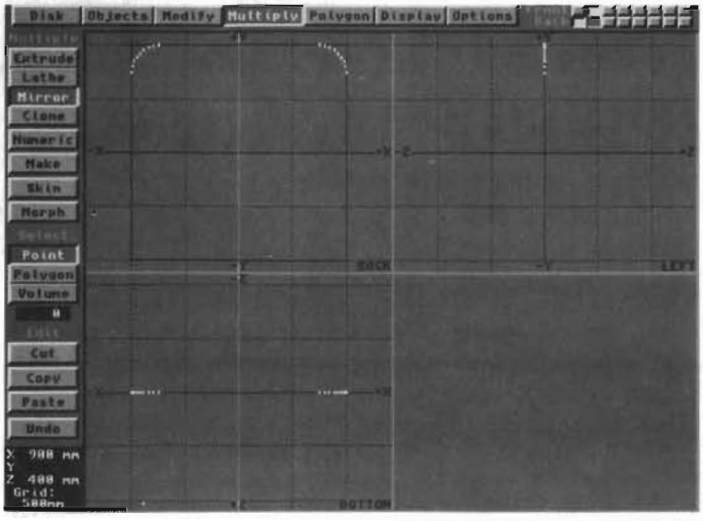


Figure 3

Here's a fun thing to do with a shape like this: Use Move from the Modify options, plus Numeric, to move the template to Y=-5 meters. Click Lathe from the Multiply options, then Numeric. Leave the Start and End Angles at 0 and 360, but change the Segments to 64. (If you don't have an accelerator, you may only want to use 32, but 64 looks really great!) Set the Axis to X, and the Centers to zero. Click OK, then Make. Now you've got a pretty decent looking beveled ring. A little work on this concept and the Olympic Rings would be a piece of cake.

Create a Surface Name for it by choosing Surface Edit from the Options area. Name the surface "Ring One", and click Create. Click OK to return to Modeler, go to the Polygon options then choose Polygon Select mode. Click Surface, use the arrows to find the Ring

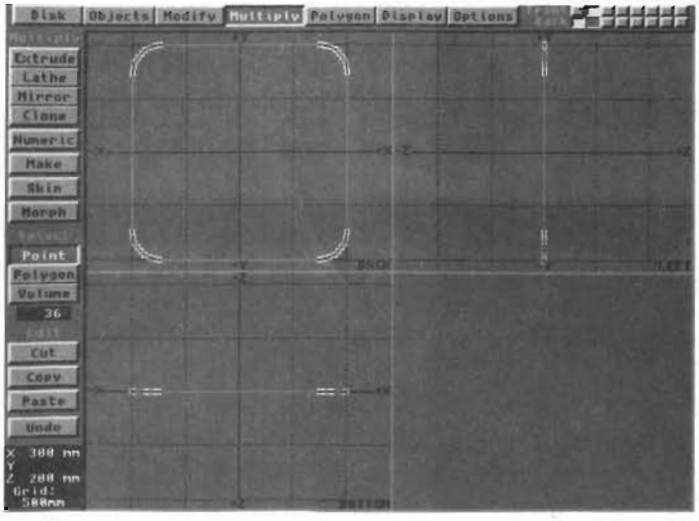


Figure 4

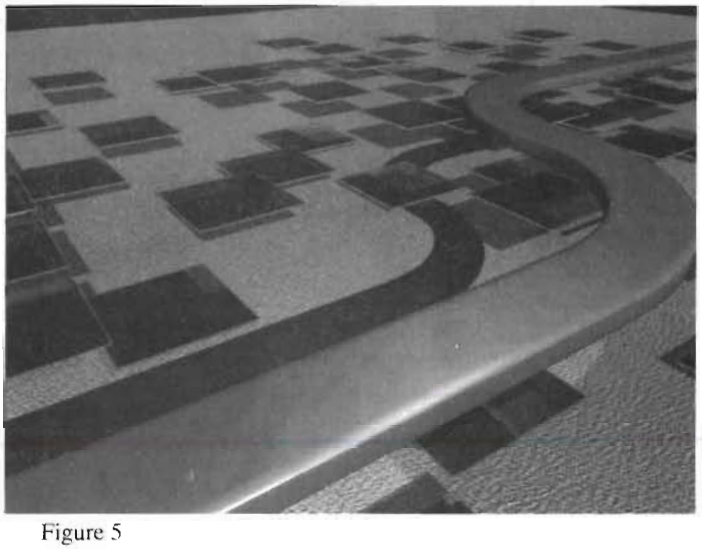


Figure 5

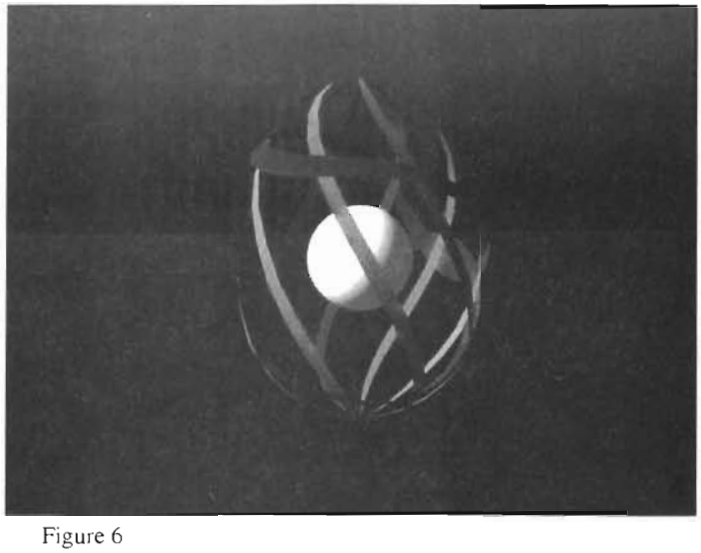


Figure 6

One Surface Name, then click OK. Now save the item as RingOne.lwob.

Rendering

Load the ring into LightWave (preferably a clear scene, medium res, no overscan, solid black background) and go to the Surfaces control panel. If "Ring One" is not the Current Surface then use the arrows to find it. Set the Surface Color to 200, 0, 0, for a bright red. The ring should have a 75% Diffusion, 85% Specularity, and Low Glossiness. Turn on Smoothing, as well.

In Layout, rotate the object to a Heading of -75, a Pitch of 0, and a Bank of -45. There is nothing magical about this angle, except it gives a really nice image of the ring. Go ahead and render it! If you're comfortable on the couch or something reading this and not following along, you can see the result in Figure 5.

I went a step further by extruding the template with a large number of segments, then using the Bend tool to make a unique curve. I added a few "floating" panes of red-outlined glass over a textured ground. There are two lights in the scene. One, a Distant light source is located just above and to the right of the camera, pointing at the S-curve. The other is a point light, in exactly the same location, with a very low amount of Falloff, to provide a little shadow variety.

Reader Response

I received a response (yes, that's right, one!) to my request for your submissions of large-scale projects you've completed with LightWave. Richard Lininger, of Lafayette, California, produced a short video tape for exhibit at the Lawrence Hall of Science on the U.C. Berkeley Campus this past spring. It was part of a three-month-long art exhibit that included about 50 enlarged 3D images that Richard also produced. Yet another portion of the exhibit was occupied by Richard's wife, Anna Marie, and 80 tessellated Batik goose eggs she created.

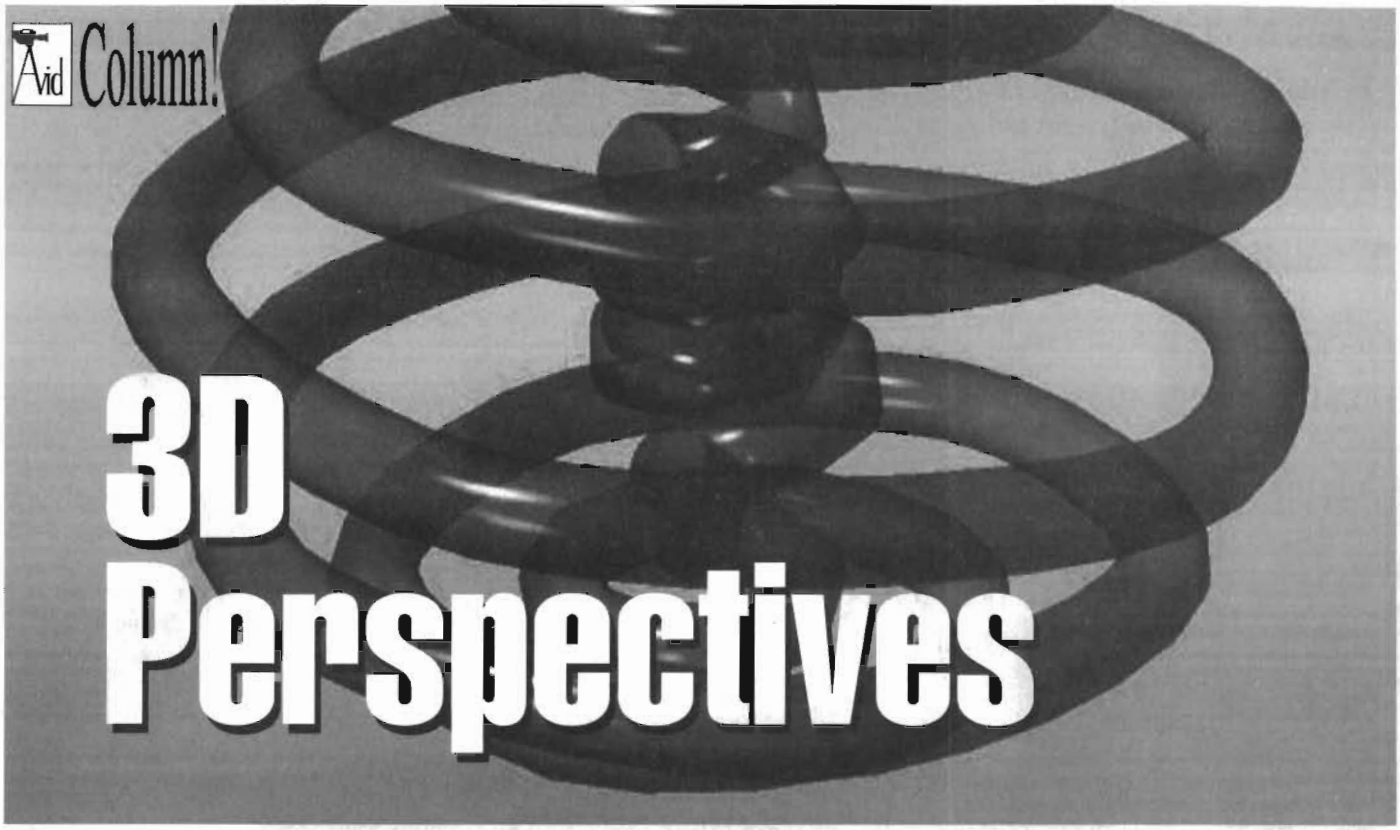
"Yolk's Dream," according to Richard, "uses 3D geometric figures to suggest certain aspects of the human condition. After the 'fall', different aspects of Separation, Searching and Reunion are visualized."

Richard tells me that he used LightWave to design and render animations which were then moved into DCTV, Deluxe Paint, Performer, and Art Department. They were recorded to BetaCam SP and post-production work was completed at Communications Video in Walnut Creek, California.

A still from Richard's exhibit named "MoonTrap" is shown in Figure 6.

Well, that's about it for this month. Did you learn anything? Write and let me know! Do you want to have a certain function or operation explained? Write and let me know! I'll tell you the truth, folks: I get very little feedback from from this column, and I don't do this for the money (well, not entirely!). So I may soon pass the Lighten Up baton on to another writer. If you want to learn, do it. Let me know what you think, what you have problems with, what do you want to know? As always, write to me at:

Mach Universe
625 The City Drive, Fourth Floor
Orange, CA 92668
Attn: David Hopkins

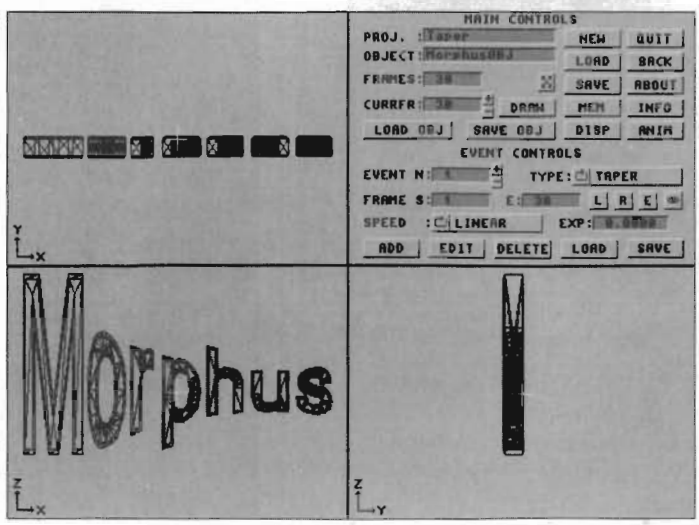


Welcome back to the column that gives you in-depth news about the latest developments in Amiga 3D modeling and rendering. This month the usual potpourri of products seems to be permeated by a mathematical theme, but don't worry—it's easy math. Let's dig in!

Morphus

Some of the most beautiful computer graphics images and animations were created in universities with a great deal of assistance from advanced mathematics. There's no denying that the more math you know, the better equipped you are to take control of a computer graphics working environment, especially one that can use scripts. But that doesn't help the majority of us who work with computer graphics, but are too busy trying to survive to be able to take time to learn such a relatively abstruse subject. Therefore it behooves software producers to build advanced math capabilities into their software in such a way that the average user can take advantage of them without necessarily having to understand the basic principles. This is by no means an easy task, but it's slowly happening.

The most recent product of such thinking is a program called Morphus. This program, which performs advanced 3D transformations on Imagine-format objects, was written in Italy by Guido Quaroni, and is being marketed in the US by Impulse, Inc., makers of Imagine. If you've ever wished Imagine's object editor could perform transformations like Twist and Bend, Morphus is for you. But it does so much more than that, like being the first Amiga 3D program that I know of that can morph between objects with different structures. Are you drooling? Is this the Holy Grail of 3D morphing? I'll save you the suspense. Yes, it works, but no, it's not the answer to your prayers. For my first experiment, I morphed between a six-seg-



ment cylinder and a basic sphere, both created with Imagine's Detail editor's Primitives requester. The sphere ended up having a distinctly flattened top. Then I tried going between two letters drawn in Deluxe Paint and extruded with Pixel 3D; an A and a B. Most of the interim steps in the morph were a hopeless unrecognizable tangle.

One of Imagine's special features is the F/X, which can physically alter an object over a sequence of animation frames. Some of the effects that come with Imagine cause objects to ripple, explode, rotate, and so on. This process is extremely efficient in terms of disk usage because it allows many different deformations of a single object, and can also be applied to a morphing object. One limitation is that only two effects can be applied to any object during an animation, and of course you're limited to the effects provided with the program, as there are no third-party suppliers at this time.

With a few clicks of the mouse, Lissa lets you explore the world of spherical Lissajous curves

Morphus can help overcome this limitations to a great extent, at the cost of some disk space, as we'll shortly see. It's a self-contained 3D animation program that can import and export Imagine-compatible object files, and comes with a utility that can insert its output into your Imagine stage files (animation setups). 3D Transformation effects supplied with the program are: Translation or movement; Scale or resizing; Rotation; Shear; Taper; Twist; Bend; Radial Bend; Waves—forty different types!; and Metamorph. Most of these are a lot more sophisticated than they might sound. For example, consider the bending parameters: angle, horizontal and vertical position, minimum and maximum value, bend direction, spiral and spiral relative position, and phase. There are fourteen bend types, including invert X/Y/Z, spiral and absolute spiral X/Y/Z, and radial on X/Y/Z. Also consider that all values can change during an effect. The number of possible combinations is mind-boggling!

What's really special is that you can apply as many as 50 different effects to an object, simultaneously in any combination or sequentially, over the course of an animation of as many as 9,999 frames. So you could have an object twist and bend for part of an animation, then have waves for a while, halfway through which one end starts to expand, and all the while it's morphing to a different shape.

Unfortunately, since it's not Imagine doing this but a completely different program, it's impossible to use Morphus' formulas as such in Imagine. The ingenious, if disk-space-consuming solution is to output each frame of the animation as a separate object for a successive frame in Imagine. But you don't have to add each one as a separate object in the Action Editor, as Mr. Quaroni has thoughtfully provided StageGEN, a utility that permits insertion of Morphus-generated animation sequences into existing Imagine animation setups. This is no quick-and-dirty utility; it supports ranges, backward and ping-pong motion, and looping, as well as insertion of multiple actors. Another nifty included utility is Visualizer_881, which shows a plane animated with all forty wave effects in succession. There's also Showaves, which gives you literally dozens of parameters for playing interactively with wave effects.

The manual is brief but informative. As with most such programs, the best way to learn is by doing. There are many settings and it takes time and experience to really understand them. There is a short tutorial that demonstrates transforming a rotating plane smoothly into a tube and then into a perfect torus; just a simple example of Morphus' extraordinary power. If you use Imagine for 3D animation, you owe it to yourself to examine Morphus carefully. For about $100, you can add a virtually bottomless bag of animation tricks to your repertoire.

Impulse has also come out with a new collection of Imagine-format 3D objects,

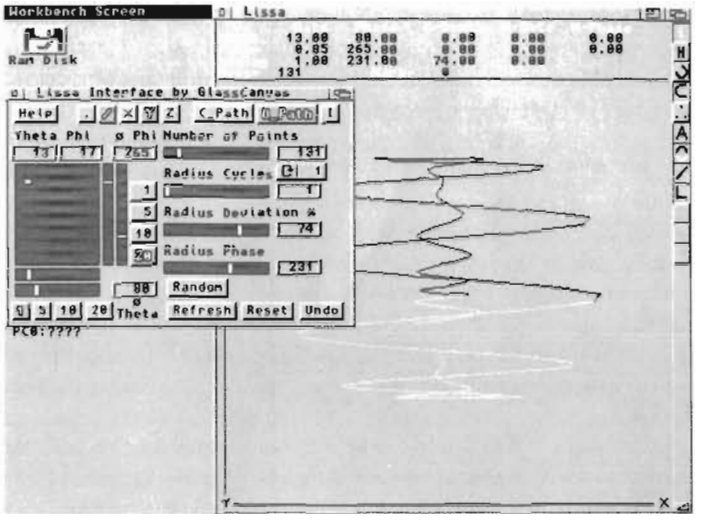
which unfortunately didn't arrive before deadline time. I'll have more information on this package for you in the next column.

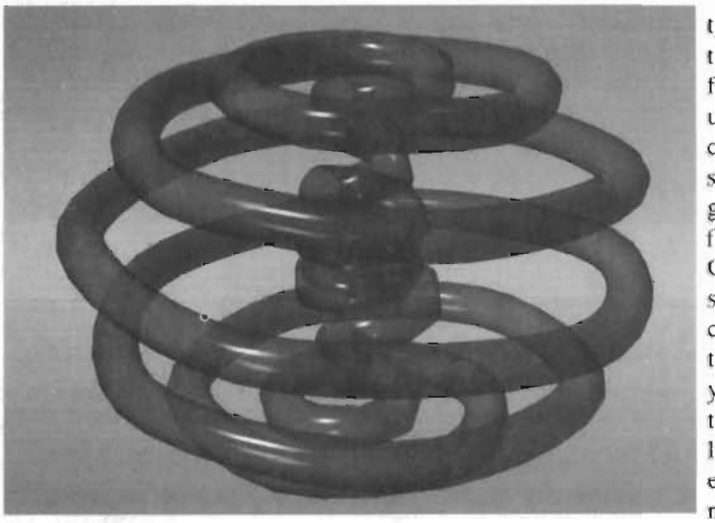
Impulse, Inc.
8416 Xerxes Ave. N.
Brooklyn Park
MN 55444
(612) 425-0557
(800) 328-0184

Lissa

It's interesting, though not at all surprising, that many of the "older generation" of today's computer pioneers were also involved in mind-expansion experiments in the sixties and seventies. Witness such phenomena as the successful cross-cultural magazine Mondo 2000. Today's high-powered personal computers equipped with high-end graphics hardware and software effectively.

At this point you might be asking what's the good of making 3D curves. Well, first of all it's fascinating in its own right. These curves are defined by complex parameters, but you don't have to understand the math to create endless varieties of curves by changing one or more parameters, a little bit at a time. Then, if you see a curve you like, you can output it in a format suitable for your 3D software.



