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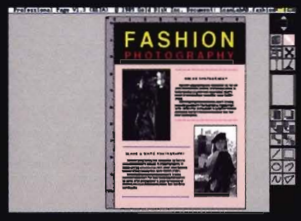

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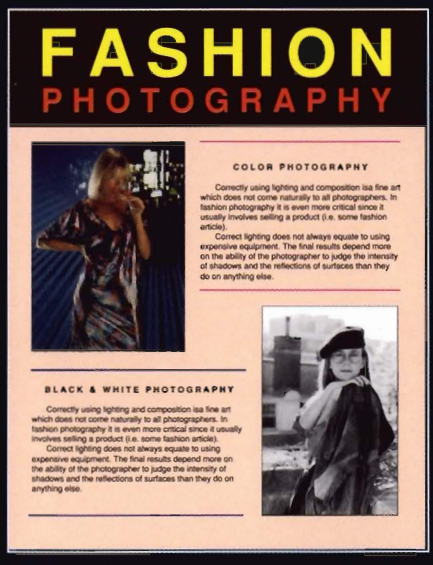

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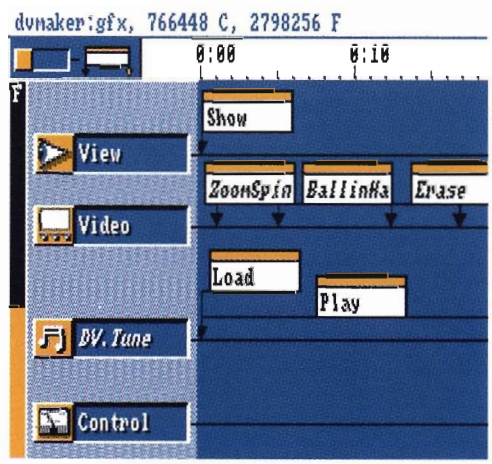
BoingApeel A painting drawn with Deluxe Photolab.

Animation



DeluxeVideo III

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Other Graphic Items

A sample of what XapShot can do.

3D Professional

Graphic Items Continued

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Impulse

A Visit To Impulse, Inc
by Mike Hubbartt

Impulse, Inc., produces many different products, including the well-known Amiga 3D ray-tracing program Turbo Silver. Raytracing produces vivid images, and Turbo Silver generates animations that use these high quality graphic images. I recently toured their facilities in Minneapolis, and spoke with the president of Impulse, Mike Halverson.

On Disk This Issue

Dynamic Hi-Res
Space Station is a striking image taken from LaserDisk in the latest, and highest Amiga resolution. The created includes a little information on how it was done.
ON DISK

RED, "Etched In Stone"

Cherries
The latest rage is scanning. And this picture shows off just how good scanning can get. This image was scanned using the JX-450 Color scanner from Sharp. Just double click the icon to view the picture.
ON DISK

Red • This Issue's Cover

This issue's cover was ray traced by M. Fisher. Then the etched in stone effect was added here in the GRAFIx studios for placement on this issue's cover.

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AMIGA GRAF/X

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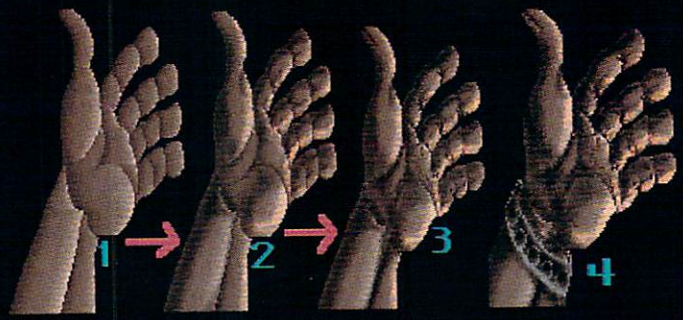
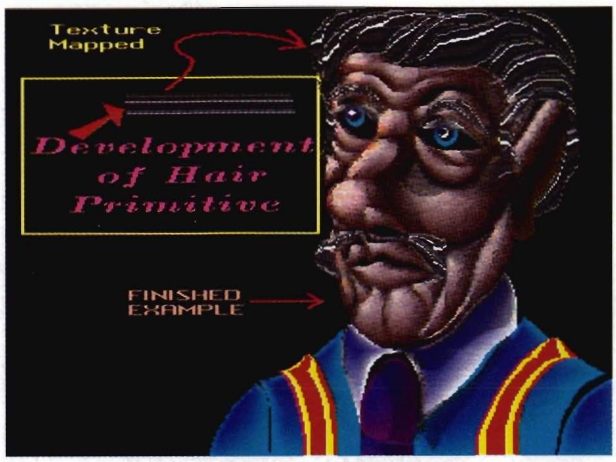
BY R. SHAMMS MORTIER

FLESHING OUT



And how did it begin, Doctor-Doctor? It just isn't true! You can teach an old dog new tricks. At least old dogs are capable of learning new tricks with some time and effort. Hello. My name is Shamms, and I'm the old dog in question. After deciding at an early age not to spend the balance of my life hanging out around the fire hydrant, I set out on a journey to find ways that these incessant visions in my puppy brain could be committed to a more public medium. After all, none of you other canines can see what's going on in my head by just lifting one of my floppy ears and taking a peek. I've tried to accomplish my task through learning to manipulate about every visual medium I could get my paws on - oil paints, watercolors, pen and ink, acrylics, you name it. Out of all of the media I've used, some have remained as favored approaches, and some have fallen by the wayside. It turns out that all have prepared me for my latest adventure: computer graphics.

I began working at accumulating skills in computer graphics about ten years ago. As a graphic designer and a painter, my first introduction to the field was less then exhilarating. I began by taking



All the fleshy fellows you see in this article are the concoctions of R. Shamms Mortier

some University of Vermont courses in computer cartography, and was led to a patient attitude by witnessing all of my work disappear at three a.m. when the mainframe belched. As it turned out, this was excellent training for my eventual Amiga purchase many years later, as it gave me the courage and humor to accept interruptions from the Amiga Guru.

I've paid my dues on just about every microcomputer on the market: IBMs, DECs, Apples, Commodore 64s, Commodore 128s. Never having had any need to caress game machines masquerading as the real McCoy, I skipped Ataris. My St. Vitus dance with Commodore began with the 64. I purchased every graphic piece of software I could for it, and used that same software when I upgraded to the 128. At our local Commodore Users Group meeting several years ago, I swore my allegiance to the lower end systems, taking an oath that I would never purchase a "pricey" Amiga. Three months later, after receiving a grant from MacMillan and Company in New York to develop a video layout for an instructional piece on atomic orbitals, I broke my oath and purchased the beginnings of my Amiga mega-studio.

So, get on with it!