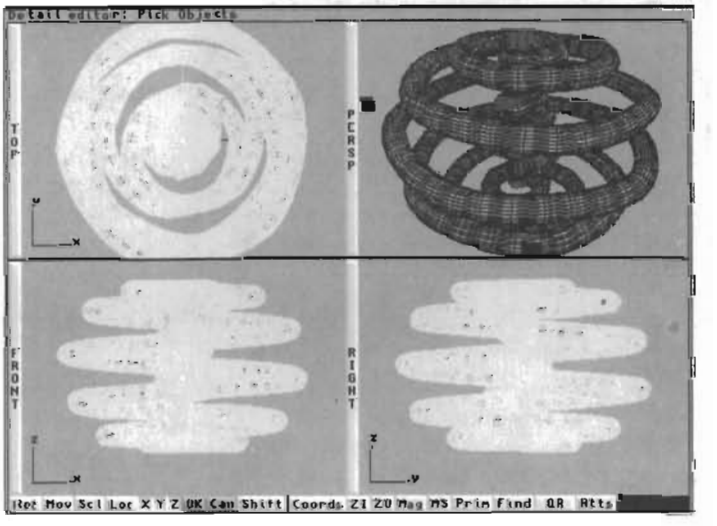


If you're a good typist you may like the keyboard interface, but I prefer to use the terrific accompanying shareware program, Lissa Interface by GlassCanvas, shown in the accompanying illustration. This shows you all current settings and gives you linear and area sliders as well as numeric fields for adjusting settings. There is also a full-fledged ARexx interface for indirect control via scripts.

Because it's so graphically oriented and has so many different settings, the only way to really understand software like this is to get your hands on it and use it. Because its list price is so low ($35), I urge you to purchase Lissa immediately if you're in any way intrigued by it. That said, here's a brief description, with admitted plagiarism from the manual, of what this program does.

The major parameters or defining settings of a curve are: number of points or resolution; equator angle or the angle along the sphere's equator; polar angle or the angle toward the poles; radius; and curve distortion, which changes the curve's overall shape between a cube, a sphere, and a set of spikes. Many of these settings have additional parameters. For the two curve angles you can set the start angle and the number of revolutions around the globe. You can also add a modulation wiggle, analagous to a musical vibrato or tremelo, which has three parameters. Finally, the radius parameters control the size and number of bumps along the curve.

As mentioned, Lissa can generate 3D objects for use in other programs. While there is some error checking, in general you're responsible for making sure object parameters don't exceed target programs'



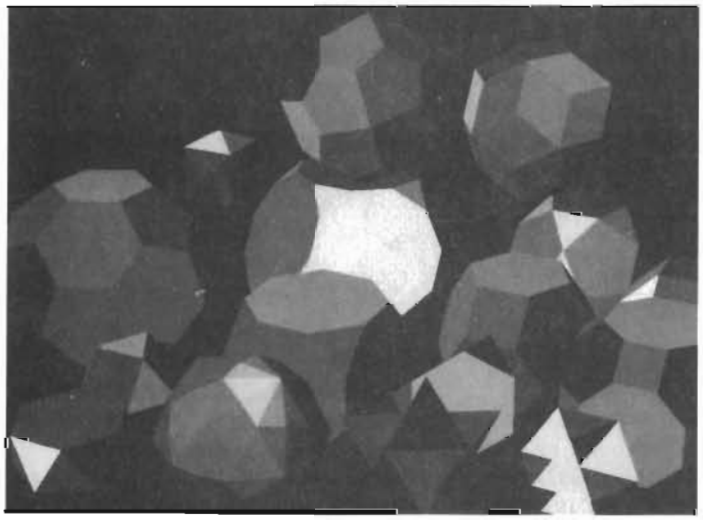
are undoubtedly more reliable tools than psychedelic drugs for helping us to better understand ourselves and our universe. Lissa, a commercial program for Amiga computers from Technical Tools of Warrenville, Illinois is a great example of a tool that by graphically illustrating mathematical principles with real-time feedback, helps expand our knowledge of natural shapes and motion. This, of course, can be highly useful when applied to 3D animation for video.

With a few clicks of the mouse, Lissa lets you explore the world of spherical Lissajous curves, which are smooth three-dimensional curves controlled by sinusoidal functions on a sphere. An example of a two-dimensional Lissajous is the figure 8 traced by a pendulum in the sand. Until now, 3D Lissajous curves were difficult to illustrate

input capabilities. For Imagine it can output the curve as an open or closed spline path (for motion or extrusion) or one made of edges. It can also connect all edges to the center of the curve by adding triangular faces, thus outputting a solid object. LightWave and Draw 4D output formats encompass the latter two Imagine options. For the few remaining Sculpt stalwarts, the program can output segments, splines, and paths complete with tumbles. Caligari output works only if you add faces. Geoformat output means a single (usually) warped polygon with many points. And for 3D landscape artists, Lissa can also output curves as two different types of Vista camera motion script files. There's also the Description text file, which lists object attributes, point coordinates, and edge/face information.

The 36-page manual provided with Lissa is superb. It starts out by explaining the principles and interface, then jumps right in with lots of examples for all the different parameters. There are lots of great illustrations and suggestions, as well as useful command summaries. I can't recommend this product highly enough—go get it now!

And while you're at it, order yourself a copy of Polyhedra, Technical Tools' other offering for the Amiga. This interesting, but not eminently useful collection of many-sided shapes will soon have you spouting terms like "dodecahedron" and "Archimedean Solid", not to mention using them in your 3D animations. Again, the manual is excellent, with illustrations and summary tables of the 50-odd shapes. And some of them are pretty odd, too! (Sorry, couldn't resist.) Objects in Polyhedra are all in Imagine format, and most come in outline and solid format. You can create interesting and unusual objects by copying, pasting, and resizing an outline polyhedron, then using Skin to create faces between it and the original.



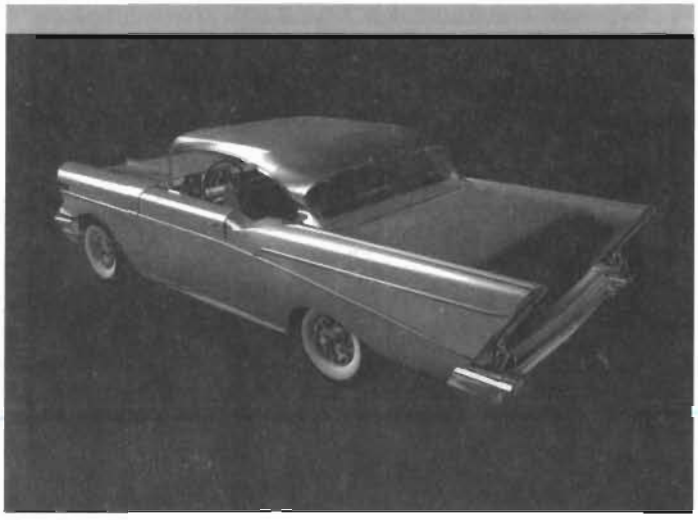
Technical Tools
2 S 461 Cherice Drive
Warrenville
IL 60555
(708) 393-6350

Will Vinton's Playmation

Last issue I mentioned my visit to SIGGRAPH, the computer graphics trade show held recently in Chicago. Unfortunately, I neglected to mention the presence on the exhibition floor of Anjon & Associates, who had a booth featuring Will Vinton's Playmation. For those of you who have been following the Martin Hash saga, this is essentially Animation Journeyman with a redesigned interface and a brand new manual. For those of you who haven't, Playmation is the only Amiga 3D animation program (it's also available for MS-DOS PCs running MicroSoft Windows) that uses splines for models. Instead of being made of stiff polygons, objects are created from smooth curves that can be moved, twisted, and tweaked until you get what you want. When animated, these characters appear flexible and rubbery, much like the characters in Vinton's prize-winning Claymation "cartoons"— you know, like the California Raisins? When you think of spline-based animation, think "natural-looking", because that's what it is.

Vinton probably uses real clay, but you don't have to get any dirt under your fingernails with Playmation's electronic clay. The program comes in the form of five modules: Sculpture for building parts; Character for building figures from parts and assigning surface attributes; Action for creating motion; Direction for building scenes from actions; and Render for creating the actual animation.

I haven't had much time to explore this program so I don't have a whole lot to report at this point, but can promise you much more next issue. I can tell you that between the new interface and the new manual, the program seems to be far more accessible than ever before. The package includes a short video called Joyride which is an exhilarating blast of a 3D animation created entirely with Playmation. If you haven't seen it, ask your Amiga retailer for a look—it might just convince you to buy the program. Anjon & Associates plan to make Playmation the premier Amiga 3D program, and with their high-powered promotion and Vinton's backing, I think they've got a shot!



Anjon & Associates
714 East Angeleno
Unit C, Burbank
CA 91501
(818) 566-8551

57 Chevy

For LightWave users who want or need a painstakingly accurate model of a 1957 Chevy, Ron Morris' Animation Creations has the answer to your prayers. The disk contains the entire model—the disk file is over a quarter of a megabyte in size—plus

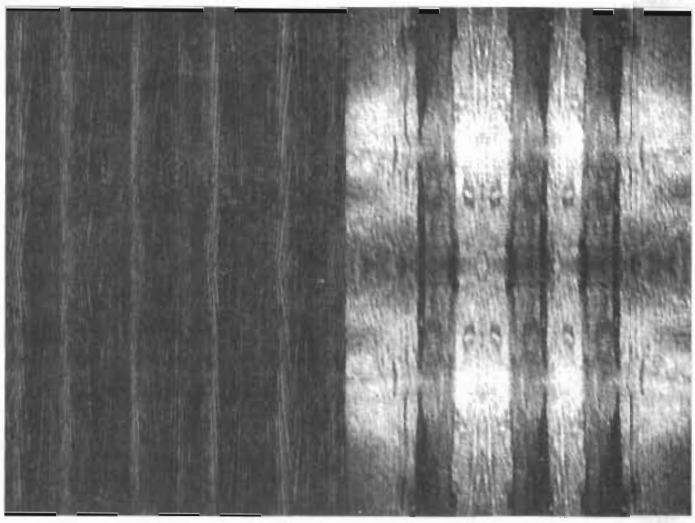
the individual parts as follows: body panels, bullets & tires, body panels, bullets & tires, dice, headlights, interior, lettering & undercarriage panels, molding & trim (chrome), molding & trim (gold), quarter panel inserts (aluminum), taillight lenses, and window glass (tinted blue). Apparently the model wasn't designed to be animated internally. For example, you can't open and close the doors because they're combined with the body, roof and steering wheel. The parts were provided to make customizing part of the model easier. Although there isn't a scene file containing a hierarchical linking of the parts, it's easy enough to build one, since the parts all load automatically into their proper positions.

Animation Creations
RD 2 Box 272 Tyrone
PA 16686
(814) 742-7671

MathVISION

Remember the old saying to the effect that teaching someone how to grow food for himself was a far greater gift than giving him food today? Well, the same thing goes for backgrounds and videographers. You can take a short-term view and buy ready-made backgrounds, or do it yourself by buying software that can create a practically infinite variety of backgrounds. The problem with the latter alternative is usually that it requires more time and work, both to learn the software and to experiment with it. Ready-made backgrounds are better for videographers who are too busy to fiddle with software, but if business is slow it behooves you to use those slack hours to develop new techniques that can help distinguish your video products and thus gain you more work.

One program with the unlikely name of MathVISION can help you do just that. In keeping with a theme in this month's column, it's essentially a program that was designed to help you see mathematical equations graphically. By plugging X and Y coordinates into a simple or complex formula, defined by you, as you travel across and down a rectangular grid, MathVISION can come up with colorful results including bullseyes, rainbow 3D hills and valleys, fractal patterns, and much more. For example, Arnie Cachelin of NewTek used MathVISION to create some of the new organic animwipes in Toaster 2.0. Equations, entered in standard algebraic format, can include standard math operators as well as trigonometric, transcendental, and Boolean functions. There's one line to enter a function for graphing, plus nine additional lines for entering user-defined functions which can be used in the first line's function. This setup can actually function as a small computer program, thanks to such capabilities as if-then-else constructs, passing of arguments, and recursion.



But if you don't program, it's not a problem. MathVISION comes with lots of examples, and there are many more available via support disks and newsletters. This program can really help you create unique images for use as backgrounds, texture maps, and so on. The manual is not bad, but could use some filling in of holes, and the program's interface could use work as well. MathVISION's chief liability for videographers is that it doesn't work in 24 bits. HAM's 12 bits is as high as it goes, and even that only works in the 2D contour map mode. However, you can certainly take the output into image processing programs such as Art Department Professional and ImageMaster and use their smoothing/blurring functions to create interpolated 24-bit color. You can even use the images directly in LightWave as texture maps with pixel smoothing turned on. You'll see more about MathVISION in future issues of AVID.

Seven Seas Software
PO Box 1451
Port Townsend
WA 98368
(206) 385-1956

Bearded Wonder

Bearded Wonder Graphics of New York have announced the release of the Ultimate Wood Collection in the new 24-bit version. This large collection of seamless wood texture maps contains 116 different images with variations on 49 basic textures. There's also a sampler set that contains 13 textures and 33 images. The images are all in 320 by 400 format, the reduced width being better suited for such applications as tiling into ProFills backgrounds. The manual, besides listing all images, offers tips of usage with various background, multimedia, video and 3D programs.

Bearded Wonder Graphics
1866 Ocean Ave. 5C
Brooklyn
NY 11230
(718) 998-1767

Pixel 3D Professional and InterChange Plus

I've received unfinished versions of both of these programs, which I've written about in the current issue of our sister publication, Video Toaster User. I was hoping to be able to tell you about the final versions of both by now, but it's just as well I haven't received them yet as I've run out of room. With any luck, I'll have detailed descriptions in the next column. Until then, if you have the time, render, model, and then render some more!

Algorithmic Composition & Video Music Box

© 1992 by Jaxon Crow

If you've been using an Amiga or just about any other kind of computer for very long, you've probably encountered the term "algorithmic composition". The term refers to the process of using the number-crunching capacity of the computer to make a certain amount of compositional contributions in composing or performing original music. Mathematical configurations (algorithms) are utilized within these programs to produce or alter music data, usually in the form of MIDI information. Lots of different approaches are taken in a variety of programs, each suited to a different level of musical interest and expertise. Any of these algorithmic composition programs can be operated straight out of the box by *anyone*, regardless of previous music experience, or additional equipment. Fully understanding and utilizing these programs, of course, takes time and practice (as is the case with any other new program or device), but most algorithmic composition software is relatively simple to use.

What's Available

By now, numerous dedicated algorithmic composition programs for the Amiga have come to market. Many other established music sequencing programs have integrated certain aspects of algorithmic composition techniques into their program environments. For example, Bars and Pipes, and B&P Pro rely heavily on their unique set of Tools to produce chords, echoes, and other musical embellishment, either in real time, or after the original tracks are recorded. Dr. T's KCS 3.5 (Level II) utilizes a completely different type of modification of musical elements. With Level II, all of the algorithmic permutation takes place in the editing stage through the use of several screens of mathematical variables. These formulas can quantize, or auto-correct the timing of notes, delete wrong notes, or completely change the key, volume, or MIDI channel of the tracks. They are selectively applied to the original musical tracks in order to create variations. And, as music and multi-media software for the Amiga becomes more sophisticated, several programs have begun to appear which are particularly well suited to video producers. In this installment of the continuing Amiga Sound-for-Video series, we'll look at a few programs designed for the production of original music by *non-musicians* and musicians alike.

Anyone with an Amiga can produce some fairly high quality electronic music, even with no additional equipment. If, however, you do have access to a MIDI keyboard or sound modules, a MIDI interface is, without a doubt, a worthwhile investment. If you are a video producer with an Amiga, you owe it to yourself to investigate the potential of some of

this exciting and easy-to-use music software. (At the end of this article, I'll give you some information on getting copies of some working music demo programs, including Video Music Box *absolutely free*!)

Algorithmic Alternatives

Music Mouse is probably one of the earliest algorithmic composition programs, and is also one of the easiest to use and least expensive (at a retail price of $79.00, available for lots less discounted). Music Mouse does not require the use of a MIDI interface or a MIDI keyboard. The program actually converts mouse movements into musical events. Commands that you provide from the Amiga keyboard also serve as switches for numerous options effecting pitch content, rhythm, and other automated functions. The program restricts the notes that are played to a group of preset scales. So, even if you don't know *anything about* music, you can still create some very interesting songs with just a little bit of practice. Some of the options don't become clear unless you just try them. It's an extremely interesting program, but you can't save songs. Everything happens in real time. (I have discovered that the MIDI Out can be plugged into the MIDI In. Then through the miracle of multi-tasking, you can boot a sequencer program and record the Music Mouse output into the sequencer!) The program will transmit MIDI note and controller information, so it can control external MIDI devices. It does not, however, read or supply MIDI timing data, so it cannot be controlled from SMPTE or MIDI Time Code. Music-for-Video applications which do not require crucial timing, such as simple stings, logos, or interludes can be easily produced with Music Mouse.

Another of the first and probably one of the most unusual algorithmic composition programs for the Amiga is M. If you are at all familiar with music sequencing, you'd probably recognize M as a four track step-time sequencer. However, its highly advanced features allow variations in pitch, volume, rhythm, note order and density, and a host of other musical variables, all of which are accessible through a system of on-screen grids and windows. Most of the sequences produced with M tend to be highly syncopated, and, unlike all of the other algorithmic composition programs I'll outline here, M does not force your music to conform to a set key or musical structure, so the results can be a bit unpredictable. This can be good if you like that kind of thing, or if you need something that sounds very "sequenced" for a video sting or bed. I've used M to compose several background tracks which were used in conjunction with "live" audio and/or narration to create continuity in video segments. M works with the Amiga's internal sounds, or, by using a MIDI interface, notes can be entered from an external keyboard, and external synthesizers can be played back from the Amiga. M saves files in its own proprietary format, or as standard MIDI files, allowing them to be imported into other music sequencer programs for editing or further manipulation. (More on the subject the exchange of standard MIDI format files in an upcoming article.) Currently, both M and Music Mouse are distributed by Dr. T's Music Software. M has a retail price of $199.00, but can be found heavily discounted.

Among the new generation of algorithmic composition software for the Amiga are two programs which are particularly well suited for Amiga users who want to produce music in a common style for video themes and logos. SuperJam!, from the Blue Ribbon SoundWorks, Ltd., and Video Music Box, from Digital Expressions can be utilized by virtually anyone to compose quick and useful musical backgrounds in quite a wide array of styles. While the programs bear some similarities including on-screen editing of musical notes, scales, and chords, they differ considerably in their in their structure and feel. SuperJam! uses the same type of graphic format used in Bars and Pipes, which often leads to numerous overlapping windows and a rather cluttered appearance, but Video Music Box has a very orderly presentation. Both programs utilize user-selectable "templates" to conform your compositions to a given musical style, so even if you are not a player, you can still produce music

in an easily recognizable style. Many of the more advanced features in either program will be of use to anyone with a greater knowledge of music theory. (For a full review of SuperJam! see AVID Vol.3, issue #4).

Video Music Box

I recently received a copy of Video Music Box, version 1.4, and, I must admit I'm surprised and impressed by this relatively inexpensive new algorithmic composition program. Video Music Box was designed to produce both MIDI and SMUS format songs. It's an ideal program to compose soundtracks for multimedia programs like AmigaVision, Deluxe Video, or CanDo, which use the SMUS format to drive the Amiga's four internal audio oscillators. It is a quick and easy way to explore new (and old) types music for the video and multi-media environment.

Operations within Video Music Box are organized around four basic objects: styles, chord progressions, sequences, and soundtracks. Quoting from the VMB manual, "A musical style can be defined as the combination of distinctive features that characterize a musical performance." Those features consist of harmonic and rhythmic information which interact with the chosen chord progression. Those factors, in conjunction with the songs' tempo, and the choice of instrumentation make up the sequence. The resulting sequence can then be used in the Soundtrack mode, where segments of the sequence can be instructed to play, with changes in volume and tempo to be executed at designated times.

Style is not the easiest thing to define—you sort of know it when you hear it. In Video Music Box, a style is comprised primarily of rhythm patterns being played by up to six players. Possibly, the best way of describing what styles are, is to compare a few of the 50+ styles included with VMB. The styles provided are divided into three basic categories: Blues & Boogie, Jazz & Funk, and Rock & Pop. Each category contains approximately 18 to 35 styles. For example, the Pock and Pop directory contains: Country 1-5, Rockabilly 1-4, TechnoRock 1-2, and others. These provide the basic rhythmic skeleton for your sequence.

The chosen style is then juxtaposed with one of over sixty sets of chord progressions. The chord progression can be composed of up to six chords per measure, and may be from two to thirty-two measures in length. Ultimately, it is the chord progression which determines the key and scale of the sequence which is produced. The chord progressions range from relatively simple ones (like Blues 1-6), to some which are much more complex (such as Jazz Fusion, or Latin 1-6). When the chord progression is applied within a selected style, the resulting sequence can be very interesting. (As a composer and a video producer, I must admit, this is a great way of quickly sketching out some ideas for new types of music for video.)

Also associated with sequence generation is the Sequence Preferences window. For each of the six parts generated by VMB, high and low note limits can be set, along with a percentage of randomization to be provided by the Amiga. MIDI channels can also be specified here, so if you normally use a particular instrument for chords or bass, it can be preset, and then saved as a default setting for all of your future sequence generation.

Video Music Box can also generate a soundtrack of a given length from the sequences you load or create. Up to five volume and tempo changes can be set, with each variation triggered at the specified time. If you are, for example, composing a piece of music exactly 30 seconds in length, and you need the volume to drop by one-third when the narration begins at precisely eight seconds, only to again rise, accompanied by slight a increase in tempo at 25 seconds, these parameters can be specified in the soundtrack mode.

VMB can also apply a pitch map to the drum parts. In other words, if you have an external drum machine or sound sampler, you can set the drum parts provided by VMB, so that they play the appropriate drum sounds (i.e. your snare drum sound will play on the snare beats, and your cymbals on the cymbals, etc.). This is a great feature for anyone with a

MIDI drum machine, sampler, or access to two Amigas.

Your own MIDI (or SMUS) sequences can be loaded into Video Music Box, where they can be converted to style templates with the Make Patterns function. These can be edited and saved as styles to be used in later music compositions. So, over time you could build a custom library of styles, from which you could draw in building variations and new arrangements. When parts are converted in the Make Patterns window, they are designated as Rhythm, Bass, Chords, or Auxiliary melody parts. A different set of rules governing harmony and composition is automatically applied to each type of musical part.

On the down side of Video Music Box, in order to alter a sequence composed with the program, notes must be edited graphically. They cannot be input from a MIDI keyboard, but must be drawn on screen. Also, the program is able to trigger the internal voices, *or* play through MIDI, but not both simultaneously. So, you cannot use the Amiga's sounds with external MIDI sound sources.

Through the use of algorithmic composition, even a music novice can create some extremely convincing electronic music. Just as it's possible to drive an automobile without understanding the intricacies of internal combustion, with a little patience and practice, virtually anyone can learn to compose music. Video Music Box is one vehicle which can give you the capability of producing some useful original music in a specific style or genre. In the end, I highly recommend Video Music Box for the quick production of songs for video or multi-media.

Other News

Also, this month I received a review copy of another new Amiga product from New Sound Music, (313) 355-3643, called "Jazz Through MIDI". The package consists of two disks full of MIDI files and a printed manual. It's primarily an educational product, full of examples and exercises geared toward students of jazz keyboard. It's an extremely well produced tutorial system, however it does require the use of a separate sequencer program which supports the MIDI file format. At $49.95, it's a lot cheaper than years of private piano lessons. New Sound Music also makes a set of MIDI files called "Soundtracks for MIDI", which contains over 100 multi-track sequences composed specifically for video backgrounds. More on that soon.

I can tell from the continued response I've been getting for the demo versions of M, Synthia Professional, Bars and Pipes, and B&P Pro, there are quite a few Amiga video producers out there with at least a healthy curiosity about the potential of Amiga music and sound software! This month I'll repeat that offer for new AVID readers, and add to the list of working demo programs, a demo version of Video Music Box (graciously provided by David Strohbeen at Digital Expressions). If you'll send me up to five blank 3.5 inch disks, along with the appropriate postage, I'll provide those demo programs to you free of charge.

SuperJam! and Bars and Pipes, and Bars and Pipes Professional are distributed by

The Blue Ribbon Soundworks, Ltd.
1293 Briardale Lane NE
Atlanta, GA 30306
(404) 377-1514.

KCS 3.5 (with Level II), Music Mouse, and M are distributed by

Dr. T's Music Software
124 Crescent Rd. #3
Needham, MA 02194
(617) 455-1454.

Video Music Box is from Digital Expressions

W6400 Firelane 8
Menasha, WI 54952
(414) 733-6863.

Jaxon Crow has recently released his first tutorial videotape on producing Sound for Video projects (featuring M and Music Mouse) entitled AMIGA MUSIC FOR VIDEO, Volume One. Jaxon can be reached for questions or consultation at: Neon Tetra Productions, P.O. Box 876, Hot Springs National Park, AR 71902, (501) 321-1198. Please call or write for a free catalog of audio and video tapes.

An Amiga Multiple Animation Project:

Applying Amiga Animation Techniques to Commercial Broadcast Applications

© 1992 by R. Shamms Mortier, PhD.

Many Amiga animators are finding a ready welcome for their work in the design of animations and animated segments appropriate for regional broadcast on network TV. I have developed, over the years, a healthy relationship with the ABC affiliate in my area, and we have worked together on several commercials for local and regional advertisers. The advantage to the client in working with an Amiga animator versus a high end designer can be stated in one word: cost. An Amiga designer doesn't have anywhere near the overhead that a high end system designer or graphics house has to constantly address. The output of most of the work can be equal as far as quality is concerned, though national accounts still prefer some of the "looks" only a high end system can provide. Even this is being challenged, however, as Amiga software and hardware reaches ever increasing levels of sophistication.

Most assignments for local & regional broadcast clients are logo-oriented, as my AVID columns over the years have continuously demonstrated, but this need not be the endall of ones approach to Amiga commercial applications. With a little cooperation from a creative director at the affiliate level, it is possible to brainstorm uses for computer graphics that either include more then a logo animation, or that ignore logo animation altogether. The project that this article describes illustrates this type of work.

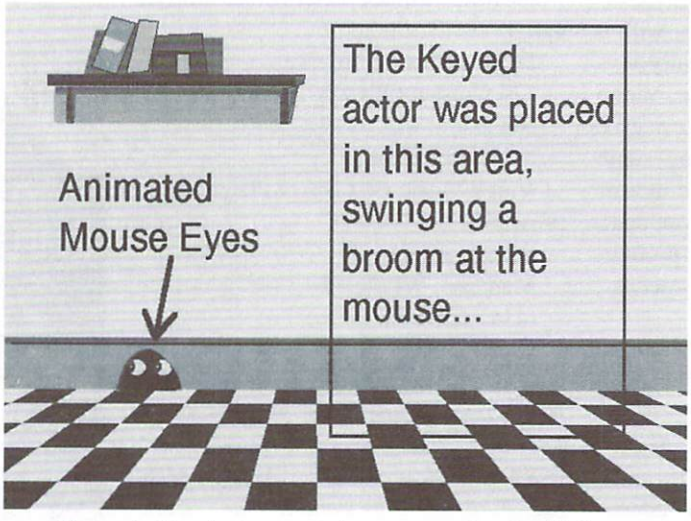


Figure 1: Here is the scene that was overlayed with live action in the studio.

The company that was addressed in this assignment was quite satisfied with their logo as it translated to the video screen. The logo did not move or spin, nor was there a desire that it do so. But the client, a local cheese outlet store, wanted to spice up other parts of the commercial with computer generated animations. Their budget, by the way, was only $500.00 for the finished work, so the existence of my Amiga animation studio was a blessing to them, as I was able to bid successfully on this job. Uninformed readers should know that $500.00 is dirt cheap for computer animation these days, especially for the complexity of work that I will detail. My knowledge of appropriate Amiga software however allowed me to complete this job in about ten hours, so $50.00 an hour is not a bad wage.

There were to be three separate parts to the 30-second animation:

1. A background animation that would fill the screen showing a mouse peeking out from a hole in a wall, against which a woman would be shown (chroma-keyed) swinging at it with a broom.

2. A strange looped animation of a cow in a field was required. The frames for this were to be digitized from a video.

3. A snapping mousetrap.

4. An animated dancing mouse was to be produced and used as the central feature of the piece. It was suggested that it not look "looped", but that it have some variability in its movement, as it was to remain on screen for some five seconds.

How The Work Was Accomplished

Every professional Amiga animator soon begins to realize that in order to have all of the tools needed to answer a specific task requires a working familiarity with more then one rendering or animation package. This being said, however, it is also true that there are a few pieces of software that seem to offer more then their share of answers to any problem imaginable. These packages remain the most fingerprinted in your collection, being grabbed for constantly. About a dozen or so packages remain in this category for me, and every Amiga animator has his/her favorites. In 2D animation work, Deluxe Paint IV is a program I use constantly, as do most other Amiga animators. In addition to DPaint, I used Disney's Animation Studio and Digital Creation's DCTV Paint for this project.

Swinging At An Animation

1. All that I animated on this frame were the eyes of the "mouse" as it peeked out from a hole in the wall. The station's creative director told me where the animation was to be placed, and the rest was easy. I used DCTV Paint to generate the basic frame, and then went to DPaint to create an animated "eye" moving from side to side. To get two eyes, I simply flipped the first one after picking it up as an ANIMbrush. Then I loaded each frame of the ANIMbrush into DCTV paint, and placed them in sequence on 30 frames. DPaint was then used to play them back and record them to tape. Time to create: about two hours.

2. The station's creative director gave me a tape of a cow in a field and a surprised farmer which I used with the capture module of DCTV to freeze. I then did some touch up in DPaint, saving each frame as a Hi-Res picture. The cow points to the man in a looped animation. I added my own background, and played back the frames to a VCR using DPaint. Time to create: about three hours.

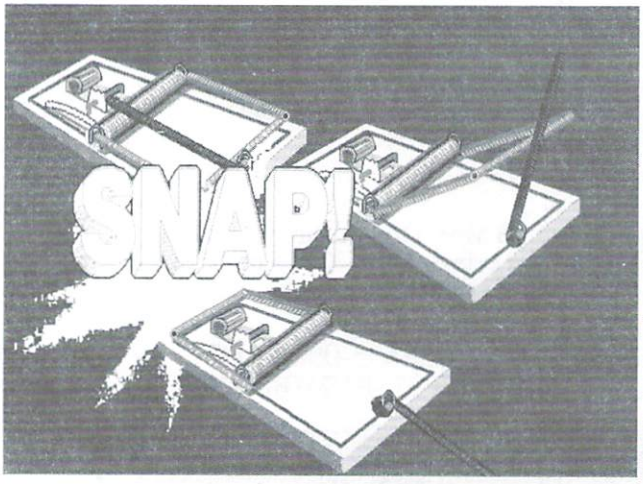
3. The snapping mousetrap was easy to create in DPaint, though if I were to do it

Figure 2: The digitized cow moves with a surprise.

again, I'd probably use Aladdin 4D and save out the frames as a DCTV animation. Why go through the trouble of creating a 3D object in 2D when there is such excellent 3D software available on the Amiga? Well, either my anxiety or some other factor interfered with my creative process, and I used DPaint to develop this idea. Not that it was a bad choice, mind you, because the final product was quite acceptable. The "Snap" lettering was added for comic book effect.

4. The dancing mouse was the most complicated part of the project. We decided a Disney-like animation was needed, and that requires a fair amount of hand work. Though DPaint IV has a nice "Lightbox" feature which allows you to see through the frame you're working on to the one preceeding it, I like the "Pencil Test" mode of Disney's Animation Studio better for this level of character animation. There are also some very nice pattern fill options in the colorizing mode of the Disney software.

Figure 3: "Snap" goes the animated trap.



I wasn't after a "Mickey Mouse" character, but a more cynical mouse. It took a while to get the features that I wanted, but finally the character took shape. I used a lot of rounded features to give the 2D figure some 3D depth. I animated the eyes, mouth, and the dancing torso. The Pencil Test mode of Animation Studio lets you see through many layers of previous frames, so I was able to gauge the movements with fair precision. Movements of greater than about 1/8 of an inch cause an animation to look fairly jerky, and I wanted smooth choreography, so I took the time to draw my suceeding frames more accurately. To give the figure more interest, I also added a spinning cane and a flipping top hat. When this "Pencil Test" was complete, I moved it into the colorizing module, and added colors and patterns. Finally, the background was added.

One of the great advantages of the Amiga is the transferability of its IFF format. The Disney created animation was saved as an IFF ANIM, and ported to DPaint. Here, being more familiar with the editing tools, I was able to touch-up the animation where it needed it. I changed some of the palette colors to my liking, and set it in play mode. Now if I had merely recorded the continuous loop, it would have taken about one second to become predictable and rather boring. This is where I used a feature of DPaint some readers may not know about. By pressing the "R" key on the keypad, a reverse is immediately invoked in an animated sequence. By creatively experimenting with this option, and striking the "R" key many time as needed, I was able to make the mouse dance, the cane spin, and the hat topple, in a rather random and unpredictable manner, adding a lot of visual interest. Though the piece only called for about 5 seconds of this choreography, I recorded about a minute of it to tape. This allowed the station's creative director to choose his best segment for edit. Here's a professional tip: the more you invite a client to participate in the creative process, the more sucessful you will be, because everyone involved loves to play.

Finally, after the piece was recorded to tape, I inserted some sound behind the dancing mouse. I did this by selecting a wood-block sample from my Casio-1000 using the audio dub feature on my recorder to add it to the animation. This makes the mouse sound like he's tap dancing with Dutch clogs on, and it comes off as very humorous. The creative director decided not to use my sound, but I use it when I demonstrate this animation on one of my portfolio tapes. See the accompanying figures for graphic examples of the elements in this project. If you are an AVID subscriber and want me to send you a disk with the animated mouse on it (which you too can play in DPaint with interaction and the "R" key), then send $15.00 (non-AVID subscribers send $20.00) to:

Eyeful Tower Communications
15 Rockydale
Bristol, VT. 05443

That's all for now.

See you in ROMulan space. ENJOY!

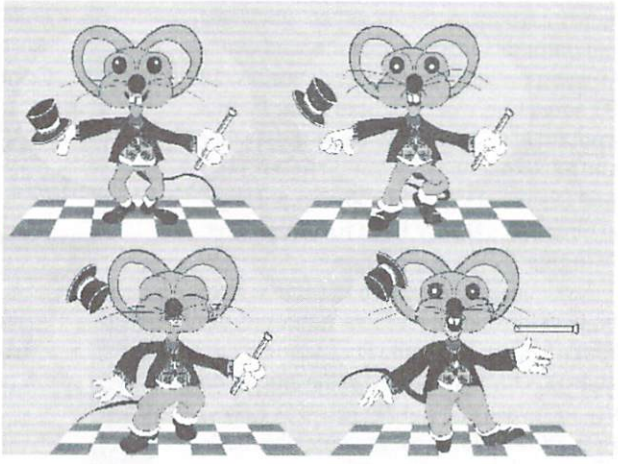
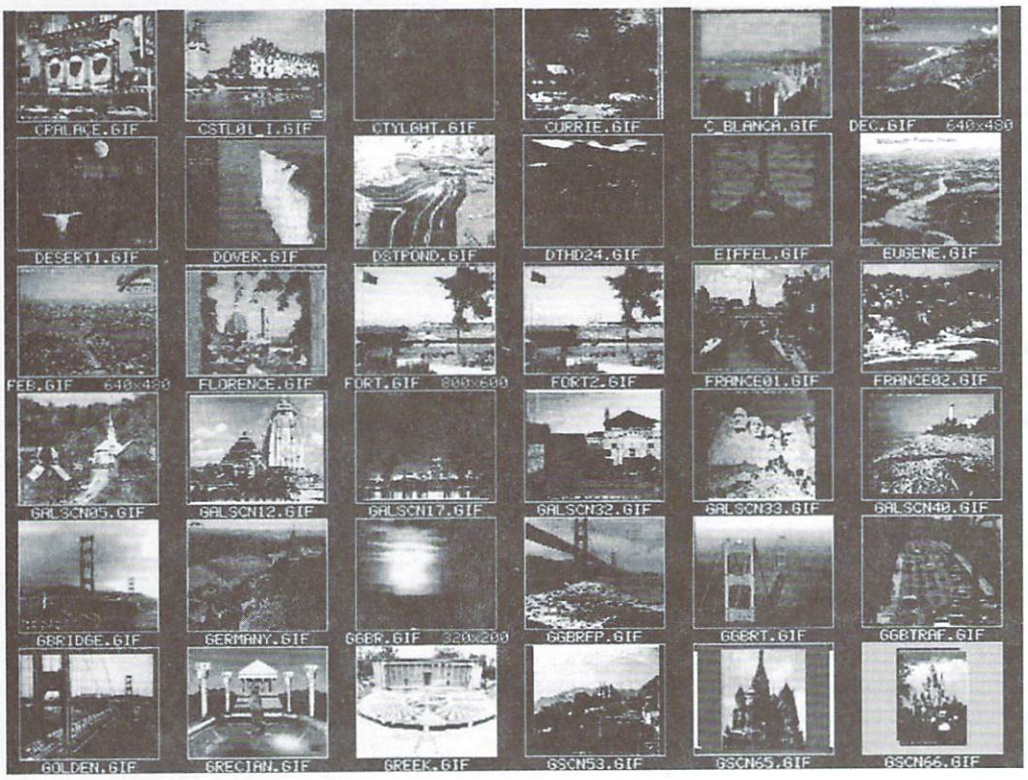


Figure 4: A dancing mouse captivates the crowd.

Video Graphic Goodies

© 1992 by Harv Laser



Last time I gave you some pointers on the different classes of freely-distributable software and offered some suggestions on where to find it, such as hooking up a modem and downloading from BBSs or commercial services like The Portal System, or buying disks from publishers of "free" software, or rummaging through your local user group's collection.

There's yet another source of "free" software, and one particular product crossed my desk this week that's such an outrageous bargain that I want to take some time to tell you about it. This other source is CD ROM. A single CD can hold upwards of 600 megabytes of computer files or programs.

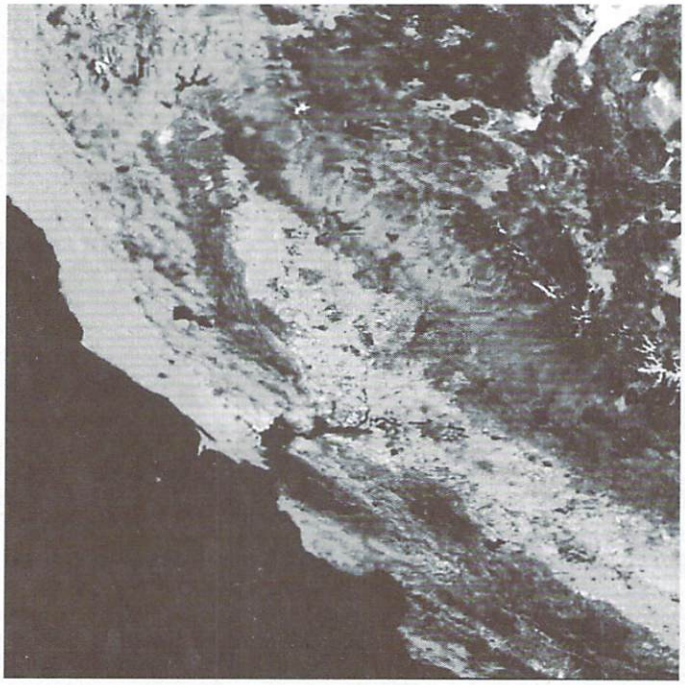
I won't bore you with the whole history of the CD here; there are better and more informed sources for such information. As folks involved in Amiga graphics and video work, the dirty mechanics of file systems and delivery formats can get boring real fast. All we want to know is "What's out there, how much is it gonna cost me and what can I do with it!?"

Well suppose I told you that a company has put over 6000 images of all descriptions in GIF format on a single CD and sells it for $24.95. The company is called Walnut Creek CDROM and this product is called *GIFs Galore*, and you can take that title at face value, because these folks ain't kiddin' about "galore." To put the number 6000 in perspective, imagine that each picture was printed on a sheet of paper. There are 500 sheets to a ream. There are ten reams to a case. So this single disc has more pictures on it than there are sheets in a full case of photocopier paper. Now, that's entertainment.

I stumbled across Walnut Creek's products from articles posted to the worldwide Usenet newsgroups, specifically because this company also produces a CD containing what's known as a "mirror image" of a now-closed Internet FTP site called ab20.larc.nasa.gov, which contained over 300 meg (over 3000 files) of Amiga freely distributable applications, source code, games, images, animations, music and so on. FTP is a subject which deserves a whole column for explanation another time. But I was curious as to what else Walnut Creek offered, so I called them to ask, and learned

about the GIFs Galore CD which, which, when I heard its price, I ordered immediately. To say I'm not disappointed by this product would be an extreme understatement.

I use Commodore's CDTV machine as my CD ROM drive. CDTV is connected to my Amiga 2500 via a $5 "Parnet" cable and by running the Parnet software on both machines, they become a simple two-Amiga network and can talk to each other and transfer files back and forth. The Parnet software and the plans for making an appropriate cable are found on Fred Fish Disk number 400. Some Amiga dealers sell pre-made Parnet parallel port cables for those of us to whom a soldering iron is a lethal weapon.