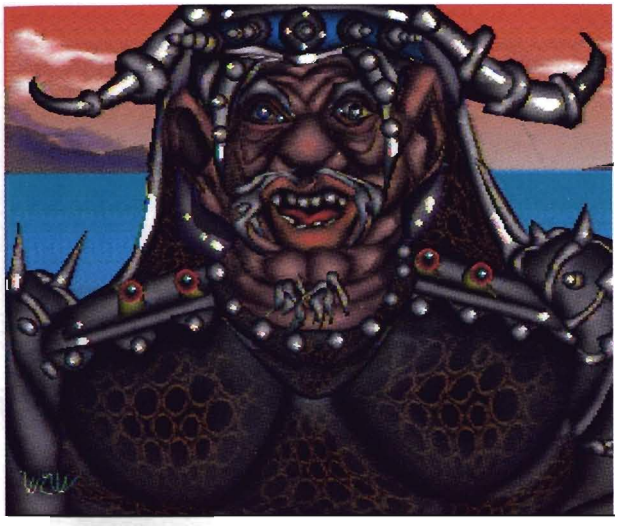
I have spent hours and days and months in serious doodling. Many of my gallery shows have been based upon these impromptu sketches, and I cannot sit through managers' meetings without commenting secretly and visually upon the proceedings.

There is something about the half angelic, half demonic character of the human face that has always attracted me. It was inevitable, then, that I should gravitate towards this same subject matter when my tools changed from pen and ink to the computer. My Amiga graphics software library is loaded with every package that I could get my hands on. I am, thank you, an Amiga obsessive artist, and make apologies to no one for my efforts. I truly believe that this system has sent an evolutionary shock wave through the industry which will change forever the way artists and designers work. It has done this on two fronts: the tools that have been de-

veloped for the Amiga are revolutionary and first rate; the price of the system is low enough so that it can be afforded.

Yes? Yes? Yes?

So, when it came time to select painting and drawing tools that could help me accomplish my self-assigned task of reconfiguring the human face, I chose several different pieces of software. For standard non-HAM tools I use ExpressPaint and DeluxePaint III. The dithering tools in each are excellent accessories for my purposes. In the HAM realm, I use Photon Paint 2.0 and DigiPaint 3.0. Many times, I port my work back and forth amongst these wares, before achieving a final painting that is satisfactory to me. It is the dithering tools and their manip-



most. Lately, I've been spending the bulk of my time with DigiPaint, because it has attributes that give it the feel of an oil painter's toolkit, and it handles colors and dithering in a superlative fashion. I'll try and take you step by step through a portion of my creative process, in the hope that this will spur you on to your own creative and intuitive explorations.

And Awayyyy we go...

THE TUTORIAL

This tutorial assumes that you own DigiPaint and are somewhat familiar with its use (if not, close the magazine for a day or two and go buy it!). The first thing we'll do is to choose a resolution. I always work in the highest resolutions possible, because I like to minimize the jaggies. In DigiPaint, this means choosing Video-Res HAM (320 x 400). Forget overscan at the moment, as you won't need it for the tutorial.

People come in many colors, and each range has its own beauty and possibilities. In addition, color is an emotional artifact, meaning that through color, we witness internal activity. A face tinged in green can be responding to the hue of a green light, a red light, or to seasickness and envy.

When choosing the color ranges of your characters features, experiment with the impact that these colors will provoke. In addition there are shadows. Red- and pink-toned skin colors cast greenish shadows, while black skin can incorporate violet shades. Seek out the way that the master painters have studied these characteristics, and learn from them. Just because you work with a computer, there is no excuse for being ignorant of history and the lessons to be learned from it. I have included a sample page of some of the color palettes that I use, to give you some visual references on this matter.

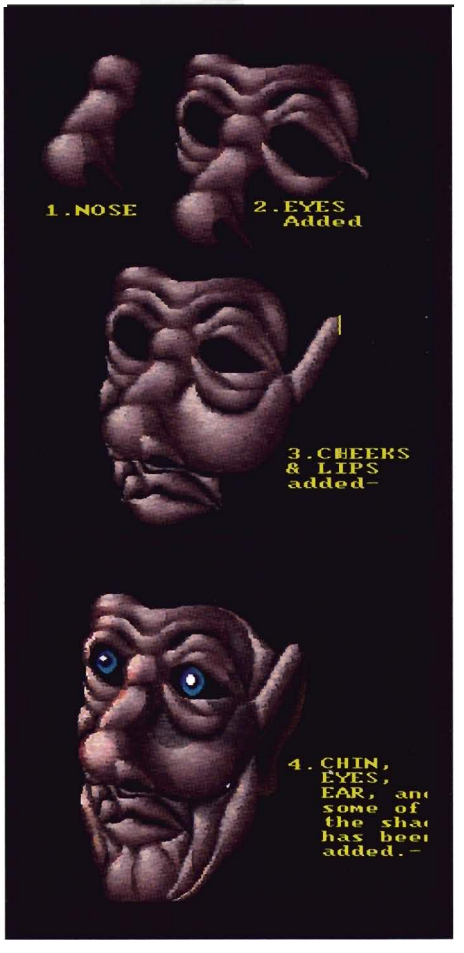
"Dithering" is the next facet that you must come to grips with in DigiPaint. "Dithering" is the process whereby adjacent colors are mixed as to give the impression that there is a smooth blending from one to the other, as opposed to a hard edge between them. There are two main dithering settings on the Control menu of DigiPaint. One gives you a standard look (the right-handed choice), while the other interposes a pattern, giving you the feel of a canvas painting. I use both at different times, but prefer the left-handed one in most cases. Use the left-handed one for this tutorial.

What to do in what order

1. Develop your fleshtone palette in the "range" colorpots on the right of the main menu. I usually work light to dark, as far as the intensity ranges go, but you can experiment with the reverse.

2. Select "Range" from the modes category, and then choose to work with a filled rectangle. Paint a rectangle of your flesh-toned colors on the screen.

3. Pick up the rectangle as a brush (choose "no back-



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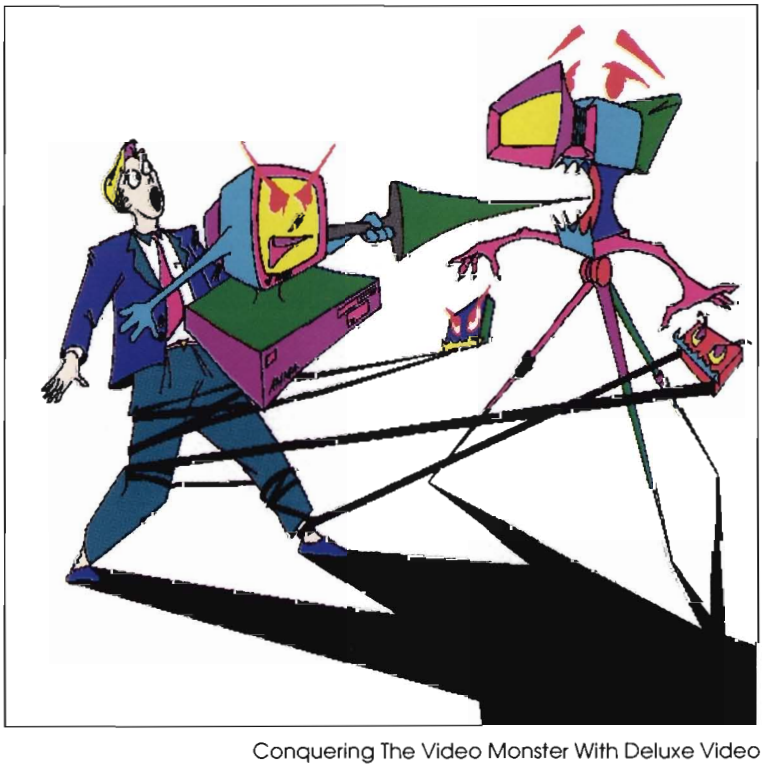
DELUXE