What this setup lets me do is buy "generic ISO-9660 format" CD ROM software, shove it into CDTV, and access it from my Amiga. This means I can run any of my normal software, and when I want to load a file from the CDTV's CD drive, I just specify "network:cd0" as the source drive in a program's file requester. It's as simple as that. The speed of data transfer over a Parnet link is faster than a floppy drive, but slower than a hard drive, and of course if you make changes to a file, you can't save it back to the CD because those discs are read-only, but if you already own a CDTV and an Amiga, you can't beat a $5 network.

The GIFs Galore CD ROM is divided up into many directories of pictures, with each directory holding one category of a few dozen or many hundreds of images. Some samples are reproduced here. The CD's categories include abstracts, art, aviation, birds, boats, buildings, cars, cartoons, cats, clip art, dogs, fantasy, fish, flowers, food, fractals, frogs, hunks (also known as "beefcake" male model poses), insects, corporate logos, mammals, maps, military, movies, nature, people, places, raytraces, reptiles, science fiction, space, Star Trek, Star Wars, swimsuit (female pinup pictures, but nothing in this directory is "X-rated" although most of it is very sexy stuff), technology, things, trains, television, and the Vietnam war. Phew.

Since each directory holds from dozens to hundreds of pictures (the swimsuit directory alone has over 630 images), it would take days to go through them all one image at a time, so each directory also contains a number of "thumbnail" index GIF screens. These are postage stamp sized reductions, a few dozen to a screen, each clearly labelled with the full size picture's name, which you can load and view to see what's in that directory.

The entire directory structure of the CD, listing all the thousands of files it contains is provided on the CD as a single text file, which also specifies each image's dimensions in pixels, number of colors, and bitplanes. You could send this text file to your printer for a hardcopy index of the entire CD, or load it into a text editor, a word processor, or just search it with the "more" text viewer that Commodore provides with the WorkBench/AmigaDOS operating system.

Since the GIF image file format is cross-platform compatible, meaning that with the right software, almost any modern brand of computer is capable of loading, converting, and displaying GIFs, another directory on the CD contains dozens of viewing programs for GIF files. The Amiga viewers provided are listed in the chart below.

Also included are LHarc and ZOO to unpack those files. Some of these programs are Shareware, so if you use them and enjoy them and plan to keep using them, the appropriate monetary contribution should be sent to the program's author. This will often get you a newer version of a program, and perhaps one with more features and better documentation.

If you want to use the GIFs Galore CD ROM on some other kind of computer, the CD also provides viewers which will run on MS-DOS machines under DOS, Windows and OS/2, Macs, Atari ST, NeXT, DECstations, SGI, and Sun SPARCs. All the computer needs is the appropriate connection to a CD ROM drive, whether external or built-in.

My Amiga is equipped with an Impulse Firecracker 24-bit display card. I like to access the GIFs Galore CD via the file requester in ASDG's Art Department Professional, load in a GIF file which ADPro then converts internally to 24-bit color data or 8-bit gray scale data depending on the source image. By using ADPro's FC24 saver, I can then view the pictures on the Firecracker in glorious 24-bit analog RGB color. Or I can convert the data into any format ADPro is capable of saving back to disk, such as JPEG, which is what I used to compress the sample pictures here before transmitting them to AVID's office. You could do the same if you own any other kind of Amiga display device such as a DCTV, IV-24, Toaster, OpalVision and etc.

As you'd expect, the quality of the images on the GIFs Galore CD ROM varies wildly. Some images are low-resolution with few colors, or poor color balance. Image processing software such as ADPro can easily correct such deficiencies though, and can scale the pictures to a larger size. On the other hand, many of the CD's images are simply glorious, often spectacular full-overscan high-resolution or larger, with extremely good color saturation and intensity. It's a real mixed bag here but there's so much to choose from,

Filename	Short description from the CD
gif2iff.zoo	- convert GIF files to IFF
gifinfo1.lzh	- Information on GIFs
gifmachn.lzh	- GIFMachine 1.3, Converts GIF files into SHAM files.
giftoif2.lzh	- convert GIF files to IFF
gifview2.lzh	- GIF_view (v. 2 / october '91) by Lorenzo Musto
turbogif.lzh	- Fast B&W GIF Viewer, Version 1.0, by Steve Borden
virtgif2.lzh	- the last GIF-viewer you'll ever need

you'd be hard pressed to go looking for some kind of image on this CD and not be able to find it.

I was curious as to whether or not the GIFs Galore images could be used in one's own commercial productions, so I asked Walnut Creek CDROM what their policy was on the subject. They informed me that they do not claim any copyright on the images on the disc. However, they also don't know which, if any of the images on the disc are held under someone else's copyright. They said they pulled all the images off of Internet FTP sites, on which only freely distributable software is supposed to be allowed, and insofar as using the images in a commercial production, "you're on your own" regarding legal questions.

One other note regarding the GIFs Galore disc and its use on a CDTV: if you simply insert the disc in a caddie and try to boot CDTV with it, CDTV's main screen will turn red, the equivalent of an Amiga GURU alert. Due to the way the GIFs Galore CD's boot sectors are written you cannot boot CDTV with this disc. You must connect a standard Amiga floppy disk to your CDTV, and into that drive insert a bootable AmigaDOS 1.3 WorkBench disk. Copy your Parnet software to the floppy too. Boot CDTV with the WorkBench disk, and then the CD will be accessible, both to the CDTV itself and over your network. If you're using a generic CD ROM drive connected directly to your Amiga, then follow your normal procedure for reading an ISO-9660 format CD ROM.

The GIFs Galore CD ROM is truly a "one stop shop" for pictures. It offers an unbelievable variety of high quality images at an astonishingly low price.

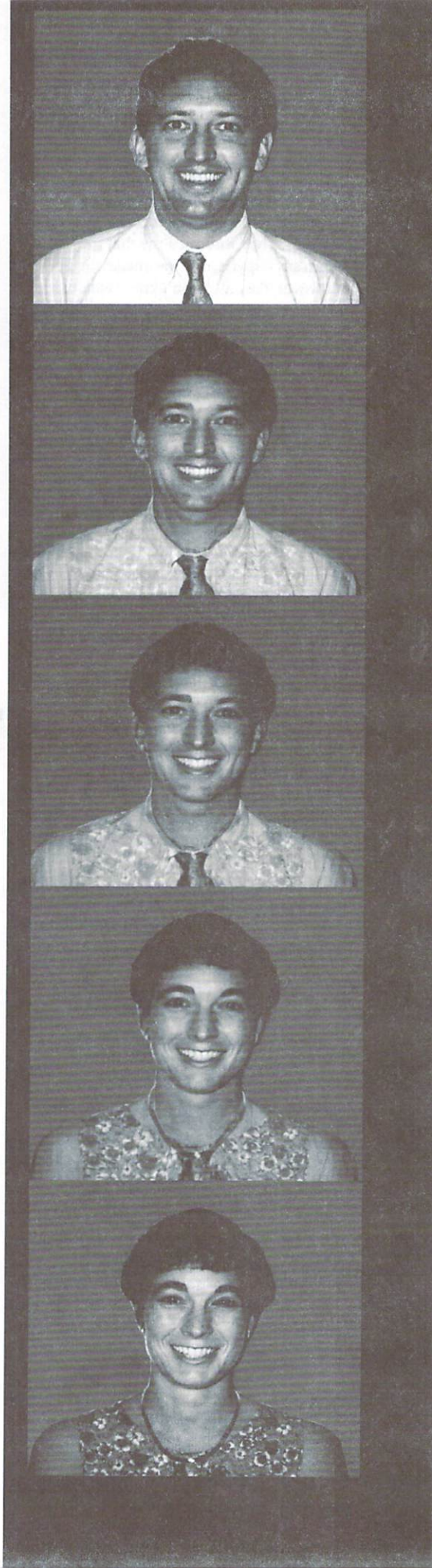
GIFs Galore
$24.95 (disc caddy not included)
Walnut Creek CDROM
1547 Palos Verdes Mall, Suite 260
Walnut Creek, CA 94596
1-800-786-9907
1-510-947-5996
1-510-947-1644 FAX

Video Graphic Goodies is a regular AVID column about low-cost and free useful products for Amiga videographers. Author Harv Laser is well-positioned to know about such things, being the coordinator of the Amiga area on Portal, a national information service. Contact Harv via this publication, or directly via these online addresses:

Portal: harv
Internet: harv@cup.portal.com

Review:

CineMorph



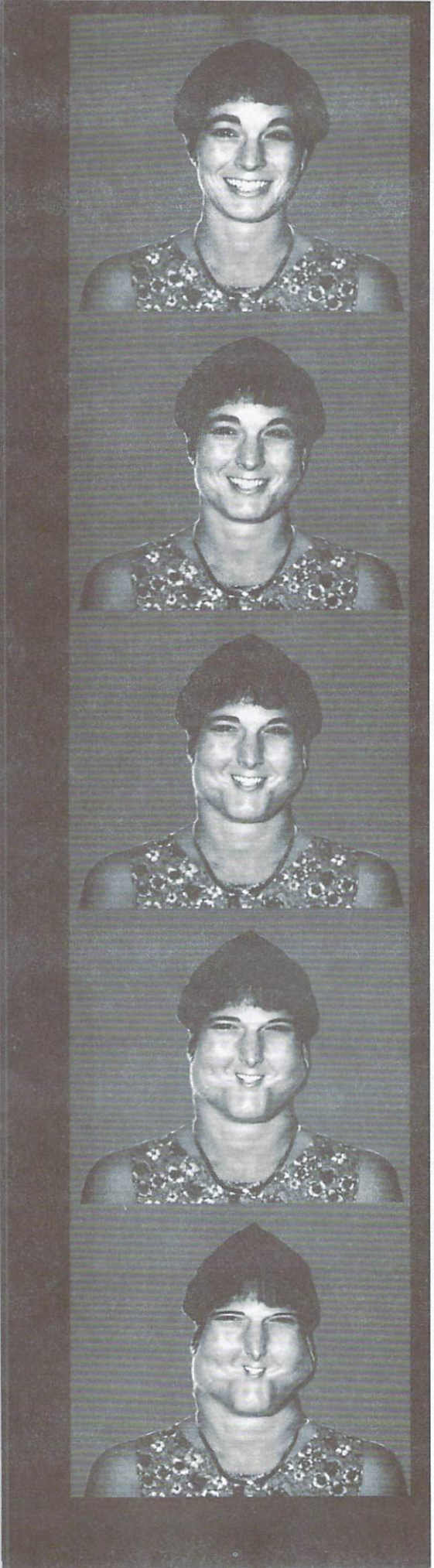
GVP's entry into the morph wars (and indeed their first venture into software since Scala) is called CineMorph.

As you probably know by now, "morphing" is the process of transforming one image into another using a combination of geometric warping and cross dissolving. Examples of morphing can be seen in the ever popular Michael Jackson video Black or White, the movies Terminator 2:Judgement Day and Star Trek VI, and a growing number of television commercials.

Morphing is by no means an automatic process; creating a good morph takes a good deal of effort on the part of the user. Before morphing even begins there is the problem of selecting the right images; this alone can make or break a morph. Generally speaking, the more similar the two images the more likely the morph is to "work."

There are several methods of morphing in use today, each of which has its own advantages and disadvantages. CineMorph uses a method known as "mesh warping", originally developed at Industrial Light and Magic, which involves arranging a mesh or grid of points over corresponding features of the source and destination images. As the term implies, CineMorph's mesh is composed of rows and columns of lines. The intersections of these rows and columns are called "points"; these points can be moved around to conform the mesh to the images. Proper alignment of the mesh can produce visually stunning morphs, but on the flip side improper alignment of the mesh can produce very unattractive morphs.

CineMorph has a well designed user interface, consisting of two sizeable windows (where the source and destination images reside) and a bevy of pull-down menus. Images are normally shown in 8-



color dithered greyscale (which looks better than it sounds), and are scaled automatically to fit within the dimensions of the window. Since the windows are resizable, you can make the windows as small or large as you want, ranging from small thumbnails all the way up to full-screen size windows for detailed work. The use of resizable windows somewhat compensates for what I feel is one of CineMorph's biggest flaws; lack of a magnification feature. Under Workbench 2.0 or greater, you can select CineMorph's screen mode and depth, so it is possible to work in productivity mode, NTSC, PAL, or whatever your computer supports.

The mesh is shown over the images as rows and columns with intersections of raised blue points, which can be selected with the left mouse button and dragged around as you would expect. CineMorph also supports extended selection just like Workbench, where you can hold down shift, select and number of points, and drag them all around at once. And like Workbench 2.0, you can drag out a box and select all the points within that box to move.

Spline or Line?

CineMorph supports two variations of the mesh warping algorithm; spline morphing and line morphing. Spline morphing has been traditionally used for this type of morphing in the past, but it can be quite difficult to align the mesh properly due to the nature of the splines. Spline morphing, apparently at the request of professional users, was put into the program for the high resolution needs of film and print, but is not needed for video or Amiga displays. CineMorph's line morphing is not only considerably faster, but is much easier to work with for those starting out. You select which method you want to use via. a pull-down menu. CineMorph allows you to view the mesh onscreen in either the line or spline method, but I highly recommend displaying the mesh in the same mode you're going to morph in, as it is easy to get confused otherwise.

CineMorph has three modes of operation; single image warp, dual image morph, and sequence morph. "Single image warp" is just a subset of the morph process which allows you deform a single image with results ranging from a mild distortion to the truly bizarre. The single image warp in CineMorph is done by pulling points around on the destination image, which effectively pulls parts of the image around to follow the points. Generally it is not necessary to move the points on the source window at all.

"Dual image morph" will probably be the most used mode of CineMorph, at least initially. This is where you morph a source image into a destination image. The object here is to align the mesh over key features of the source image, then align corresponding points in the destination mesh over corresponding features of the destination image. The result is a sequence of frames showing the transformation of the source into the destination.

The "sequence morph" mode is the most complicated mode, but is capable of producing very effective results. This mode is used to transform one moving sequence into another, which is what is usually done on the high-class, high-dollar morphs. Normally, one would have to edit a mesh for each frame in the sequence, but CineMorph alleviates this tedium somewhat by allowing you to place "key frames" in the sequence at strategic locations. You need only edit the mesh at the key frames; the remaining frames are generated automatically using a linear interpolation process. In most cases it should be sufficient to have a key frame about every 10 frames, but if need be a key frame can be placed in each and every frame for total control of the morph.

Creating sequence (moving) morphs is a tricky but very rewarding process. You first need to have two sections of video that match very closely (say, a two people turning their heads in exactly the same way). You must then grab these sections of videotape as a sequence of 24-bit IFF files and store them on your hard drive, making sure that each corresponding frame represents the same point in the motion for each person. Each sequence is then loaded into CineMorph using the Load Sequence menu item (actually only two images are kept in memory at any one time; it loads two new images whenever you change frames to save memory). Key frames are automatically placed on the first and last frames of the sequence, so you need to align the mesh to match these pairs of images. Then it is a judgement call as to whether CineMorph's automatic interpolation of the mesh on intervening (non-key) frames is sufficient for your purposes. I found that most of the time a few other key frames were needed (depending on the length) to get good results.

CineMorph allows you to edit what it calls the "tweening" of the points on a global and individual basis. This means you can control the rate at which the image transforms for the entire picture, or you can control how each individual point behaves in the morph. Being able to control each point allows different areas of the image to morph at different speeds. This is an essential feature for creating "realistic" morphs.

Morphing Tips

The key to morphing in CineMorph is the alignment of the mesh. Generally, you will want to outline key features of the source and destination in a "box", formed by four points. For example, if you are morphing two faces together, you would surround one eye on the source image with a box of points, and then surround the same eye on the destination image with another box of corresponding points. By corresponding I mean the points on the source eye and the points on the destination eye must be the same row and column.

As I mentioned earlier, if you are just starting out in CineMorph, do not attempt to use the spline morphing. It is difficult at best to use, and it is easy to get frustrated. The problem with the spline morphing is that moving a point at one location in a spline affects a great deal of the spline, which can cause portions of different splines to overlap (a bad situation). Generally I've found that line morphing produces results just as good as spline morphing, although you may need to add more points to get as smooth a result.

CineMorph contains a number of options for rendering your morphs. You can save your morph sequences out as individual 24-bit files, or you can render to one of several different resolutions, ranging from low resolution 32-color up to HAM and even HAM-E and DCTV formats. Rendering may be done to individual IFF files, or they may be packed directly into an ANIM file for direct viewing by any of a number of popular player programs. Dithering can be added to any of the above modes (except DCTV) which in some cases helps, in others doesn't. I found CineMorph's image rendering quality to be decent, if not spectacular. Better results can usually be obtained by taking the 24-bit output files and rendering them in other software.

As far as speed goes, CineMorph is very fast at generating its morphs. On my

The Interface

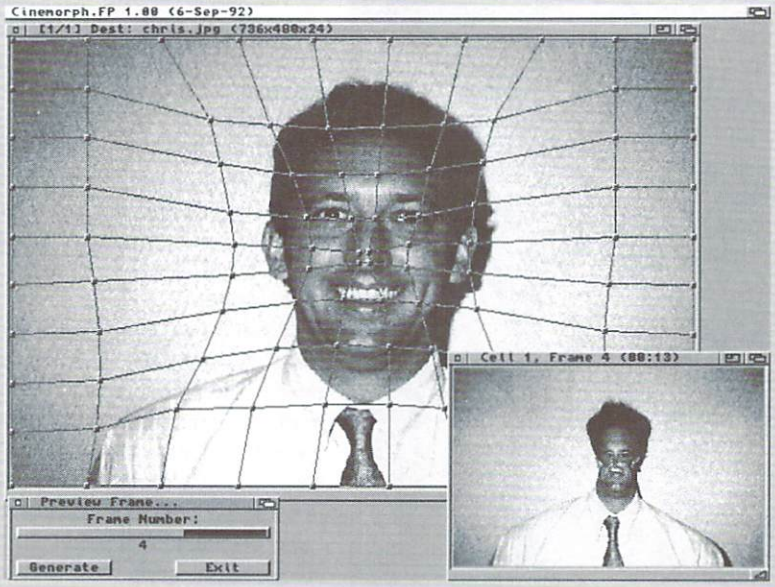


Figure 1 shows a project that shrinks a part of the image towards a center point. The mesh is a simple, smooth, compression of the inner mesh towards the chosen center point. The tip of the nose in this case. This creates an amusing caricature of the person in the image. You'll note that in the window showing the previewed frame, the render time was only 13 seconds.

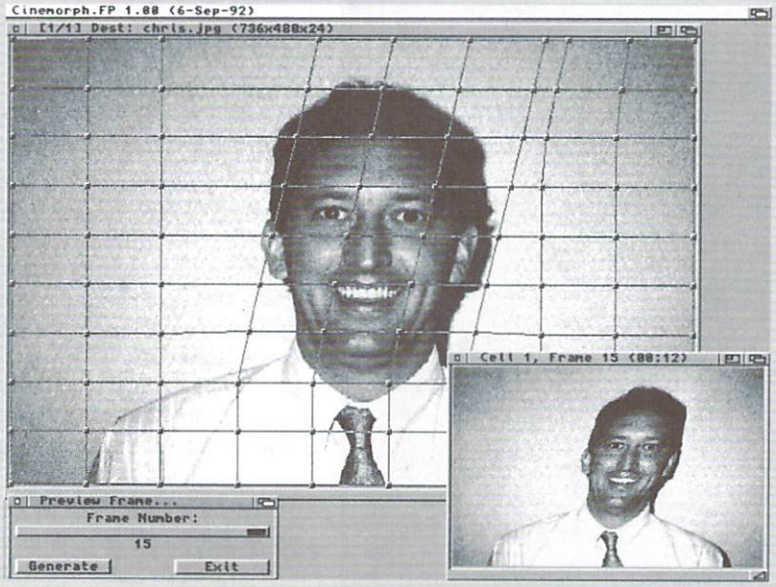


Figure 2 shows a project that skews a region of the image over towards one side. When animated properly, you can get a wind-like effect blowing that area over.

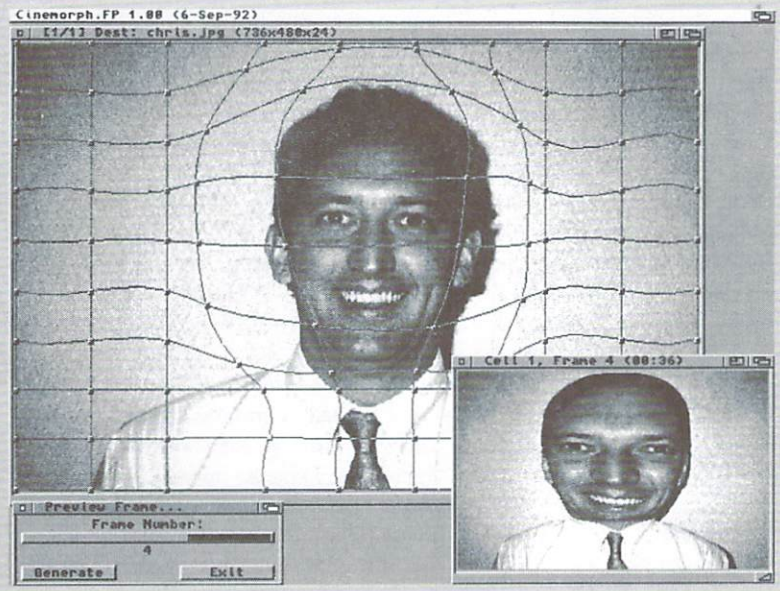


Figure 3 creates an inflated effect by pulling the mesh out into a sphere around the head. This creates the illusion of that part of the image being wrapped around a balloon.

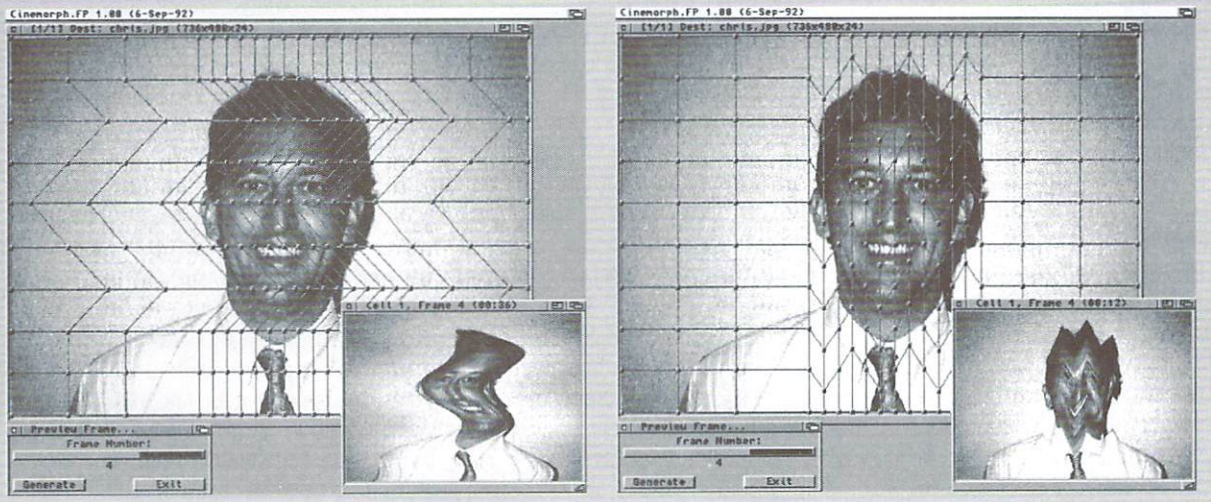


Figure 4 and 5 show horizontal and vertical zigzags. You can push waves through any image, fully animating them, just by creating a zigzag pattern like this. Fun to use for entering "dream sequences" and the like.

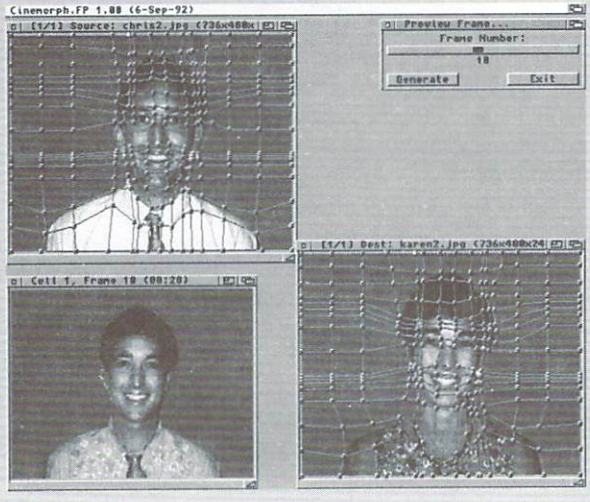


Figure 6 shows the mesh used for creating the morph used in this article. The upper left corner shows the source image and mesh, the lower right shows the destination image and mesh. The lower right corner shows the middle frame from the sequence, about 1/2 source and 1/2 destination. Clearly someone new has been created!

50mhz 68030 machine, a 736x480 color morph (using line mode without anti-aliasing) takes about 15 seconds per frame. Adding anti-aliasing (generally needed for production morphs), however, slows the time down to about 1 minute per frame. Spline morphing adds additional time, another factor making the line morphing very attractive.

In using CineMorph with my Toaster station, I found very few obstacles in achieving the results my client desired. I first captured my source and destination images as framestores. As CineMorph does not directly load or save framestores, the two images were saved as RGB using ToasterPaint. All frames were rendered in 24-bit format and saved directly to my Maxtor 670 meg hard drive.

Going to Tape

Output to tape was handled using Nucleus Electronics' Personal Single Frame Controller with a JVC BR-S822U S-VHS deck. I used the "Generate Sequence" option of CineMorph, which produced a sequence of 24-bit files on hard disk. The Personal SFC was set up using the "Render to Toaster" function. A sequence list was made of the 24-bit files. A frame count of 300 was set on the first and last frames. This provided 10 seconds of editing space for easier insertion in the finished product.

Dumping 24 bit images to tape with the Personal SFC was a somewhat time-consuming but totally automatic process. As the framestore format has never been publicly released, P-SFC must access ToasterPaint to transfer 24 Bit images to framestores. P-SFC does an admirable job of this task, first converting and then dumping individual images to tape.

As you can imagine when rendering high resolution morphs, images can reach over 1 meg per frame. If you don't have the hard drive space available for large animations there are other options. Personal-SFC has the option of running during the render process. Therefore the large 24-bit files are rendered on the fly. The most obvious solution however is CineMorph's built in Anim support. I have achieved fine results using CineMorph for HAM-E and DCTV realtime Animations. If you are without these display enhancers, HAM Mode and High-Res interlaced animations can also be quite effective. All that is needed to send these to tape is an NTSC encoder of some type.

More Tips

Some tricks I learned in morphing saved me time and maximized my return. I studied a great deal of the morphs used in television commercials and film and discovered that most of them have no actual movement within the morphing sequence. The eye is fooled into seeing motion as the morphs create motion themselves. A good example was a series of morphs used for McDonald's commercial promoting their marketing tie-in to the movie Batman Returns. The morphs showed characters from the movie morphing into their portraits on cups. The characters appear to move during the morph, but after examining it I discovered that the film image froze as it entered the morph, but the image of the cup was larger so the characters appeared to continue moving forwards as their image morphed into the cup. By doing careful planning for my own work, I created impressive looking morphs that also appear to move even though I only had to use a single source and destination image for the morph. This saved me time, and the client money.

CineMorph contains a number of options for rendering your morphs

One trick I learned was that I did not have to outline images precisely. Putting the regions of the source mesh around the same regions on the destination image, without attempting to outline features exactly, could achieve nearly as good a morph as I got by outlining every feature precisely. For example, if I put a box around each eye, and around the nose, and used the matching boxes on the other image, the morph looked about as good as if I outlined the eyes and nose exactly. The rule of thumb here was to include the same ratio of background to feature in both images and their mesh.

The final trick, or tip, that I discovered was on speeding up the rendering of morphs beyond their normal speeds. Normally CineMorph operates in a 16-color hires interlaced screen. This screen resolution slows down many processes in the Amiga, and CineMorph is no exception. Just before you render out your images or animation, change your screen depth to use the minimum number of bit planes for the display (usually 2 bitplanes or 4 colors). I've gotten up to 30% speed increases as a result!

The fun one can have in using CineMorph is not limited to professional applications. The program is so easy to use that anyone can use it for spicing up their home videos productions in many ways. Although morphs are the immediately obvious application of CineMorph, you can easily simulate many other image processing effects. You can create a fisheye effect, shrink everything towards a point, zigzag areas of the image, even make someone skew over towards one side as if they're being pushed by the wind.

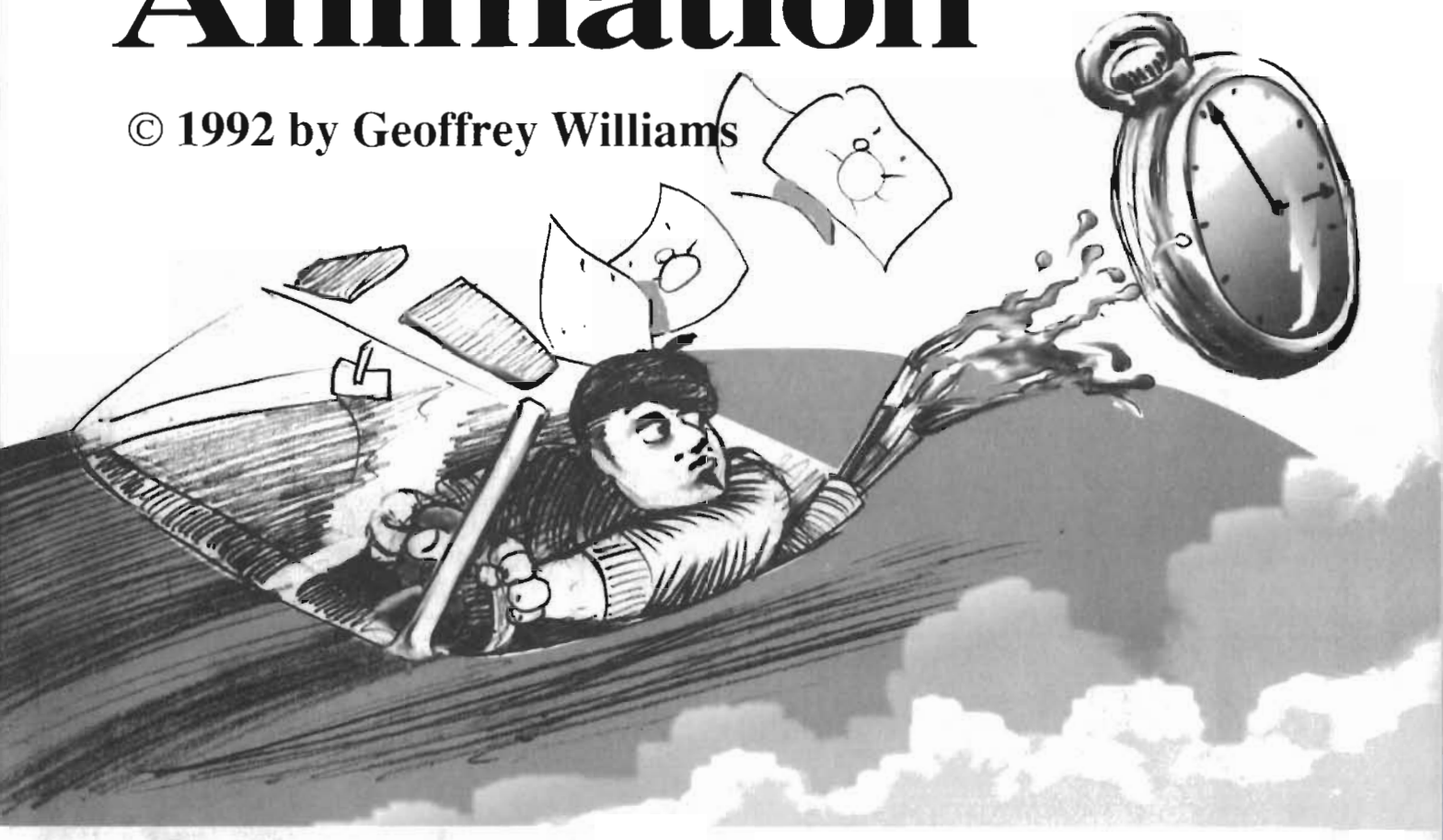
What's missing from CineMorph? Again, I found the most notable absence to be the lack of a zoom feature. Although it can be simulated somewhat by opening a window to full screen size, a magnify mode would have been very nice. Also conspicuously missing from CineMorph is regional control of the color dissolve, which would allow you to control the rate of dissolve for different areas of the image, much like individual point velocity control.

In conclusion I must recommend CineMorph for anyone needing to create morphs and related effects. I had used ImageMaster prior to CineMorph, but found that using the CineMorph interface with its mesh system was much easier to control than points, and CineMorph's rendering speeds could achieve the same results faster. The preview and animation rendering made testing my results much faster as well, however my final note to users would be to avoid the spline mode of this otherwise fine program.

Michael Vunck is an Amiga animator and graphics artist working in industrial and broadcast video. You can write to him at:

V.I.A.
2303 Marriot Rd
Richmond
VA 23229

Faster Animation



Currently, the best way to ensure fast and smooth animation is to use a single frame recorder. For almost everyone, this is a heavy investment, as not only is your initial cost very high, but it is extremely hard on the recording deck. It is also hard on video tape, as you are repeatedly recording over the same section of tape dozens of times. The best solution is recording to optical laser disk, and this will be the way of the future, but it is still very expensive.

For most of us, single frame recording of our animations is not practical, so we must rely on playing them directly from the Amiga. In this article, I'll cover everything you need to know to move those animations as fast as possible.

Understanding Computer Animation

Animation on the Amiga is done by creating a series of images which are flipped through very rapidly to create the illusion of motion. Thanks to the IFF standard, it is possible to create animation frames in a variety of programs from 3D renderers to image processors, and then assemble them in an animation paint program such as Deluxe Paint IV or compile them into an animation using a compiler such as the public domain program MakeAnim. You can then play them back in Deluxe Paint or a multimedia program such as AmigaVision or Scala.

Later we'll cover some additional options, but for most applications you will need to rely on the Anim compression format, and an understanding of how it

works is the key to getting the best speed out of your animations. The Anim format allows you to take individual frames and compile them into a single animation file that is often as much as one tenth the file size of the individual frames. It does this using a form of delta compression, which only saves the differences between each frame. When you play that animation, before each frame is displayed, it decompresses only the pixels that change. The more pixels that have changed from the previous frame, the longer it takes to decompress and display each frame.

This generally means that animations with a lot of movement will play back slower, but the critical factor is how many pixels change. Imagine a red ball moving completely across the screen. If we create a five frame animation, we have to play it back very fast to create the illusion of smooth movement. If we have 40 frames, the animation can play back slower and still create smooth movement. In terms of compression, the five-frame animation is theoretically slower on a frame by frame basis, as the differences from frame to frame are greater. With a smaller distance to travel each frame, the ball will overlap from frame to frame and those red pixels would not change, and much less of the background would change each frame.

In practical terms, what this means is that if you have an animation that does not play back smoothly, you can improve the playback by adding more in-between frames. There is no real way to calculate the results, as you may get some minor increase in frame decompression at the cost of additional frames. Even if there is no increase in playback speed, as is the case under most circumstances, the additional frames will create smoother movement.

Benchmarking Playback Speed

In order to determine just how much difference in playback speed can be caused by different factors, I use two high-resolution (640 by 400 with 16 colors) animations for benchmarking. The first has several large objects spinning around a central moving object, which creates a consistent but slow playback. This is test anim A and on an unaccelerated Amiga using Deluxe Paint IV, it has an average playback speed of just 3 frames per second. The other animation starts out with a few objects falling in front of background lettering, then many objects fall. This animation plays back faster at the beginning and slows down dramatically towards the end, due to the fact that more pixels change from frame to frame in the end than at the beginning. This is test anim B and it averages 3.5 frames per second in DPaint. The average frame per second playback speed was calculated by playing the anim as a loop 60 times and then dividing the overall time to determine the fps rate.

Besides the amount of change between frames, the next major factor in playback speed is resolution and the number of colors used. The same two animations reduced to 320 x 400 resolution (with the resulting loss in quality) average 8 frames per second (A) and 11.7 frames per second (B). In another test, I split animation B into two parts, one with the lettering saved as an 8 color hi-res picture, and the other with the falling objects as an 8 color hires animation. In 8 colors, animation B played back at 9.1 frames per second, and genlocked over the background text image it looked exactly like the original but with over six frames per second increase in playback speed.

Another way to increase speed is to use Deluxe Paint's uncompressed mode. It requires a lot of memory, but the fps playback speed for Anim A was 5.2 and for B it was 5.5, almost doubling the speed. The most surprising change was when I converted the animations to HAM interlace. Even though this is a lower resolution, it was difficult for even the artist to tell the difference. Using the compressed mode they played back slower than hi-res images, but using uncompressed mode, they both played back at 8.5 frames per second.

These comparisons are for an unaccelerated machine. Once you add acceleration, the rules change a little. One of the most surprising facts is that using uncompressed mode on an Amiga equipped with a GVP 50 MHz 68030 accelerator did not help at all; they actually played back slower.

In general, though, the faster the machine, the faster the playback. For a 16 MHz 68020, A played back at 4.5 fps and B played back at 5.7 fps. With an Amiga 3000, A was 8.4 fps and B was 9.6 fps. The GVP 25 MHz accelerator played A at 8.2 fps and B at 9.6 fps. The GVP 50 MHz accelerator played A at 9.0 and B at a surprising 16.0 fps.

As you can see, calculating playback speed for complex animations can be almost impossible. In fact, even the program you are using to play animations can affect playback speed. For example, while DPaint is one of the faster Anim players, other animation programs can be significantly slower playing back the same animations. Even more problematic is that most multimedia authoring programs are slower at animation playback than DPaint, so while it may be fine when you create it, it may degrade just enough when played back in your presentation program to cause a problem. It does not take a lot of slowdown to make an animation appear jerky.

Improving Playback Speed

One factor that has confused even many knowledgable animators is that few programs can play animations faster than 30 frames per second, even when the machine is capable of it. If your animation plays at 30 frames per second on an unaccelerated machine, it will play no faster on an accelerated one. Because of this, many have assumed that acceleration does not help that much, something my testing clearly disproves.

Another point of confusion has to do with Deluxe Paint's speed setting. If you create an animation in Deluxe Paint and it is set for 15 frames per second, most other players will default at that speed. Make sure that the frames per second speed is set at 30 frames per second, or your animations may play back slower than you intend.

Overall, the best solution to improving playback speed is adding an accelerator to your machine. The next best solution is to carefully design animations so that fewer pixels change from frame to frame. Finally, you can divide 16 color hi-res animations into two 8 color animations and key one on top of the other, or you can either reduce the resolution, or convert to HAM and playback in uncompressed mode.

Another option to increase the amount of animation without speed decreases is to use color cycling, which is supported during animation by most current versions of animation software, including Deluxe Paint IV. Since only the hardware color registers are changing, and not the frames themselves, there is no additional speed degradation.

There are additional considerations and

options using different hardware, such as DCTV. If you use the higher resolution, you will suffer severe degradation in speed without that much improvement in quality. Another serious problem you can have with DCTV is when converting frames from a 3D program. The most important thing to do is to lock the palette in the 3D program, otherwise minor, almost-indistinguishable color shifts from frame to frame can cause serious speed slowdowns.

There is a hardware solution for achieving faster animation. Interactive Video System's MovieMaker is one way around memory limits and compression slowdowns. By displaying uncompressed frames of the animation at 30 frames per second directly from the hard drive, it gives you random access and full speed playback of DCTV animations. It does require a very large and fast hard drive, but it allows you to play back fairly long detailed sequences, and is a better solution than single framing for many instances. It also requires additional hardware such as an accelerator (and some makes may not work), but it currently looks to be a very promising solution.

There are hard drive animation players available in the public domain, but they provide neither the speed or sophistication of a commercial product like MovieMaker. Sebastiano Vigna's RTAP plays standard ANIMs directly from the hard drive. It works very well, and the animation starts playing instantly even when it is very large. It plays a bit faster than standard ANIM playback using a fast hard drive (although not dramatically), and it lets you play animations much larger than memory. Alexander Smith's AGMSFilm includes a compiler and a player. While its animation file is very large, it allows you to add sound (in fact, you have to) and it does not use standard compression so it works with animations with a lot of movement. It is best suited for very large animations, and the author designed it for a 900-frame animation he had created. Both programs can be found on the AVG Animation Assistant II disk (I'll send you a copy for $5).