A Look At Deluxe Video III

by Steve Gillmor and Tina Chase

In this article we will discuss the techniques, trials, and triumphs of using Electronic Arts' Deluxe Video III multimedia presentation system. The comprehensive update of the pioneering Deluxe Video software allows the Amiga desktop producer access to 2D animation, sounds, music and titling in all resolutions, in up to 4096 colors. We wanted to demonstrate a number of the capabilities of Deluxe Video III in the GFX.vid video on your disk. We pretended for the purposes of this discussion that we were producing a promotional video announcing Graf/x Magazine, to be used for a looping in-store display. There are many more effects and new tools available in the program than we had space to incorporate examples of, but this should be a good starter kit for you.

Briefly, the video begins with music, a DMCS ditty from the Deluxe Video examples disk. If you're running from floppy disk, there will be a delay while the first images and animations load. First the screen does a diamond-shaped wipe from the center out, revealing a patterned background of the words "Deluxe Video III". Then an animbrush graphic of the name of this magazine zooms and tumbles towards you, coming to rest near the bottom of the screen. The "x" in Graf/x then spins a few times in place.



Conquering The Video Monster With Deluxe Video

Now, at least for the first time through the complete animation, there will be another pause while the next brushes load. The title appears to float to the upper left portion of the screen, and an open hand journeys from left to right, arriving just in time to catch a falling green/white ball - to an accompanying "boing" sound effect. The hand tosses the ball back up off screen, from where it returns, cleverly disguised as a big lacy snowflake. When the snowflake lands in the hand, the title in the upper left corner begins to colorcycle in a cascading effect. If you're running a 68000-based Amiga (A500, A1000, A2000), you will probably notice the music change tempo, then pick back up again when the cycling completes.

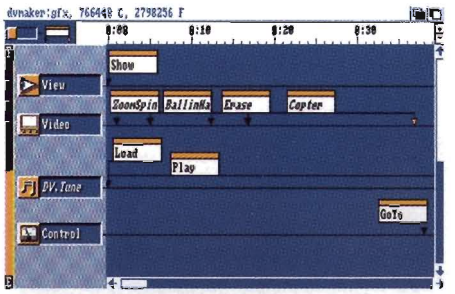
Another hand, this time in color holding a blue eraser, erases in a zigzag fashion the entire screen to black. Again we pause visually as more stuff is loaded into memory. The sound of a helicopter is heard, then we see a helicopter gradually dragging a large red TV set from the upper right toward the middle of the screen. On the TV set's screen is an animation of a bird in flight. The chopper deposits the TV, then exits stage left. The bird suddenly flies out and around the set, then flies off screen right. Finally, animated letters slowly turn and

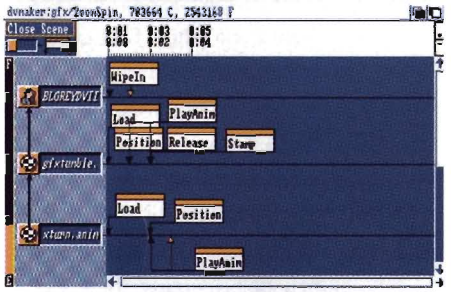
VIDEO

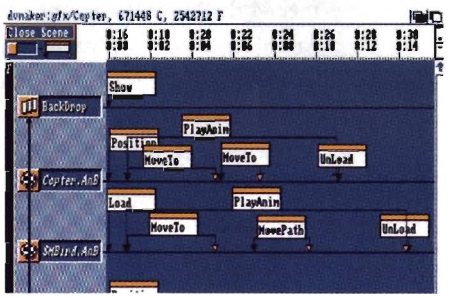
appear to form the ending GRAF/X title, and the picture slowly fades out. The video then loops to the beginning as the music continues. You'll notice that from now on the video will run much faster as it repeats, since many parts are now in memory.

Let's step through the video scene by scene, and analyze the elements used to create these effects. To start with, we used DeluxePaint III extensively in this production, not only to create the brushes and background pictures, but also to create new animbrushes and alter existing ones. Although Deluxe Video III fully supports OP5 Anims, we decided to use the more compact animbrushes to convey the power of the program without going over our byte allowance on your Graf/x disk.

The video is made up of four scenes, named ZoomSpin, BallinHand, Erase, and Copter. ZoomSpin has three elements, the backdrop black and grey pattern, the zooming and tumbling title animbrush, and the spinning "x" animbrush. First we chose a Diamond Wipe Effect for the background IFF picture, with a one second duration. Since Deluxe Video III, unlike its predecessor, does not support automatic sizing of brushes, we used DeluxePaint III's Move requestor to do the job. We set the Z Distance to -1500, the X Angle to 720, and Recorded in reverse so that the full-sized title brush diminished and tumbled into the center of the screen. Playing it back in the opposite direction, we picked it up as an animbrush and brought it into Deluxe Video. First we Loaded it, Positioned it, then Played the Anim, and finally Stamped it down and Released it.