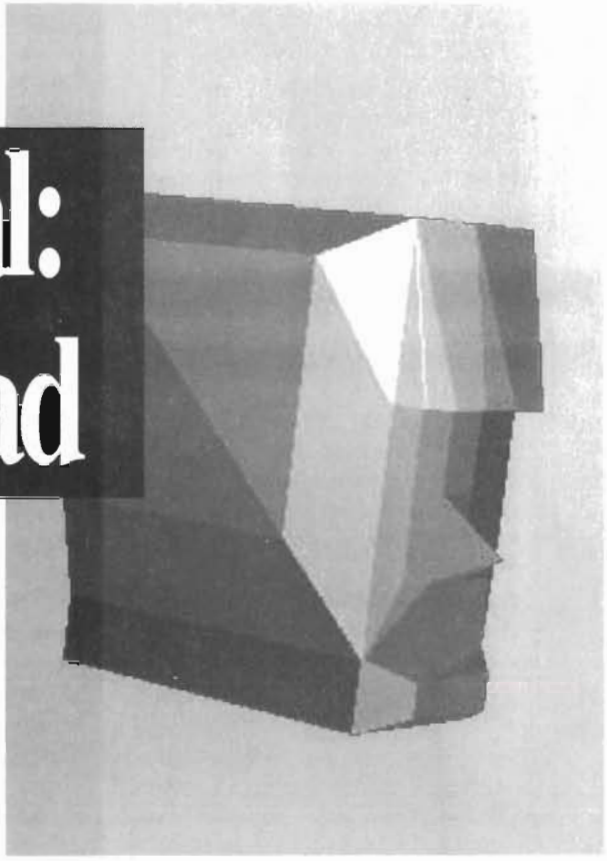
Another hardware consideration is the speed of Chip RAM. No matter how fast your accelerator is, you can only push so much data through the graphics chip. This is why there are at least two companies developing Chip RAM accelerators. As of this writing, neither Black Knight Peripherals or PPV was able to provide me with specific information on actual product, so it is impossible to know exactly what the capabilities will be. Both should make faster animation possible, but its anybody's guess as to when they will actually be available.

Compared to the Mac and the IBM, the Amiga is a very powerful real-time animator. With a little understanding of the process, you can produce stunning animation without a single frame recorder.

Geoffrey Williams is national director of the Amiga Video-Graphics Guild and Executive Producer at Creative Business Communications, which produces multimedia presentations. He can be reached at:

1833 Verdugo Vista Suite G
Glendale, CA 91208
(818) 240-9845.

A Vertex Tutorial: Project Blockhead



The first thing you create using a new tool should be simple. There are good reasons for this. If you're new in the field, you can become discouraged unnecessarily. If you're experienced in the field it can make you think a tool is not as good as it really is. So the principle is simple. But that doesn't make it easy.

If you take a good guitarist to a music shop, he might want to try out one or another guitar. This is rarely a problem. He'll pull out a pick and sit down on an amp and start playing something. If the shop isn't busy, this can be a pleasant way to pass a few minutes, and the sales people generally won't mind this. This has been going on for years. The reason it works is because music is inherently redundant. A good guitarist has played the same things day after day. He may vary the songs to suit his taste, but he's got his mental bag to reach into. So does a typist who will usually pull out the usual "dog and fox" type sentence.

On the other hand, I've watched artists in computer stores try to get a handle on a graphics package and not have the foggiest idea what to do—not from a technical sense, but just not having any idea of something to create. I faced this problem the first time I sat down to learn a graphics package, and from my guitarist experiences, the solution was obvious. I just picked a couple of reasonably easy standards and used them to test functions and user interfacing.

My two main standards are, for 2D systems, a face, and for 3D systems, a skateboard. The face is the obvious one for many artists. It's a human face, though it can be a bit "comic-ish" depending on my mood. But it can be a particular problem for 3D systems. The face is inherently a very complex surface with odd curves and no flat spots and fine details. Unless you're using a NURBS based system, it can be very time consuming. On the other hand, the skateboard makes good use of the usual strong points of 3D (flat-surfaced solids and cylinders), and yet it also has room for some tricky details if I had the time to get into it (the trucks, kick-tails, and such). I recommend that if you want to try out a number of different graphics systems, you pick something like this for your first piece of work.

Coming to Terms With Vertex

My experience with Vertex ran counter to my better judgement. I recently was approached to form a new company with three others. It was the best offer of this kind I'd seen, and I accepted. Our company will, in time, have a strong presence in the field of broadcast quality computer graphics. But the importance of these developments began to take on greater significance. Part of the long term plan indicated that there would be a time, very soon, when I'd need the ability to create 3D data models at home of a "scratchpad" quality, which I could take to work to use on our projected "main computers." There was no doubt what type those main computers were going to be; Silicon Graphics. And the central data formats would be Wavefront and Alias Research. I expect we'll probably need some others as well, but these are the standards for the industry, and will likely be for a long time.

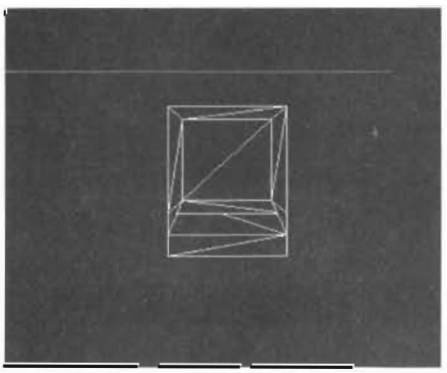


Figure 1

As for my personal home system, I've already owned a number of computers. Someday I will probably have a Silicon Graphics at home and that will be very nice. But there are reasons for me to keep other computers around. Because I'm the currently the main "expert"

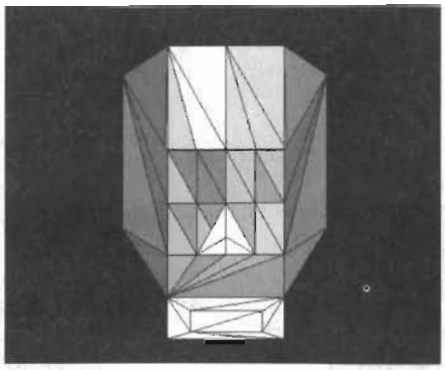


Figure 2

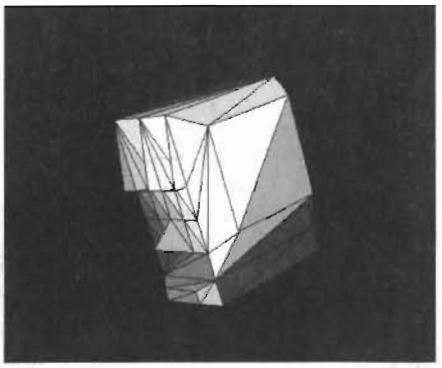


Figure 3

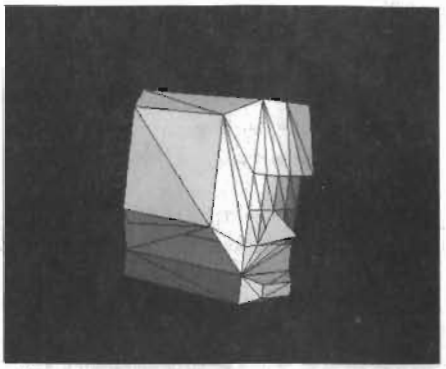


Figure 4

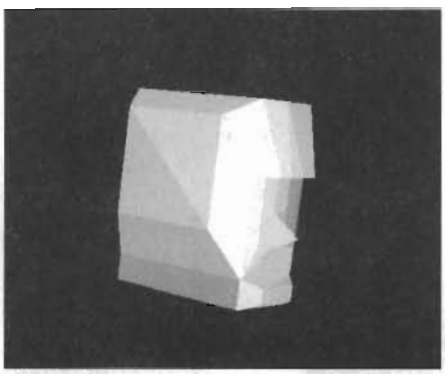


Figure 5

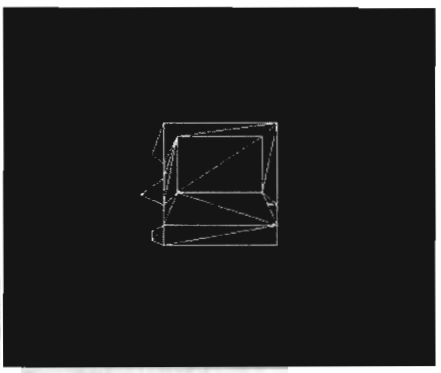


Figure 6

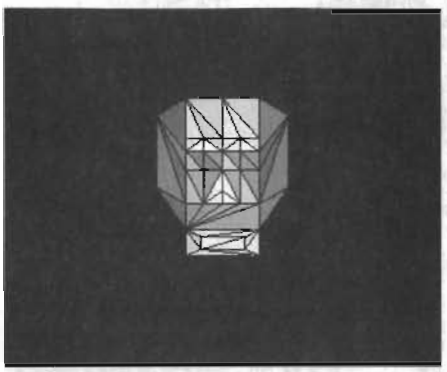


Figure 7

on advanced computers for our company, it is important to keep abreast of as many platforms as possible where developments affecting the video industry are likely to occur. Also, it would be a good idea to have a system that we could lend out to contract workers or other "extra help" on a temporary basis.

The question I was faced with was "What is the least expensive system I can buy which will produce 3D data models that I can take upward into Silicon Graphics computers?".

Alias has recently ported their lower end NURBS based software to Macs and IBMs (Alias "Up Front"), but Macs aren't particularly cheap and IBMs are not well suited to the task unless expensive graphics co-processors are added. Besides which, related support is not as widely available. For example, I haven't done an actual count, but it seems there are more rendering houses locally for the Amiga than for the Macs and IBMs. The problem is that though the Amiga world is currently the most developed "low-cost" alternative, there is a huge wall between Amiga data formats and Silicon Graphics data formats.

Costing a Minimum System

The first problem I ran into in planning this system was that it has not been a common practice for the software vendors in the field to state the minimum hardware requirements for their programs. Going through a computer store, I was dismayed to find, time after time, packages that didn't state this clearly. Even when we started looking through documentation we couldn't always find the answers.

The second problem I ran into was lack of data mobility. The Amiga world has been slow to respond to the needs of "serious users" in this respect. I won't cover this in detail. The main transportability routes are Interchange Plus, Pixel 3D and Vertex. Interchange Plus is only an data conversion system with no substantial preview or data model creation or editing capabilities. Pixel 3D doesn't convert to any of the major Silicon Graphics formats (DXF doesn't help much). That left Vertex with WaveFront output as the only product claiming to do everything I needed right away, in one package. Besides that, it was cheap enough that even if it wasn't enough on its own, I could afford to buy it and add other packages later.

The research wasn't easy. I found was that most 3D CAD packages require at least 2 Meg of RAM. Some stated this outright, and in other cases I found this out from experienced users. This really didn't come as much of a surprise. Because I'd done some 3D CAD on the Atari ST I had expected this, and early on, I was resigned to buying a system over 1 megabyte of RAM. However, Vertex showed some potential. Vertex didn't specifically advertise that it would be usable in 1 megahyte , but if you look at the development history of the program, it points out that it was originally written on an Amiga 500 with 2 floppies. Vertex's main drawback is that it is not sold by stores—only by direct sales, and there was little information easily available to me about the program.

The entry level system I projected was this:
Amiga 500 with 512K internal
(total one megabyte)
one external floppy (total two floppies)
monochrome monitor
A 3D modeller — Vertex
A converter to some popular
Silicon Graphics data format — Vertex

When one starts a new company, one expects things to go wrong. Plans that looked attractive have a habit of changing their complexion over time. I had expected that it would be some time before I actually had to produce "serious work" on my Amiga, but events required that I immediately begin work on a project which might turn out crucial to the early establishment of the company. So it was that when I first received my copy of Vertex,

the first thing I had to do was to start into creation of data models for our company's first project. It isn't unusual that this project immediately required human representations. But it was a bit unusual to find that I was creating faces before I got around to my skateboard test piece. I'm happy to say that Vertex (version 1.62a) performed very well overall. I ran into a few minor problems with the manual, but the capabilities are sufficient and the interfacing about as good as I expect can be done within the confines of my "minimum system".

This tutorial will explore a fairly wide range of Vertex functions. This should keep the overall effort (number of steps) to a minimum, making it relatively fast, but the experience will also help you use Vertex efficiently when you work on other data models.

Goals

The goal was to have a small data size human head model for testing scenes. The small data size would speed up renders. But it's a judgement call deciding what is an acceptable level of detail.

My first version was called "egghead". That data model started as a sphere and was added to and mutated a bit before I realized that it wasn't worth it for me to continue it at that time. The model was starting to look very good, but the data size was growing rapidly. I stopped working on that data model and copied it to a reserve library for future use and started over with project "blockhead".

The idea for "blockhead" was, as the name implies to begin from a cube or block form and add vertices as needed until an acceptable level of detail was achieved. This ensured the smallest data model acceptable. I was taking a big chance on having sufficient tools to get the job done in this way. I had not even finished reading the Vertex manual. But looking at the various ways to add vertices, edges and faces, I felt therewas a good chance this would work. If not, I'd just have to get more RAM and start again on "egghead".

The descriptions of the steps will sometimes be general. I'll assume that you have read the manual a bit and have even tried the functions. I'll describe the steps in more detail where I think they are not clear.

Conventions

After much thought I could not come up with a really good standard for describing directions. It seems to me that whatever I chose is not going to be "natural" for someone. As such, somewhat arbitrarily, I've decided on the following: Front is towards you (Z is decreased) and Back is away from you (Z is increased) which is in keeping with Vertex conventions. But Left is to your left (X is decreased) and Right is to your right (X is increased). "Above/up" (Y increased) and "Below/down" (Y decreased) pose no problems.

If I say "Modify/Points/Vertex Info" then I mean select the function "Vertex Info" which is found in the "Point" sub-menu under the "Modify" menu. I will not generally give full menu descriptions after the first time the function is encountered except where necessary for clarity.

In cases such as "Modify/Extrude" where there are many parameters settable, I will usually only give settings that are not the default settings. A default setting is the setting that shows up when you first use the function in a work session. It is *not a* setting that may be remaining after the last time you might have used the setting. Fortunately all of Vertex's numeric requesters have Clear buttons that reset all values to the default amounts. If you're not sure which are default values, just click on Clear before entering new settings.

Steps

1. Create a standard cube
- "Add/Basic/Cube" Name = "MainBlk"
- "View/Side"
- "Deselect/Area" (the 4 vertices in the back)
- "View/Front"
- "Modify/Points/Vertex Info" clockwise from the upper left. The vertices should be 8, 4, 3, 7.

Note: with different versions of Vertex the vertex numbers may be different. Also, if you don't create or delete things in the right order, the numbers won't be the same. That doesn't necessarily make your data model "wrong". But keeping track of the vertex numbers will help you understand descriptions later in the tutorial. Check the 4 rear vertices. In "View/Front", clockwise from the upper left they should be 5, 1, 2, and 6.

2. Add side extensions:
- "Deselect/All"
- select the right side vertices
- "Modify/Extrude" X = 40, Step = 1
- "Deselect/All"
- select the left side vertices
- extrude X = -40, Step = 1

3. Start shaping and proportioning
- "Select/All"
- "Trans/Scale" X = 0.5
- "Deselect/All"
- select all of the far left and far right vertices
- "View/Side"
- Scale Y = 0.75, Z = 0.75
- "Deselect/Area" (the rear 4 vertices)
- "View/Front"
- check the "Vertex Info" clockwise from the top left. The vertices should be 16, 12, 11, 15
- check the vertices behind these. In "View/Front", clockwise from the upper left, they should be 13, 9, 10, 14

4. Add Cheek area:
- "Deselect/All"
- select the 4 bottom-most vertices
- extrude Y = -40, Steps = 2
- "Add/Edges" as follows:

a.
- from Num 10, X=45, Y=-37.5, Z=37.5
- to Num 17, X=25, Y=-70, Z=50

b.
- from Num 11, X=45, Y=-37.5, Z=-37.5
- to Num 18, X=25, Y=-70, Z=-50

c.
- from Num 11 to Num 17

(See Figure 1 Side view)

d.
- from Num 14, X=-45, Y=-37.5, Z=37.5
- to Num 19, X=-25, Y=-70, Z=50

e.
- from Num 15, X=-45, Y=-37.5, Z=-37.5
- to Num 20, X=-25, Y=-70, Z=-50

f.
- from Num 15 to Num 19
- "Deselect/All"
- "View/Front"
- "Select/Area" (the vertices on the right side of the head connected by the new edges and also the lower right vertices of the original cube)
- "View/Side"
- "Add/Faces" connecting the vertex numbers as follows:
- 11, 10, 17
- 11, 18, 17
- 10, 2, 17
- 11, 3, 18
- repeat the procedure to create faces on the left side of the head

5. Add the Chin:
- "Deselect/All"
- select the front 4 vertices of the lowest box
- extrude it Z = -10, Step = 1.

This creates a "chin" that I may not keep later. It's really just so I can tell which surface is the front during rotations.
- deselect all
- select 4 frontmost chin vertices
- scale X = 0.6
- Trans/Move" Y = -5
- deselect upper 2 vertices of chin
- Move Y = 10

6. Nose:
- "Deselect/All"
- select front 4 vertices of original cube
- "Modify/Sub Edges" (subdivide edges) once
- deselect the upper 3 vertices

- Subdivide edges again once
- Check Vertex Information for the following new points:
- Middle Lowest #31, 0,-50,-50
- Above #31 is #37, 0,-25,-50
- Left of #31 is #34, -12.5,-50,-50
- Right of #31 is #41, 12.5, -50, -50
- Deselect the other points leaving these 4
- "Add/Vertex" 0,-40,-70 ("Vertex Info" will show this as Number 43)
- Add edges connecting all these 5 points
- add 4 faces to create nose (no holes to breath)
- "Modify/Points/Rename" these vertices "Nose"

7. Forehead:
- Deselect all
- Select the row of 5 new points above the top of the Nose
- Select the top row of 3 points on the front face
- extrude them Z=-10 step = 1
- deselect the lower row
- move Z=10

Figures 2, 3, 4, and 5 show the head at this point from various views. You should now have a sloping forehead leaving an inset where the eyes would be. I'm not going to make eyes right now. You can re-proportion the top of the head or otherwise modify it to your taste. For the purposes of this tutorial, the head is done. This style of "head" is only from 1/5th to 1/10th the complexity of the more detailed sphere based model I started earlier.

The Numbers

My system allowed the following starting allocations when running Vertex:

Work RAM: 38,504
Maximum Vertices 661
Maximum Edges1,677
Maximum Faces1,016
This version took:
Work RAM: 102 bytes (0.3% of available resource)
Vertices: 51 (8% "")
Edges: 171 (10% "")
Faces: 128 (13% "")

So that looking at the worst case, I've only used up 13% of my available resources (from the faces), probably leaving me enough to complete the rest of the body. Though it is only vaguely humanoid, a human model with this level of detail can be useful even if you have a lot more RAM and disk space than I, for example, as "filler" for architectural models and such where the detail is simply not necessary and rendering speed of a whole scene is a significant advantage.

Cleaning Up the Model

The following procedures will start a cleanup and perfecting of the blockhead model. In the final analysis, you're the only one who can decide when a model like this is "done". If you're a perfectionist, you can keep on tinkering with a model for a very long time. Depending on the purpose of your model, this isn't inherently good or bad. If you want to perfect your model further, and you don't have much experience with human figures, there are many books that will give rough human proportions. One book I have is *Believe It Or Not You Can Draw*, by Arthur J. MacDonald, Copyright 1991, Royce Publications, 90 Ronson Drive, Rexdale, Ontario, M9W 1C1, Canada. This is not an exceptionally good book because the proportions are scattered throughout, but it was sufficient for my needs. Look in your local bookstores for similar art instruction books.

If you check the "Vertex Info" for the topmost and bottommost vertices you'll find the the top vertices are Y = 50 and the bottom are Y = -90 for a height of 140. For no particular reason, when I completed my whole human figure, I decided on a head size of 120. To avoid the "Herman Munster" (tall forehead) look:

1. Reproportion Head:
- "Select/Area" the top 2 layers of vertices
- Move them Y = -20
- "Deselect/All"
- "View/Side"
- "Select/Area" the 5 vertices in the top row behind the protruding

forehead (the row just above the top of the nose)
- move them Y = -10
- (See Figure 6 for the results)

2. The Nose Area:
- "Deselect/All"
- select the vertices on the back surfaces and "View/Hide Select"

This seems to work better than "View/Back Hide"
- "Select/Name" "Nose"
- Select the vertex to the upper left of the nose (#35)
- Deselect all the vertices except for #31 and #35
- "Delete/Edges"
- "Select/Name" "Nose"
- "Add/Faces" for vertices 35, 37, 34
- (See Figure 7 for result)

Resources Used:
Vertices 51
Edges 170
Faces 128
(No substantial changes in sizes)

Is it done yet? Well, we haven't added eyes or mouth yet, or ears, but for the sake of this tutorial I'll call it done now. The shape is reasonably identifiable as human, and I've long since moved on to finish the rest of the body and we've covered enough of the Vertex functions that you can always change anything more that you want. So the rest is up to you.