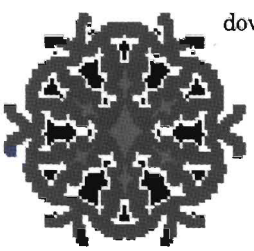


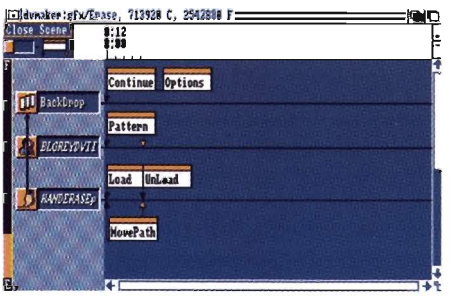


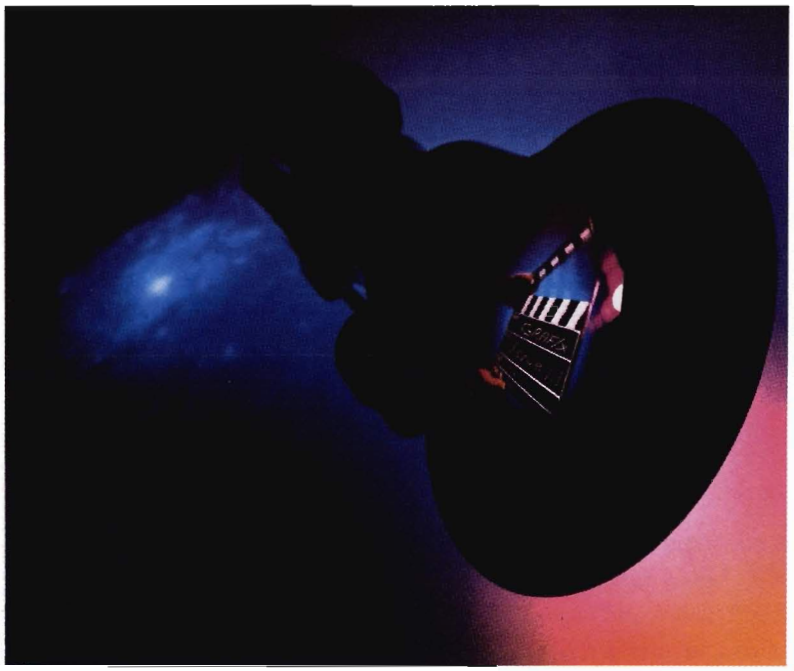


We could have just Positioned it just prior to its Play command, but we wanted to avoid as much delay as possible during realtime play. After the animbrush is stamped down, we Release it, which frees some memory but does not UnLoad the animbrush. As you'll see, we will use it again in the next scene.

The last frame of the Graf/x animbrush does not have the "x" in it, so when we stamp it down, we also simultaneously Play the "x" turning animbrush. This was also prepared in DeluxePaint, and it works seamlessly with the other brush. We could have created the same effect with one animbrush, but we wanted to test the ability of Deluxe Video III to accurately support multiple animbrushes in a precise and frame-accurate situation.

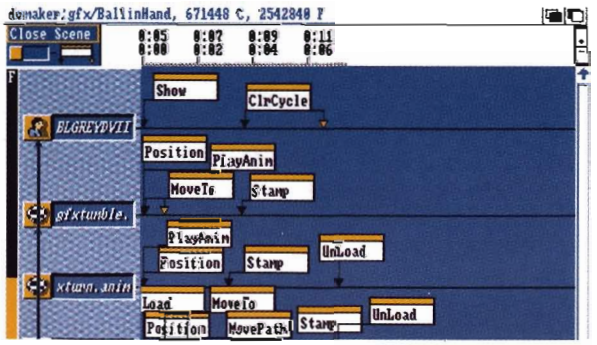






That's the whole first scene, and you might be wondering why we broke things up in quite this manner. The next thing that happens is that the Graf/x title moves up and to the left quadrant of the screen. We wanted to take advantage of the new Deluxe Video III ability to attach objects to other objects in a hierarchical or parent-child relationship. We also wanted to reuse the same two animbrushes to create the effect of a single Brush. So we attached the "x" to its parent animbrush, then set the Play Anim requestor for each to Play only the last frame. Then we used a MoveTo effect on the Graf/x animbrush to move both brushes together to the upper left corner. Since we only Released the title animbrush in the first scene, we only have to Position and PlayAnim it in the second scene. We also Show the backdrop picture again to clear the first scene's leftover Stamped brush; otherwise we would see the Graf/ part of the title split into two parts, with one part remaining at the bottom of the screen.

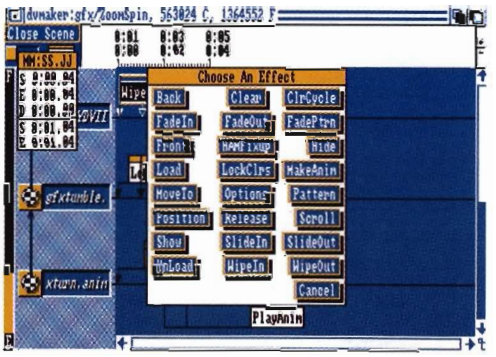
One of the important differences between this and the



previous release of Deluxe Video is that now the parts (pictures, brushes, Anims, animbrushes, sounds, and tunes) are saved separately from the script you devise to orchestrate your video. This gives us the opportunity to use various elements from the examples included on the distribution disk, as you too can do with the parts from this video. Of course, we had to modify the palettes of some of the brushes to work with our material, and we tried where possible to use smaller versions of existing objects.

The open hand brush originally held a larger version of the bird we see flying later in our video, so it was carefully painted out (well, not so carefully that you can't see where we doctored it). We used a new effect here to make the movement of the hand as it catches the ball more realistic. First, a MoveTo effect carries the hand out to intersect with the dropping ball. The we added a MovePath effect, entered Trace mode and drew a path down, then back up as the hand propells the ball back up. It is easy to experiment with Trace until you get a movement that looks realistic, and you can adjust the points created by the trace in Edit mode to more exactly define your trajectory.

We did much the same thing with the ball, using a MoveTo to arrive at the same spot on the screen, then adjusted the length of the MoveTo effect to coordinate the arrival time with the hand. It was then



fairly simple to create and edit a MovePath for the ball to mimic the downward movement of the hand as it "catches" the ball, then keep pace with the hand's upper movement until the timing seemed right to let the ball continue on alone. While in trace mode, we pressed the "h" key to zoom the trace screen out, in order to move the ball out of frame at the top of the screen. Then we had the blue lace snowflake fall back into the hand at the point in time where the ball would have been expected to return to earth. Since we wanted to convey the impres-

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XAP SHOT

XAP SHOT MEETS FRAMEGRABBER
A NEW HARDWARE COMBO FOR AMIGA DIGITIZING

by Harv Laser

The portable digitizing studio in your hand. . . Add another slick little gadget to the growing pile of hardware with which you can pull real-life imagery into your Amiga. The Canon Xap Shot: it's terrific, but pricey. This small camera, about the size of a peanut butter sandwich, when used with the FrameGrabber (Progressive Peripherals & Software), enables you to carry around what amounts to a portable digitizing studio in the palm of your hand.

Appealing most, perhaps, to the well-to-do "yuppie" market whose livingrooms bristle with the latest esoterica of consumer electronics, Canon Inc., of Tokyo, touts the Xap Shot as "Photography for the Video Generation." The Xap Shot's main marketing thrust will be to folks who're willing to part with a good chunk of cash in order to tote around a small, easy-to-use camera which can capture live images and then play them back through a home television set. To this end, the Xap Shot fills the bill perfectly.

While spending nearly a G-note to take video pictures of vacation spots, babies and house pets could be deemed a legitimate reason for owning a Xap Shot, the Amiga owner reading this will ask "so why is Graf/x reviewing a camera?" Good question. Glad you asked.