In retrospect, Vertex has proven itself. There are two basic types of 3D modelling interfaces. They are "vector-based" and "spline-based". There is simply no way that even the very best vector-based interfaces can match the ease of use and speed of a good spline-based interface. I understand that there are some truly bad spline based" interfaces, but I've only seen ones that were good, so I hesitate to say more than this. As far as vector-based systems are concerned, Vertex is about as easy to use as any of the more expensive programs. The complement of functions is complete enough to fulfill my original needs for "scratchpad quality" data model creation. That much should be evident by the functions I've used in this tutorial. It does leave final touching up necessary in the target rendering system. Things like texturing cannot be added in Vertex. Furthermore, objects are not hierarchically grouped which is helpful for editing highly detailed object sets and essential for complex choreography. Balancing that is a surprisingly jitter-free interlaced mode interface which gives packs a great deal of information in the "small" 640 x 400-resolution screen.

As for data mobility, and in particular output of WaveFront objects to Silicon Graphics workstations, I have not yet had the opportunity to test that particular transfer, but I've tested and confirmed data movement to Imagine 2.0 and Pixel 3D, so at worst, I can get data to a Silicon Graphics package through Pixel 3D's DXF conversion. The Wavefront file "looks right". Because it's a text file it's both humanly readable and if it turns out to be wrong can theoretically be corrected manually in any text editor. I should have a chance to load a test file into another program shortly, but wasn't able to in time for this article.

So Vertex has proven to be a bargain already, and if I had to do it over, Vertex has proven its value sufficiently that I'd buy it again. And maybe that's what really counts.

Vertex 1.62a:
by Alex Deburie
Copyright 1992, The Art Machine
4189 Nickolas
Sterling Heights, MI
48310, USA
(313) 939-2513

Tips on Amiga Animation

© 1992 by Patrik Beck

The Amiga has sparked a revolution in animation. Not only has it reduced the cost of producing commercial quality animation, but it has also greatly decreased the amount of time required to create animation.

Artists who had never thought of touching a computer before are drawn to the Amiga. Computer programmers find themselves drawing butterflies. The computer as a canvas can be a very forgiving medium, mistakes are eliminated completely and successes can be saved and re-used forever. Though I had always been interested in animation, I initially bought my Amiga as a tool for writing. Once I started seeing the animation demos people were releasing into the public domain, I knew I had to learn how to do that myself. (Do people on other computer platforms collect demos the way we Amiga users do?)

Today, after much study and much more trial and error, I am a full time Amiga animator. I have degrees in both art and electronics, both of which have aided me in my trade. I have found some traditional techniques that lend themselves to computer animation, and many new ones that would be impossible in any other medium. I would like to share some things I have found important when doing animation on the Amiga. These are things that would apply to anyone attempting to run animation in real time, whether it be a 2D cartoon or a 3D raytraced rendering. You can take them as gospel or toss them as garbage, but they have served me well in producing professional animation.

1. Be aware of the limitations of the medium.

The two biggest limitations of Amiga animation are playback speed and the number of colors.

There are several things you are accustomed to seeing in traditional animation that are difficult to do on an Amiga. Long pans and zooms are popular because in film it is only one large frame over which a camera is moved, thus creating several seconds of "animation" using a single picture. This is difficult to reproduce on the Amiga because it usually involves updating every pixel on the screen with every frame. Even with an accelerator this is a lot of information to transfer at a

sufficient speed to create smooth animation.

The best way to deal with this is to avoid shots that require the full screen to be updated. Remember that it is a large number of changed pixels from screen to screen that tends to bog down the processor. I know that having a full overscan screen is necessary for nearly every video application, but by framing or letterboxing the animation you can reduce the amount of action in the scene. There was one instance were we had an animation of a rotating desk. It was in overscan-interlace-HAM and even RCS's Fusion Forty accelerator could not get it to run smoothly. We solved the problem by adding text over the animation. With that much less information to update on the screen the animation then ran smoothly.

If possible, reduce the number of colors in the palette—you will be amazed at the speed increase that halving the number of bitplanes gives you. This brings us up against resolution.

If you are doing cartoon-type animation, you can come close to matching the quality of show like The *Simpsons* or *Smurfs*. These shows rarely use more then 16 colors at a time, often as few as seven or eight. Solid modeled 3D animations need more colors to look real and to provide antialiasing, but to run in real time you are stuck with the original 4096 colors native to the Amiga (more with the new Amiga 4000).

2. Take advantage of the medium's strengths.

The strengths of the Amiga as an animation workstation far outweigh its drawbacks. The biggest advantage is the ability to go direct to video. The fact that you can go from concept to finished copy in hours would have been inconceivable a few years ago. The trick is to get the computer to do the work for you.

When Deluxe Paint III was first released, with its AnimBrushes and Move commands, it gave unprecedented power to the animator. It is worth your while to spend time mastering these functions, and it is easier to learn them without a deadline staring you in the face. Once you have a handle on the easy geometry involved with using the Move requester you can whip out flying titles and logos in no time. Animated brushes can be flipped, recolored, and used in the same scene.

Here is a simple way to recolor an animated brush. Go to the palette requester, pick the color in the brush you choose to replace, and exchange it with an unused color. Now remap the brush. When the brush is done remapping, restore the original palette. This technique takes a little practice but can very efficiently recolor an AnimBrush.

3. Use a storyboard, keyframes, or reference sketches.

A traditional storyboard gives a rough idea of all the graphic action in an animation, displaying the key points in a scene. Having a rough sketch penciled out on paper with a few notes jotted down will help keep the sequences clear in your mind. When doing a DPaint logo treatment I often do the last page first and keep it on the spare screen. This allows me to check the registration of the text and the back ground while I am flying in letters.

A storyboard also saves time by exposing possible misinterpretations of the work to be done. Some one may have a clear idea of what they want done graphically, but have difficulty explaining it verbally. I usually insist on at least a written description on what is to be done, although being able to prove you were just doing what you were told is not as important as keeping the client happy.

4. Pencil test your work

A pencil test is used to confirm that the things being animated move appropriately. On the Amiga we use wire frames and previews to make sure that everything is going where it is supposed to. There is nothing more frustrating then setting up your computer to render, then coming back an hour or day later to find out you missed a decimal point or forgot to change a plus to a minus (how many blank frames have you rendered?). Wireframe previews are good for checking the movement of objects, but wireframe images can also be deceiving. It's a good idea to spot-render a few frames of the animation to make sure that everything is where it is supposed to be. A low-resolution scanline mode or even wireframe with hidden line removal will help to point out errors in placement of objects. Be sure to delete these low quality images before committing to the full render, or they may accidentally be included in the final animation.

5. Beware of symmetry

A common practice among Amiga artists is to draw one half of an image or character pick it up as a brush and flip it over to complete it. There is nothing really wrong with this except that in real life things are rarely perfectly symmetrical. Even inanimate objects are more visually interesting if put at an angle. Subtle differences between right and left can add "life" to your images .

6. Get opinions of others on your work and listen to things you may not want to hear.

Even with the help of computers, animation still takes a long time. It is no wonder that animators can get downright testy when people offer criticisms or point out errors in their productions.

Unfortunately, when one stares into a CRT screen for days at a time, tunnel vision develops and gross errors sometimes get overlooked. It can be as simple as giving a character two left hands or as disastrous as misspelling a company logo. It is hard to scrap hundreds of hard-won frames over something the client may or may not notice, but you will be better off delivering something you know is right.

If an error is discovered in your work, hopefully you have an earlier version of it saved that you can salvage. It is up to you to decide whether it is more efficient to repair an existing work or to start from scratch. I have found it is usually more efficient to redo it from the beginning, since I have normally saved all the brushes and recorded the parameters of the move commands. Most of creating an animation is finding out what does not work, so an animation that may have taken five hours to create can often be redone in less then one.

7. Keep a "morgue" of your work.

Any time you are creating a character or object, keep a file of it at several stages of its development. These files can save time in the development of new projects. When working on a rush job, having a source of material to draw on can be a lifesaver. Several times I have pulled background pictures and animations out of the archives just to have something to put titles over.

Besides picture, brush, and object files, you can also stockpile favorite palettes, movement paths, and world environment settings. To save time when raytracing, I often load an old file and delete all the objects.

8. Study the work of others.

For classy animation techniques, study the earliest and latest of the Disney movies. The first Disney animated features were at the very beginning of the animated film industry, much the same point at which computer animation is now. They often had to invent new techniques and devices as they went along. The most recent releases by Disney are excellent examples on how computers can enhance traditional animation. The subtle blending of hand-drawn characters and computer renderings in the recent film *Beauty and the Beast* is nothing less than breathtaking.

For learning quick and dirty guerrilla methods, study some of the bargain-basement animated series like *Voltron*, *G.I. Joe*, and *Teenage Mutant Ninja Turtles*. Notice how they cut corners. The characters seem to move very swiftly and often repeat the same movements over different backgrounds. Determine for yourself which times this affects the quality and which times it does not.

9. Acquire reference material.

You are always hearing about artists who were drawn to the Amiga because of its graphics power. The are also large groups of self-confessed computer nerds who have been inspired to artistic endeavors for the same reasons. Often the computer enthusiasts are as baffled by art as artists are by computers. A trip to the library to pick up a few books on human figure drawing, movement, and the use of color can help give you a better sense of composition.

Animated feature films, of which many are now available on video, make excellent references, as do currently running animated series. When taping a cartoon, don't zap the commercials that make use of animation. A VCR with pause and variable slow playback rate is an excellent way to study animation.

For sequential action images of humans and animals in motion, there is nothing better then the classic photographs of Eadweard Muybridge. These photographs, some dating back to the 1870's, are an indispensable reference for animators. They portray men, woman, and children, usually nude, involved in various activities like running walking, and climbing stairs. The photographs are timed at precise intervals similar to movie frames. The photographs have been released in several books with different titles, but any

book referring to Eadweard Muybridge is sure to contain them.

10. Cross-train with different techniques and software.

I know a number of Amiga artists who do all their work within a single animation package. This is a pity because one of the great strengths of the Amiga is the IFF standard. Even if you do not have the time or inclination to master another graphics program, you should at least be aware of its capabilities. I know of one 2D artist who dabbled in raytracing just to learn how to recreate the raytraced "look" with Deluxe Paint. He mentioned that it also gave him insight on how shadows fall and the reflection of light. Now that Deluxe Paint IV accepts HAM pictures, touching up raytraced images is easier then ever.

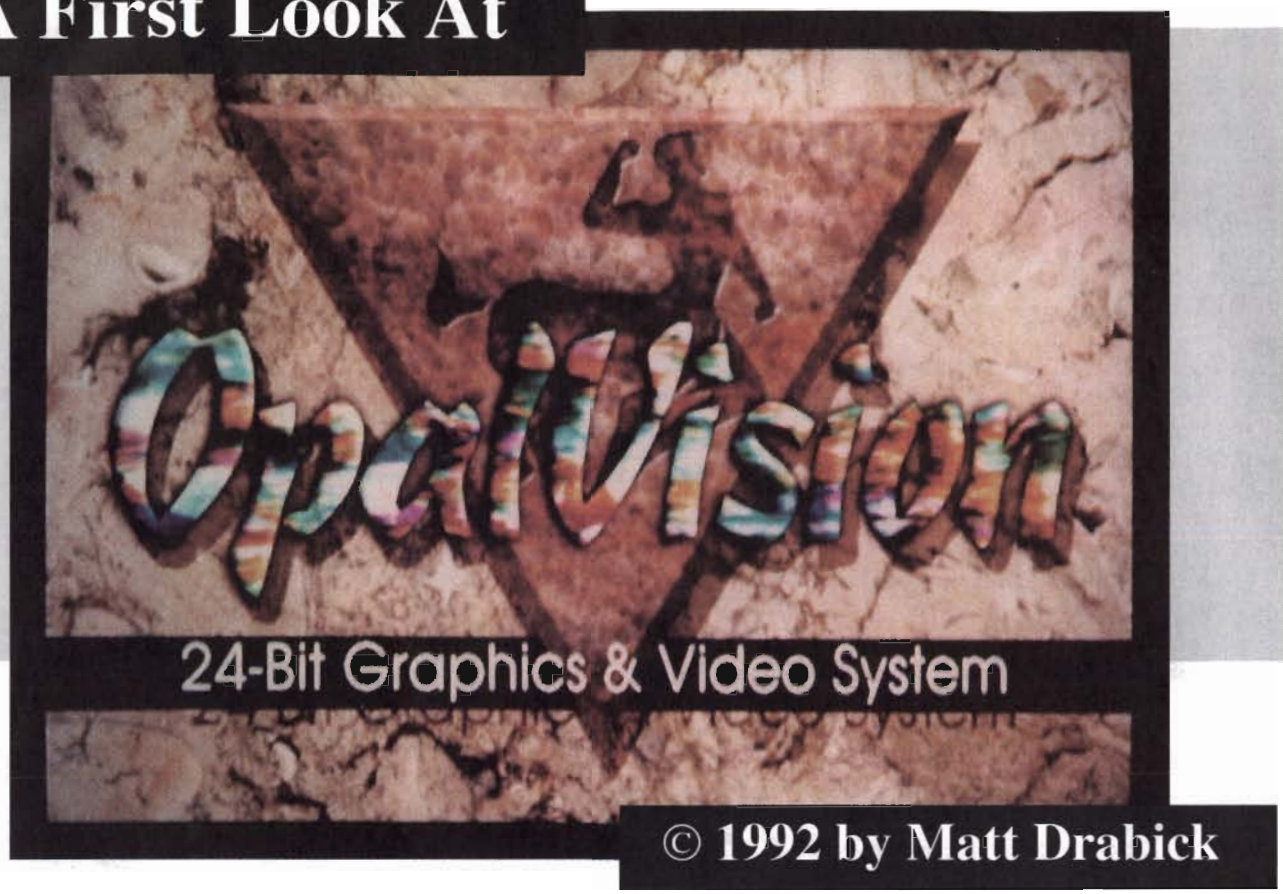
Some programs do things much better then others. Programs like Pixmate and Butcher are better at juggling palettes then paint programs. I find that they often do a better job at re-mapping image files and reducing the number of colors in a picture. Of course, for really serious applications, there is Art Department Professional, which does just about anything to anything.

If you really want to push your Amiga's graphics capabilities to the limits, learn to use Director 2.0. This is not an image-creation program, but a way of presenting and controlling Amiga images and animations. It is a programming language, but don't let that scare you! The program comes with numerous examples and is probably the most painless entry into programming you will find.

Voila!

Those are my tips. I hope that sharing some of the guidelines that I use will be helpful to you in creating better and more marketable animations. If you have tips or suggestions on improving the quality to Amiga animations, please feel free to share them with me! Please send any questions, comments, etc. to me in care of this publication.

A First Look At



OpalVision is a new display device for Amiga 2000 and 3000 computers. Designed in Australia by Gary Rayner and Opal Tech and manufactured and distributed in North America and Europe by Centaur Development Inc., OpalVision is a powerful videographics hardware and software bundle. With perhaps the best paint program available for the Amiga bundled with a 32-bit frame buffer, a real-time 24-bit presentation program, and soon-to-be-available framegrabber/genlock, digital video effects (DVE), scan-rate converter and quad-input video switcher modules, OpalVision works with both NTSC and PAL Amigas. Because the Video Toaster is an NTSC device only, effectively preventing its sale to PAL Amiga owners in Europe, Australia, New Zealand, etc., OpalVision has the potential to offer those markets many (but not all) of the Video Toaster's capabilities. The frame buffer and 32-bit paint program began shipping at the end of August. By the end of the year all of the modules should be available. This review is a first look at OpalVision based on the frame buffer and paint program sent to me and also an explanation of what the other components are supposed to do. I will write another review on the complete package when all of the modules are available.

The Hardware

Opalvision is the logical outgrowth of the Colorburst, also designed by Gary Rayner but marketed for only a brief time in the United States. It is available as a card that uses the video slot in either an Amiga 2000 or 3000. An external version with its own power supply will be available later in the year for the Amiga 500 and 600. While OpalVision works with a stock Amiga, an accelerated machine (68030 or 68040) and a math coprocessor is highly recommended. A minimum of one megabyte of Chip RAM and two megabytes of RAM are suggested, although two megabytes of Chip RAM and four megabytes of RAM are highly recommended. A hard drive is highly desirable, with the recommended minimum size being 40 megabytes. While not strictly necessary, a Wacom graphics tablet is nice to have to take full advantage of some of OpalPaint's special features.

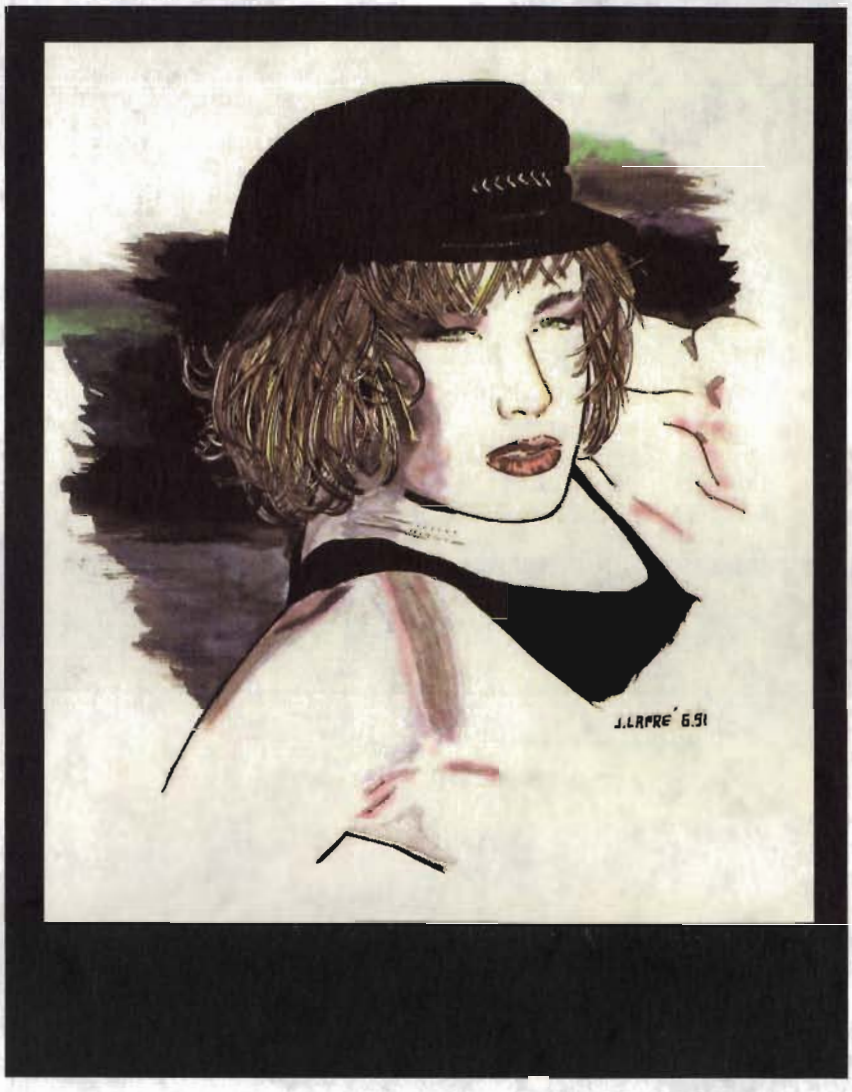
Installing the board and the associated software is very straightforward. The board uses the Amiga's video slot and must be attached to the 3000's video slot's adapter plate before the board is installed. A 23-pin connector is located on the OpalVision motherboard for connecting to an RGB monitor. A hole in the adapter plate next to the 23-pin connector is present for passing cables through to be used with the framegrabber/genlock module and/or the quad-input switcher module. There is an empty socket on the OpalVision motherboard for the upcoming DVE module called the "Video Roaster" chip, and also two rows of pins for the framegrabber/genlock and scan-rate converter modules. The quad-input switcher module is an external box with multiple video connectors that attaches directly to the motherboard. A trim pot is located on the motherboard next

to the 23-pin connector for fine-tuning the board's output using the included adjustment program. An installation program is included as well for automatically installing the software bundled with the board.