HOW TO STUFF REAL LIFE INTO AN AMIGA

Think of the ways you can use your Amiga to create static, moving, and printed imagery. Do you like to dabble with paint programs? Perhaps you've contemplated making your own animations or videos. Or maybe you're the photographer or artist for an Amiga User Group Newsletter. Most of the people I know, while fascinated by computer images, aren't artists.

This brings up the problem of how to get satisfactory imagery into the computer so it can be further manipulated, massaged, and processed, and a final product delivered

to you by your software. Let's take a hypothetical situation and explore the possibilities. Your user group meets tonite, and there's going to be a demo given by a representative of a large software company. It's your job to write and illustrate an article for the next newsletter describing this demonstration. Rather than the same old screenshots, you want to get a photo of the speaker at the podium. What are your choices? Well, you own a 35mm camera with all the trimmings (although you haven't used it much since you caught "Amiga Fever"), and you have a DigiView setup, so you figure you'll just fire off a few shots during the presentation and digitize the prints. Knowing that your deadline is close, the next day you rush your film over to "Mr. Speedy's One Hour Foto" at the local mall to get your pictures back in a hurry. You really wanted "Jumbo prints" because they're easier to digitize but since one-hour places don't offer them, you make do with 3x5 prints.

You race home with your processed photos and, sliding behind your computer chair, open the package and whip through them. Uh oh, they're not so great. In fact, out of the whole roll of 24 pictures there're only one or two that you're even semi-proud of. Oh well, most amateur photographers get results like that, even with a shoulder-bag full of camera gear.

You fire up your DigiView and slap the best picture down under the camera. Your newsletter editor uses Professional Page, and he wants gray-scale IFF graphics, so you use DigiView's black and white mode to digitize your picture. After a lot of focusing, digitizing, and diddling with the software, you finally get something you think he'll like, and you save it off as an IFF picture and upload it to the private newsletter section of your club's bulletin board. Later that day the editor phones you. The picture you sent him wasn't the greatest thing he'd ever seen but he'll use it and he also wants a shot of Joe Demonstrator shaking hands with the group's president. It's back to your photos to repeat the process. If you're lucky you have the shot he wants. If you're even luckier it'll be one of the good photos. If not, well now you know what Jimmy Olsen went through. Ah, the life of a cub reporter.

AN EXCITING VIDEO DIGITIZER

Now let's try another approach: go through that same scenario, but instead of using a "real" camera and a DigiView, let's try the Xap Shot and the FrameGrabber. But first, for those of you who are unfamiliar with the FrameGrabber, we'll take a little detour here to describe it.

The FrameGrabber (Progressive Peripherals & Software) is a live video digitizer that will work with ANY

model Amiga since it doesn't attach to the bus. The FrameGrabber is a freestanding black box about the size of a hardbound book that takes the monitor output signal from your Amiga and sends it back into your monitor through two cables. Another cable attaches to your Amiga's parallel port. It sits in the monitor "loop" so you can toggle the realtime, live, incoming imagery and your normal Amiga display - instantly with the tap of one key. It talks to the parallel port so it can "download" captured imagery from its own 96 kilobytes of memory to your Amiga, there to be processed by the FrameGrabber's software.

On the front of the FrameGrabber is an NTSC (That means standard American video.) input jack, a standard RCA female-type plug just like you'd find on the back of your hi-fi receiver. No funky BNC connectors here. Into this plug you connect any device which outputs a good ol' NTSC signal - like a VCR, a TV-tuner, a laserdisc player, a color camcorder, even a security-type B&W camera like those used with DigiView.

OR. . . a Canon Xap Shot.

You run the FrameGrabber's special software on your Amiga which controls the FrameGrabber's circuitry. You watch the images on your Amiga monitor coming from your NTSC source via the FrameGrabber. Moving or still images - it matters not. When you see something you want to grab, you hit ONE KEY. Whammo. FrameGrabber grabs whatever you were seeing on your monitor (in 1/30th of a second for color, 1/60th for B&W) and downloads it to the Amiga via the parallel port. The FrameGrabber software then massages it into whatever resolution, color, and size you had previously selected, and displays it on your screen. This process can take anywhere from a couple of seconds to about a half minute, depending on what resolution mode you're using. You can save that image to disk as an Amiga IFF file and later import it into dozens of Amiga graphic-oriented software titles - paint programs, ray-tracers, desktop publishing programs, word processors, animation programs, whatever you have.

FrameGrabber's software can also create animations in standard .ANIM format by capturing consecutive frames in turn, either manually or via a built-in, variable timer in the FrameGrabber software.

As long as the image on your screen remains in FrameGrabber's memory, that image can be manipulated, enhanced, tweaked, modified, and beaten into submission THOUSANDS of different ways by the FrameGrabber's software. The software is VERY fast. Written in Assembly language by the same developer (Justin McCormick) who wrote PIXmate (Progressive Peripherals & Software), it also has the distinct "PIXmatey" feel to it.

Due to the amount of memory in the FrameGrabber box itself, the only mode in which you can capture overscan pictures is low-resolution (320 pixels across, plus the overscan area). However, the FrameGrabber software works in low, medium, interlace, and high resolutions and in palettes from two colors to 4096-color HAM, or 16 shades of gray. Besides IFF pictures, brushes and palettes, it can save files in DigiView's 21-bit RGB format, or in its own, 24-bit format, as separate RGB files (meaning you can slow-scan digitize using a FrameGrabber and a B&W security camera and colored filters for results as good as DigiView).

Given enough memory, FrameGrabber's software multitasks wonderfully, and since the FrameGrabber is in your monitor "loop" there's no need to go through a lot of folderol with extra cables or use two monitors if your NTSC input device is a camera which requires focusing. You can FrameGrab from RUNNING videotape, or laserdiscs, or live video cameras, or television.

The FrameGrabber's software enables you to toggle from your Amiga display to the FrameGrabber's live display instantly. Even if you're not digitizing, you can amuse yourself and watch televi-

sion on your Amiga's monitor while you're downloading from a BBS! The only downside to this is that the FrameGrabber must be powered at all times when you use your monitor - the FrameGrabber has no on/off power switch. However, if you're not using its software, you'd never even know the FrameGrabber is there. It's completely transparent to all your other software and hardware.

"But it uses the parallel port! What about my printer?" Hey, no problem. Just get one of those little Centronics A/B switchboxes and you can have both the FrameGrabber and your printer connected to your Amiga (although naturally you can only use one or the other at a time). ALWAYS make the switch, with all power to the system turned OFF, however, to prevent potential damage to the components during the switch operation.

FILM? WE DON'T NEED NO FILM

Now back to our story. We'll rewind the user group meeting and start again. . . This time, you go equipped with a Canon Xap Shot camera and a small portable television. During the demonstration you snap pictures of your guest speaker and club officers. Even as the demo continues, you walk to the back of the room and quietly plug the output of the Xap Shot's AC coupler, which also contains its video output jack, to an RF converter attached to the antenna terminals of your portable color TV. You put the Xap Shot into playback mode, and you can rapidly look at all the pictures you shot just seconds earlier! This is TRULY instant photography. Even Polaroid can't do it faster than this.

If you don't see satisfying images, you just re-shoot the pictures right then and there while the meeting is still going on! The Xap Shot works its magic by using a CCD (Charge-Coupled Device) image sensor to record onto tiny, two-inch "standard" format "video floppy disks". Each disk can hold fifty images, and any image can be erased and its disk space used to record another image. The Xap Shot has a minimum playback resolution of 400 lines, and its image sensor captures 786 pixels horizontally, so that it delivers VERY crisp and clean results. The Xap Shot has a small, built-in, light-sensing, automatic strobe flash, which cannot be detached or tilted. There's no facility on the camera for attaching any other kind of flash device.

Besides shooting single frames, the Xap Shot can be put into a self-timer mode, and then tripod-mounted (using the optional "action grip") to get yourself into your own pictures. It also offers a continuous shooting mode where you can record three frames per second by pressing and holding the "shutter" release button.

A small, liquid crystal display atop the camera's body informs you of which shooting mode you're using, which frame on the disk you'll be recording to next, whether your disk is loaded or write-protected, and the internal battery's condition. Canon claims the small, black, lead-acid storage battery (about the size of a pair of Vegas dice) holds enough juice when fully charged to record 800 frames without flash, or about 300 frames if you use the flash 25 percent of the time. The Xap Shot will power itself down automatically after two minutes of non-activity in playback mode when using the battery, or after 15 minutes when using the AC coupler.

Including the battery, the Xap Shot weighs just under one pound and snuggles very comfortably in an adult hand, although its smooth surfaces could be a bit "grippier." My large hands had no trouble dealing with the Xap Shot's tiny control buttons and switches; it took a few sessions with the camera to learn which did what, but after that it was insanely easy to hold and use in all its modes. While I was carrying around the camera at a local tourist attraction, few people seemed to notice it. A couple of folks carrying bulky SLRs curiously asked, "What's that?", but the Xap Shot is very compact and unassuming in appearance.

GOOD BUT NOT PERFECT.

Unlike videotape-based CamCorders, the Xap

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Mandelbrot graphics are named after an IBM research fellow,

Benoit Mandelbrot, who developed the field of fractal geometry. Dr. Mandelbrot coined the term fractal to describe this special type of geometry. Basically, a fractal is a geometric object with fractional dimensions.

The roots of fractal geometry reach back over a century. The mathematicians Carl Weierstrass, George Cantor, G. Peano, and H. von Koch who developed these "mathematical beasties" had their equations labeled "pathological." Their equations conflicted with the geometric intuition of the time.

Fractional Dimensions

What is a fractional dimension? Let's use a few examples to illustrate. Take a sheet of paper; imagine it as being a true, two-dimensional plane (pretend the paper has no thickness). Now, crumple the paper into a ball. It has now become a space-filling 2-D object that appears as a three dimensional object. Mathematically, you could say it has a fractal dimension between two and three.

The same idea can be applied to one dimensional lines. Curve or fold a line over enough of times, and you'll generate a two-dimensional plane. These types of fractals are space-filling fractals.

Dr. Mandelbrot had used the English coastline as an example of one-dimensional, space-filling fractal. For us, lets use the U.S. coastline. Imagine it is our job to measure a section of the U.S. coastline. We decide to use a one-mile-long measuring stick. We measure the section and come up with a measurement of 25 miles. We decide that the measurement isn't accurate enough, because we missed a lot of irregularities in the coastline on account of using our one-mile-long straightedge. So, we remeasure the same section using a yardstick. We find the coastline is quite irregular, with a lot of nooks and crannies moving in and out from the water.

Using the yardstick our coastline measurement becomes much greater. The conclusion we draw from this is that the shorter our measuring stick, the greater the length of the coastline. This may be easier to see if we remeasured our coastline again using a one-inch measuring stick. Now we can measure many more irregularities in the coastline, all of which contribute to our total length measurement.

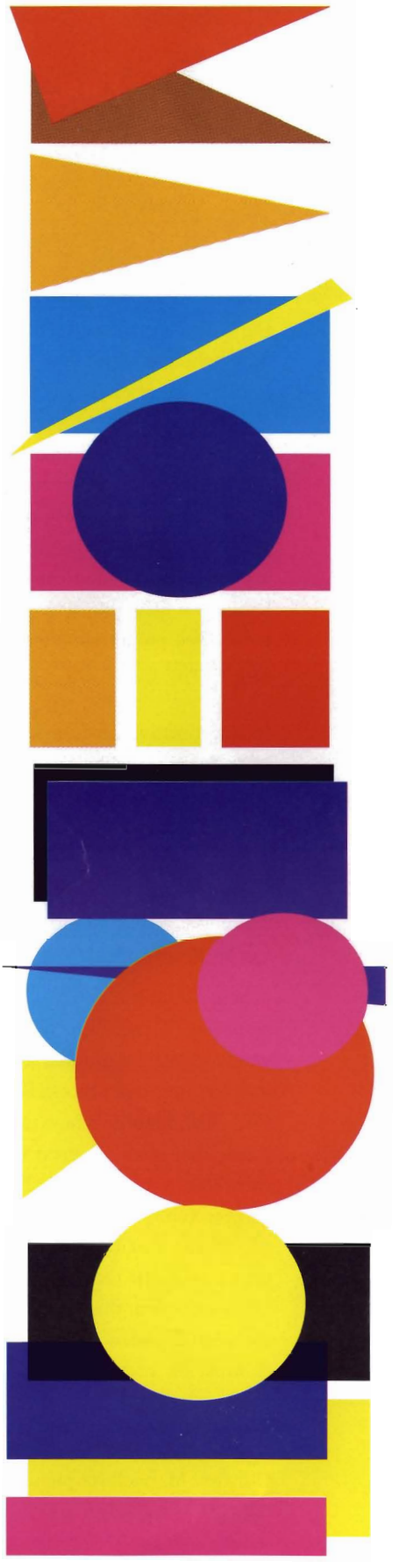
As stated before, a line is one-dimensional. But if we deviate our line up and down, it approaches being two-dimensional, depending on the amount of deviation. For example, deviation in a straight line is analogous to the nooks and crannies in the coastline; a coastline will therefore have a fractional dimension between one and two.