The Software

Currently shipping with OpalVision is the 32-bit paint program OpalPaint, the 24-bit presentation program Opal Presents!, the frame buffer display program Opal Hotkey, and the 24-bit computer game King of Karate. Opal Presents! is a slide-show program that can display IFF-24 and native Amiga display IFF files as well as live video when using the optional framegrabber/genlock module. Simple and intuitive to use, the program has a "filmstrip" at the top of the program screen with thumbnail versions of the images to be displayed. Beneath the filmstrip is a horizontal row of buttons that allows images to be added or deleted as well as loading, playing and saving of scripts. Underneath and to the left of the row of buttons is a block of twenty transition buttons with symbols denoting the effect. Transitions include vertical and horizontal blinds, hard cut, fade via black or via white, wipe up, down, right and left, and a mosaic dissolve. There are also several spectacular effects such as the image dropping down and bouncing several times and another hard-to-describe effect that looks as if the image was being quickly poured onto the screen. Transitions can be controlled by mouse clicks, ARexx scripts or automatically timed to change at a certain time. Both transition and hold (or dwell) times can be entered in seconds. While images can be played back directly from hard drive, for the best results images such be loaded into RAM. Considering just how good some of the transitions are now, the addition of the Roaster Chip's hardware support should provide for some truly outstanding effects.

Opal HotKey is a utility program designed to run in the background and control the frame buffer display mode. With the OpalVision frame buffer it's possible to run a 24-bit image in the background while displaying a DPaint animation or any other native Amiga display image in the foreground. Taking the process a step further, by using the priority stencil mode found with OpalPaint part of a 24-bit image can be defined as the foreground and the remainder as the background. The end result is that part of the 24-bit image is displayed behind native Amiga graphics while the rest of the image is displayed in front of the native Amiga graphics for three separate image layers. As its name suggest, Opal HotKey provides keyboard commands to control the frame buffer's display mode. Live video can be incorporated as well, making for some very interesting results when using the framegrabber/genlock module. ARexx commands can be used as well to control the frame buffer's display functions.



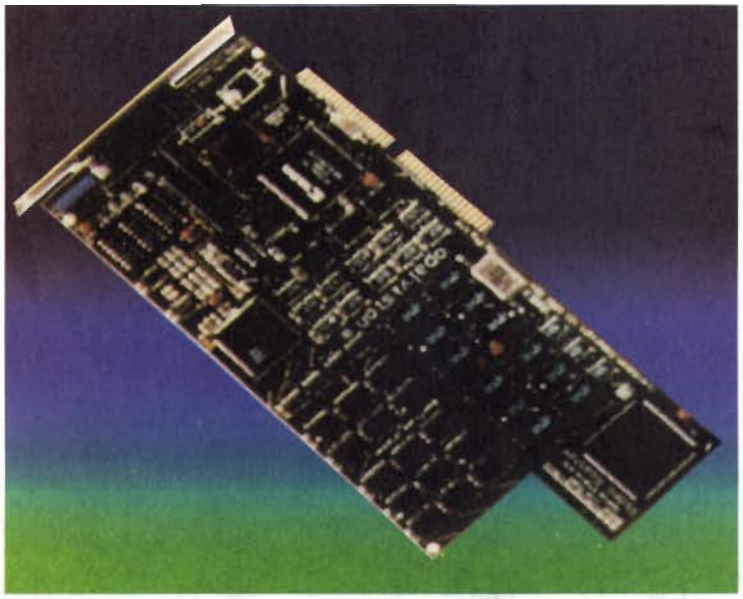
A 24-bit martial arts action game "King of Karate" is included with the system. While is may seem a bit whimsical to include a game with such a professional display device as OpalVision, the games does serve to demonstrate OpalVision's graphics power such as its ability to move 24-bit images in real-time. The 24-bit backgrounds are very impressive and well done. The two foreground characters are realistic looking and the character animation very smooth.

Coming Soon...

The four OpalVision modules were unavailable for this review. According to Centaur, by the end of the year all of the framegrabber/genlock, scan-rate converter, quad-input and Roaster Chip modules will be shipping. With the possible exception of the scan-rate converter, the other three modules benefit from the presence of each other. The Roaster Chip even requires that the framegrabber/genlock be installed. Knowing that the frame buffer and currently shipping software list for $995.00 and the four modules only raise the price to $1995.00, buying the board now and adding the modules later is certainly an affordable way to purchase so much capability.

The framegrabber/genlock module allows an external video signal to be connected so that images can be grabbed or laid on top of the incoming video signal. Either a composite or a Y/C video signal can be connected to the module for input and output purposes. The module itself attaches to

a row of pins located on the motherboard with cables and connectors that pass out through the hole in the video slot adapter plate. The framegrabber is a real-time 24-bit device, with a eight-bit linear keyer with alpha channel for the blending of OpalVision or Amiga native display images and the external video source. The eight-bit alpha channel allows graphics and text to be laid over an incoming video signal for antialiasing purposes and various degrees of transparency. While waiting for the module to become available, it is possible to connect most external genlocks to the OpalVision motherboard.



The Roaster Chip allows for the real-time processing of Opalvision and Amiga images as well as an incoming video source in conjunction with the framegrabber/genlock module. Acting as a digital video effects processor, the Roaster Chip provides for the wrapping of images on a sphere, real-time scaling or page turns to a second image. The module also allows for 24-bit picture-in-picture displays with a live video source. It's even possible to run an eight-bit or 15-bit animation in a window in the foreground while running a 24-bit image in the background. Centaur is currently working on an animation utility that will convert 24-bit 3D images created with Imagine and others into a 15-bit animation with 32,000 colors. Speeds of up to 25 frames per second can be achieved via this method. Custom transitions are also possible with the software provided with the module.

The quad-input production switcher module provides connections for four composite or Y/C video signals of which any two can be active at a given time. Cuts, wipes and dissolves can be performed between any two sources using the Roaster Chip module. An input is provided for an external reference signal such as blackburst and an output for the 8-bit alpha channel as a key source.

Finally, the deinterlacer module functions as a scan-rate converter to provide 24-bit images and live video output without any flicker for use with a multisync monitor.

OpalPaint in Depth

OpalPaint, the 32-bit paint program included with the OpalVision frame buffer is in my opinion the best paint program currently available in the United States for the Amiga (TVPaint by TecSoft of France may be better). At first glance the program looks deceptively simple, with all of the standard drawing tools common to most Amiga paint programs located in the main menu bar at the bottom of the screen. After experimenting with OpalPaint for a few minutes, however, the power of the program becomes readily apparent. Fast and stable, OpalPaint does everything well and provides some interesting if not unique features such as brush wraps and brush warping, and up to three cutout brushes held in memory. It can create a line-art representation of the brush that includes not only the outline but some surface detail as well. The program also has area and color stencils, virtual memory support, can create and display small thumbnail images when loading and saving both images and brushes, provides some image processing effects comparable to Art Department Professional, and has a status window that briefly describes the function of the tool or operator selected. OpalPaint also supports JPEG image compression for loading and saving files, has alpha channel support with varying degrees of transparency for stamping 24-bit brushes over a 24-bit background, can address the framegrabber for capturing images directly into the paint program and has many other useful and powerful features too numerous to list here. The following paragraphs are intended to shed some light on only a few of the program's many outstanding features and is not a comprehensive review of all of OpalPaint's features.

While clicking on the left mouse button activates a tool or operator, clicking on the right mouse button usually brings up a requester that provides options for that particular tool or operator. When using the filled rectangle tool for example, a window pops up and offers the choice of using a solid color, one of six gradient fills or one of three brushes to fill the area with. A preview window is included with all of the filled area tools to obtain a quick look of the intended effect without having to apply it to the screen first. Many of the operators use a vertical slider to set the degree of transpar

ency, brush warping, etc., usually as a percentage or in degrees.

The process of creating a color palette and selecting the pen color is very easy. Above the main menu bar is a horizontal row of 20 paint pots. The pen color can be selected by using the mouse or using the left and right bracket keys, with the active color highlighted by a white border. 260 ready-made colors are available (13 rows with 20 different colors each). Clicking the Palette button on the main menu bar reveals the Palette menu requester. The requester has a window that displays the entire spectrum of hues (red, orange, yellow, green, blue, violet) with a pair of crosshairs used to select a specific shade of color. The vertical slider next to the window adjusts the black level of the color selected. Underneath are RGB and HSV sliders which change as the crosshairs and vertical slider are moved. Colors can be selected using the RGB and HSV sliders as well. A separate mixing area is included for blending new colors together, much like using an artist's palette to mix and blend two or more colors together to create a new color. Finally, twelve ready-made palettes are included with the program, including pastels, metals, skin tones, red, greens and blues for easily selecting specific ranges of colors. Palettes can be saved and reloaded for later use.

OpalPaint can work with both area and color stencils. Area stencils allow for certain parts of the screen to be masked and prevents the selected area from being painted on. This is very useful when a specific area of an image can be easily defined such as a tall, square building. It's not so easy when the area to be masked isn't an easily defined shape. Color stencils can then be used to define which colors of the image are to be protected and which aren't. Up to six ranges of colors can be defined using hue, saturation and value sliders to set the ranges. Colors can be either included or excluded from masking. The process is much like the color stencils found with DPaint except that more colors can be masked. A tutorial included with the program shows how easy it is to work with color stencils by changing the face of a clown from red to blue without affecting the rest of the image.

While the program defaults to Paint mode, a separate screen with seventeen other modes including Contrast, Posterize, Additive, Subtractive, Brilliance, Mosaic and Sharpen is available for modifying images. Four spare modes are available that provide access to 25 additional modes such as Emboss, Oil Paint, and Addnoise. Some of the modes resemble convolution matrices found with Art Department Professional 2.0. All of the various modes modify the image and provide an easy way to create dramatic looking results using framegrabbed images or images loaded from an image library. The Emboss mode is especially good, converting an image into a gray-scale version of its self with just a hint of its former color and adding an embossed or sculptured look that is very effective with faces. The Brilliance mode can be used to lighten or darken areas of an image and can be used to create a beveled look with marble and other stone textures.

Also included with OpalPaint is a selection of advanced artist's tools including Airbrush, Chalk, Texta, Watercolors and Colored Pencils. All of the functions benefit from but don't require the use of a Wacom graphics tablet and can react to the pressure applied to the tablet's stylus. The weight or effect of the tool can be adjusted as a percentage using a vertical slider. For more of an airbrush effect simply move the slider closer to 100%. Also included is a selection of paper textures such as rice paper, rough paper and hairy paper. The depth of the paper can be set as a percentage as well. When used with other drawing tools the texture of the paper is left behind without affecting the color value of the area affected.

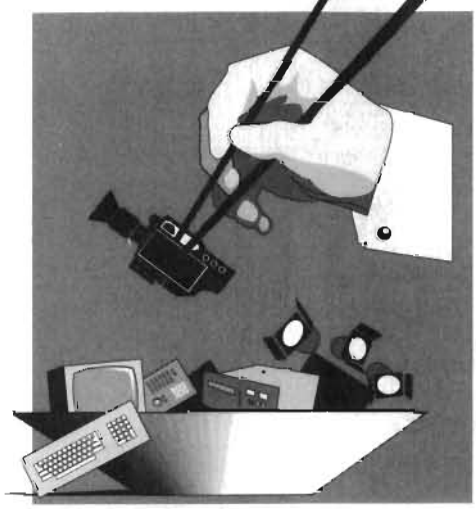
One of OpalPaint's greatest strengths is the interaction of tools and operators with each other. By setting the depth of the paper texture to 100% and setting the transparency level to just 50% a different effect is achieved compared to 50% for the paper texture and 90% for the transparency. Stencils, transparency, textures and antialiasing can be turned on and used at the same time, again with the settings set at different percentages, while being used with any of the drawing and artist's tools. Finally, images of up to 32,768 by 32,768 pixels can be displayed an scrolled around on screen by using OpalPaint's virtual memory support. By using a fast hard drive, OpalPaint can transparently read and display from the hard drive images that greatly exceed the amount of available memory. The hard drive in effect becomes an extension of the computer's memory, allowing you to display and work on huge image files.

Conclusion

The manuals are well written, concise and easy to read, with illustrations on how to install the board and software. Tutorials are included on how to use the software along with useful tips and hints. A good selection of images, brushes, textures and ready-made palettes is included with OpalPaint to help the user get started in the right direction. When all of the hardware modules are finally available OpalVision promises to offer some serious competition for the Video Toaster. While OpalVision doesn't have all of the Toaster's features (no 3D rendering or character generation software is included) it wouldn't be too surprising to see third-party software developers either writing some new applications for OpalVision or porting existing software over to work with the board. Able to work with both the Amiga 2000 and 3000 as well as NTSC and PAL machines, the future looks bright for OpalVision not only in the United States but in Europe and the rest of the world.

OpalVision
by Centaur Development, Inc
4451-B Redondo Beach Blvd.
Lawndale, CA 90260
(310) 542-2226

VidBits



BCD Associates Announces Application Note, CompuServe Access

BCD Associates, makers of the 2000A internal single-frame controller for Amiga 2000 and 3000 computers, have two pieces of good news for Amiga videographers. First, those considering the purchase of a single-frame controller can obtain BCD's new application note on single-frame controllers. This free document provides readers with educational material that allows them to evaluate the features and specifications of various available controller systems.

Also, BCD Associates have announced their new customer support area on CompuServe, the national information service. The BCD section of CompuServe's Multimedia Vendor Forum provides users with access to three areas: a message center for communicating directly with BCD as well as other users; a library area for information storage and retrieval; plus an Online section devoted to direct online converencing. For more information contact BCD or call CompuServe directly at 1-800-524-3388 and ask for representative 228. Mention BCD to waive the usual $15 membership fee. Of course, you must have a modem to use CompuServe

BCD Associates
128 NW 67th
Oklahoma City, OK 73116
(405) 843-4574

CyberEdit Offers Fast, Easy Video Editing

Cybercall, Inc. promises that CyberEdit, their new Amiga Video Editing software offers the fastest and easiest video editing tool available. CyberEdit works with two VTRs and/or camcorders, and also requires a hardware edit controller such as Future Video's EditLink 3200. Depending the video equipment's capabilities the system enables assembly edits, audio-only and video-only inserts, audio and video inserts, and freeze frame. SMPTE capability is available when used with the EditLink 3200 or 2000/TC-DT controllers. ARexx users will appreciate that their favorite scripting language can be used to control the system—in fact, other Amiga ARexx software can control either or both VTRs without running the CyberEdit user interface, to save on memory. Watch these pages for a full review of CyberEdit, coming soon.

CyberEdit
Cybercall, Inc.
20 Cleveland Ave.
Highland Park, NJ 08904
(908) 249-9883

DPI Offers Background CD-ROM for Multiple Platforms

PhotoStock is a CD-ROM with background/texture images from Digital Photographic Imaging, Inc. The disk contains 50 different high-quality images in these categories: Natural, Manmade, Paper, Stone, Textures, and Wood. Each 640-by-480 picture is in 24-bit IFF format which can be loaded directly by a number of different Amiga programs. The pictures are also on the disk in 8-bit and 24-bit formats for Macintosh and MS-DOS computers, so no conversion should be necessary. If you have a CD-ROM drive or a CDTV connected to your Amiga, PhotoStock can enhance your image collection considerably.

Digital Photographic Imaging, Inc.
PO Box 545
ADA, MI 49301
(616) 676-3347

Video Network Provides Online Resource for Videographers

Now that more and more videographers are using computers, it's only natural that a resource such as *Video Network* should come into being. Video Network is described as "a database and interactive communications tool designed for video professionals". By connecting a modem to your computer and dialing up this service, you'll have access to downloadable video-related files and programs, video industry news, E-mail, user groups, an online shopping mall, and more. There's a classified ad section and a database listing used equipment for sale, online consultation and leasing, and a new section, called Ask the Producers, which lets you get help and answers questioned from professional video producers who work in a variety of genres. Who knows—someday you may see AVID online in the Video Network.

Video Network
Box 129
Portsmouth, RI 02871
(401) 848-9454

TexTiles Expands Videographers Texture Image Library

Digital images of textures are useful for a wide range of functions in desktop video, including as backgrounds and wrapped around 3D objects in LightWave. TexTiles is a collection of forty high-quality 24-bit images in Amiga IFF format. Each image measures 256 by 256 pixels, and all edges match up with each other for seamless wrapping. These images are ideal for mapping of colors, transparency, reflection, and diffusion in LightWave. Currently available are *Volume I: Things That Go Bump* and *Volume II: Megamaps*.

Mannikin Sceptre Graphics
3208-C E. Colonial Dr.
Orlando, FL 32803

ARexx Cookbook Provides Recipes for Video Success

The ARexx Cookbook by Merrill Callaway is a tutorial guide to the ARexx language on the Amiga. Many Amiga video-related programs are ARexx-compatible, which means that you can become a real power user by learning how to write ARexx scripts for them. Become fluent in ARexx by following the tutorials, studying the examples, and modifying existing ARexx programs. Of particular interest to videographers is the included ADPro Scale Utility, which lets you use Art Department Professional to modify both an image's pixel aspect and its image aspect, so you can fit it into a particular space without distortion. If you've been longing to take full control of your Amiga video system, this book will help a great deal.

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ERRATA

In the Dr. Is In column in AVID Volume 3, Issue 8, the retail price of Motion Man was misstated. The actual price is $149.95. Contact Anti Gravity Products, 456 Lincoln Blvd., Santa Monica, CA 90402, (310) 393-6650.

In the 3D Perspectives column in the same issue, the wrong telephone number was listed for ordering The Big Rig truck model for LightWave. Mach Universe's correct phone number is: (714) 750-0100.

AVID apologizes for any inconvenience these errors may have caused.

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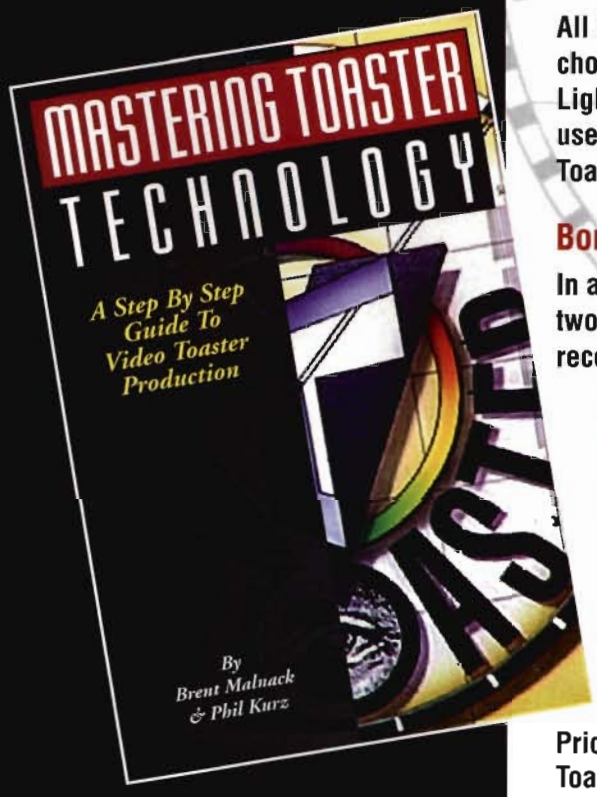

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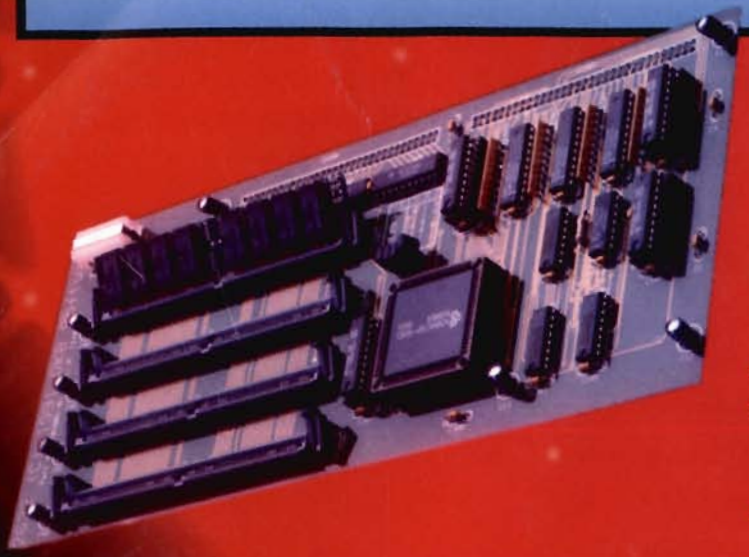

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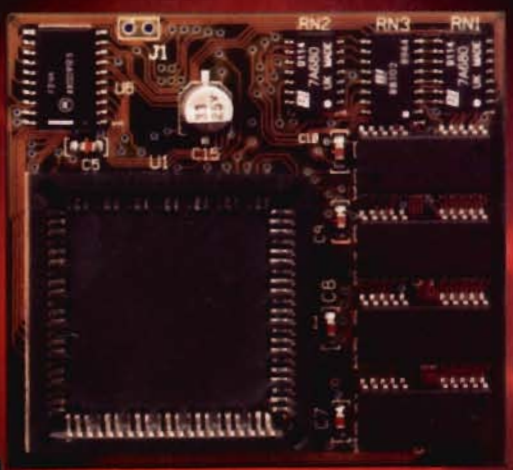

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