Complex Numbers

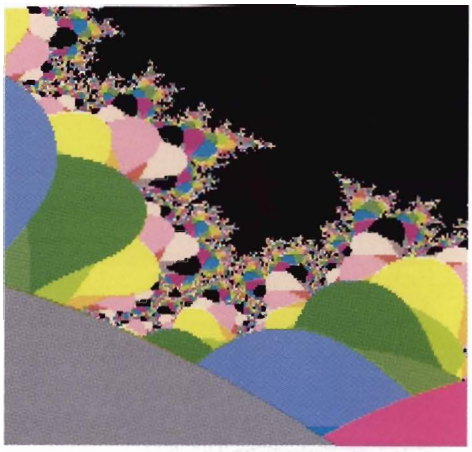
The fractals we will play with today use complex numbers. A complex number is made up of two parts. The parts are called real and imaginary. The complex number 9+3i, where 9 is the real part and the 3i the imaginary. The i next to the 3 shows which part of the number is imaginary. Complex numbers can be plotted on a standard Cartesian coordinate system. This is the standard graph system with x and y axis used in high school to plot linear equations. Using this graph system for complex numbers, y becomes the axis of the imaginary numbers. The x axis becomes the axis of the real numbers.

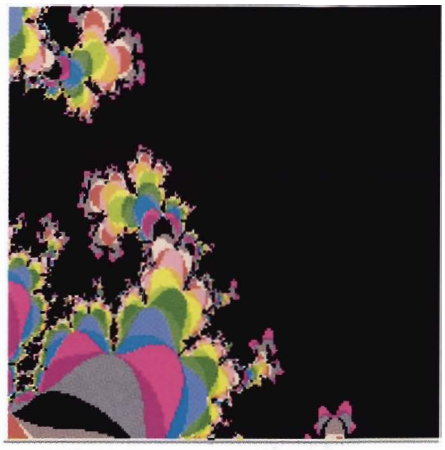
Plotting

We begin plotting by defining the area of space we are going to explore. These are the input variables XR, XL, YT, and YB in



By John Iovine





the program. The variable range is then divided into pixel points using our screen resolution as the divisor. For the x range it is XR-XL/320 and y range = YT-YB/200. The input variable CT determines how many iterations the equation will perform for each pixel point to determine whether it lies in or out of the Mandelbrot set. The iterative equation is

$Z = z^2 + c$

Starting with a seed value for Z, we square z and add c then feed this value of z back into the equation. Remember z and c are both complex numbers. (In the program we use x and y derived from our range.) The rules governing the mathematical operations with complex numbers are a little different than using standard real numbers. (See properties of complex numbers at the end of this article).

In the iterative process, some complex numbers become quite large, quickly exceeding the capacity of the computer; these numbers are treated as if they reach infinity and are considered outside the Mandelbrot set. Other complex numbers remain small after many iterations, these numbers are in the Mandelbrot set.

Color Generation.

When running a complex number though the iterative equation, if the number exceeds a preset limit (that would identify a number growing geometrically to infinity), the iterative process is halted. The current value of CT, which identifies how many iterations have passed to reach this point, is used to calculate a color that the corresponding pixel is painted. If the iterative process continues until the value of CT is exceeded, that point is considered inside the Mandelbrot set and is painted black.

Mandelbrot Picture

Our first Mandelbrot picture uses the standard coordinates -2.25 to .75 for the x range and -1.5 to 1.5 for the y range. The graphic resolution I set up in the program is 320 x 200 with four bit planes or 16-color resolution. You can enhance these resolutions if you want. I keep the resolution low to keep the program as simple as possible.

Program Features

I tried to incorporate a number of useful features into the program. Menu option "1" allows you enter coordinates to plot a new picture. This is useful if and when you run across a Mandelbrot picture and coordinates in another magazine or book and wish to regenerate the picture. You will be queried by the program for a filename. This is for an automatic save feature that saves the picture in IFF ILBM format upon completion of the plot. Saving in this format also allows you to use these plots with all popular paint programs that support IFF ILBM format. Be careful in choosing a program name - the program does not check to see if a file with that name already exists, so you could inadvertently overwrite an original drawing if they both have the same filename.

The save function also saves the drawing plot coordinates. This is to allow you at a later time to be able to explore any drawing in greater detail using the view mode.

Using the ***view*** and ***create*** modes in the program allows you to move a square box around the screen using the cursor keys. This feature allows you to zoom into the area lying within the box. When you press the enter key, the new drawing coordinates are calculated from the box parameters, and you are given the option of (1) changing any of the parameters, (2) plotting the new drawing or (3) returning to the menu. As you zoom further into the Mandelbrot set I would advise exploring the edges of the set. As you zoom further and further in you will have to increase the CT value to achieve greater

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Interactor

Released in December, InterActor is Very Vivid's new animation design system, which specializes in special applications such as scrolling backgrounds, scorekeeping, playing animations from harddisk, interfacing with laserdisks, synthesizers and projection systems, sprite-flipping, and interobject collision. Designed for professional use, InterActor uses the mouse as its main tool, using double-clicking to load objects or add them to lists, cut, copy, and paste object attributes, and scroll through or multi-grab items in a list. To enhance speed, all editing tools are on screen with the single click of a mouse button; there are no menus, pop-up windows, or any other inaccessible program functions. The user interface also supports keyboard commands, the use of the return key for option confirmation, a cut and paste buffer, and the facility of multi-grabbing items in a list.

Folders represent different areas of the program. When a folder is selected, the screen is redrawn in order to optimize speed and memory handling. The screen is also redrawn each time a different Page in a Folder is selected. A new "zoom rect" technique is used to enhance smoothness. Folders are built on coherently linked, expandible modules, allowing for the use of upgrades or enhancement modules. They also allow the program to support new ports, different serial devices, and new animation or file formats.

InterActor sells for $99.00.
Custom modules begin at $30.00.

Very Vivid Inc.
P.O. Box 127 Station B
Toronto, Ontario, Canada M5T 2T3
(416) 686-7850

SupraModem Plus

The Supra Corporation announced in December the SupraModem 2400 Plus. The SupraModem 2400 Plus features MNP classes 2-5 and CCITT V.42bis, which are error correction and data compression protocols that allow the user to communicate at very fast rates with no errors. With MNP, the user can communicate at an average throughput of 4000 bps. CCITT V.42bbis allows for 8000 bps error-free throughput. SupraModem 2400 Plus is used with a terminal setting of 9600 baud. It then adjusts its rate and protocol to match the modem at the other end of the phone line.

Features of the SupraModem 2400 Plus include compatability with any computer and all popular telecommunications software, asynchronous operation at 300, 1200. amd 2400 bps, compatibility with U.S. and international protocols, and autoanswer/autodial. The package, complete with the modem, operator's manual, quick-reference card, power adapter, and telephone cable, sells for $199.95.

Supra Corporation
1133 Commercial Way
Albany, OR 97321
(503) 967-9075

Neriki Desktop Genlock

Approximately a year and a half ago, Telmak released

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a broadcast quality genlock called Neriki Image Master. The Neriki Image Master works with all Amigas as well as all graphics, text, and animation software. It genlocks to any suitable video source to produce full 500 line resolution under NTSC standards.

This self-powered, standalone, rack-mountable unit does not take up any slots and does not drain on computer power supplies. Because the controls such as chroma phase, effect key, enable, key invert, and dissolve, are built into the genlock, software commands are not needed for its operation. The Neriki Image Master, which is designed for upscale use, outputs in NTSC, R-G-B, key out, and YC out. The Neriki Image Master is RS-170A approved. The selling price is $2250, which includes a one-year limited warranty.

More recently (April), Telmak released the Neriki Desktop Genlock. The desktop model is designed to be used without a switcher, and therefore only outputs in NTSC or YC. The desktop model has the same video board and the same output quality as the Neriki Image Master. The selling price for the Neriki Desktop Genlock is $1250.00.

Telmak USA Inc.
1101A Air Way
Glendale, CA 91201
1-800-637-4540

Videotape Graphic Tutorials

TeleGraphics International and Micro Digital Graphics jointly produced an instructional videotape series about incorporating effective, low-cost computer graphics into video productions. The three tape series focuses on various Amiga graphics packages, video graphics techniques, and preproduction planning. With straight-forward language and easy-to-understand examples, the series is designed for at-home users as well as companies involved in desktop video.

Tape one, Video Graphics Techniques, is an introduction recommended for the beginner. The tape teaches the basics about signal theory, hardware requirements, genlocking and keying with SuperGen, the "transporter" effect, fades/wipes/dissolves, and much more. The tape also includes tips on how to avoid video graphic problems.

Tape two, Color Cycling Animation, explains how to utilize the color cycling feature of most Amiga IFF paint programs, focusing on Deluxe Paint II and Deluxe Photolab. The tape teaches you step-by-step how to use the color palette. It also teaches you how to animate the background and combine the animation with your object or character. Applications include text animation, cartooning, background manipulation, animation backgrounds, flow diagrams, and flying logos and objects. Tape two also comes with an Amiga animation art disk, which contains animations from the tape along with some other animations.

Tape three, Digitizing for Effect, teaches digitizing manipulations such as cut and paste, expand, flip, and distort, and gives an overview of how digitizing works. Tape three includes instruction and demonstrations of Digiview, Deluxe Photolab, Deluxe Paint III, and Digi-droid. Tape three also teaches you what equipment to use, how to choose images to digitize, and how to choose a camera for your specific purposes.

The tapes are available on VHS format only and sell for $39.95 each or $99.50 for the set.

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Tape four, Amiga Hard Drives: The Complete Guide, is scheduled for release February 15, 1990. It covers Amiga hard disk installation and discusses various hard disk options, highlighting two SCSI controller boards as well as JANUS drives. The tape also explains basic hard disk concepts such as partitioning, formatting, interleave factors and autobooting. Moreover, tape four includes guidelines for simplifying and optimizing Directories. Tape four comes with a utilities diskette and will sell for $49.95.

TeleGraphics International
05 Dock Street
Wilmington, NC 28401
(919) 762-8028

PixelScript By Pixelations

PixelScript v1.1, released in August by Pixelations, is a PostScript interpreter which allows printing from PostScript files on a Preferences printer. PixelScript works with all Amiga desktop publishing and word-processing packages and runs from either CLI or Workbench.

Features of PixelScript include an ARexx port, a screen previewer, and ten fonts in two font families, including two light fonts for finer print quality at small point sizes. Pixelations claims to have improved handling of complex structured graphics and bit-mapped fonts, as well as improving handling of gray-scale images by adding a rotation feature. More efficient RAM usage and faster loading of Pixelations-format fonts add to overall speed improvements. The PixelScript package includes a complete manual with details on running Pixelscript and tips for using it with many packages.

Pixelations markets as series of typefaces for PixelsScript. Volume one, called The Providence Family, is a compilation of Roman, Italic, Bold, and Bold Italic typefaces designed for elegance and easy legibility ($75.00). Volume two, Brighton Sans, is a sans serif face with calligraphic touches at large sizes ($65.00). Volume three, University Heights, incorporates a variety of unusual typefaces ($65.00). Volume four, New Optimal,is sans serif with a flair at the ends of the strokes ($65.00). The typeface series works with Professional Page, PageSetter/LaserScript, PageStream, excellence!, ProWrite/ProScript, City Desk 2.0, Shakespeare, and of course, PixelScript.

Pixelations also makes two volumes of clip art which they call typographer's ornaments. Both include a variety of images, ranging from an old fashioned lamp to flowers to Christmas decorations. Volume one (23 images) and volume six (25 images) both sell for $65.00.

Pixelations, Inc.
P.O. Box 547
Northborough, MA 01532
1-800-225-5800

gadget is NOT selected (white with black letters), the selected or given filenames will be appended to the list at the right. The list at the right will always have a current file denoted by a light blue box filled with dark blue letters. The current file may be changed by either selecting a new filename on the file selector, or by selecting the up or down arrows at the bottom of the list. The current filename may be removed from the list by selecting the "Remove" gadget located at the bottom of the list, in between the two arrows. filenames may be inserted into the list by placing the current file indicator ontop of the file which you wish to insert AFTER, and selecting a new filename from the file selector. When you have added all the desired filenames to the list you can create the desired animation by selecting the "Build" gadget on the file selector.

Note: All pictures in the list MUST be of the same resolution and display modes. There must also be at least 3 filenames given (the same three IS acceptable).

SplitANIM V1.0 - Split one animation into two.

SplitANIM is used to split a single animation into two smaller ones. This is mostly used to enable manipulation of an animation that is too large to fit into memory. This program is freely re-distributable. This means that you may distribute it to anyone, or anywhere that you so desire providing that this unaltered file, and the original unmodified
program are distributed together.

To use SplitANIM you must first know how many frames are in the animation that you want to split. This information can be obtained through the use of the ANIMInfo program. Once you know how many frames there are in the animation you must decide where you wish to split the animation. At this point you can use SplitANIM to perform the operation.

To call SplitANIM from CLI simply type :
SplitANIM <return>
To run SplitANIM from workbench simply double click on its icon.

You will be prompted for the full pathname of the animation that you wish to split, and the frame at which you wish to split it.

If you wish you can give the information to SplitANIM on the command line
when calling it from a CLI.
i.e. SplitANIM animname 15 <return>

SplitANIM will create two new files with the same name as the original except that it will append a ".1" and a ".2" to the end. These two files are valid Opcode-5 Animations and can be viewed and manipulated as such.

Graphic Images

There are also several graphic images included on this issue's Companion Disk. To view them, simply click on their icons, and they will soon appear. Click with the right mouse button when you are finished. All these images can be viewed with 512k. They include:

Station - Dynamic Hires
BoingApeel - HAM
Cherries - HAM
Ghostball - HAM
Containment - HAM
Dome - HIRES

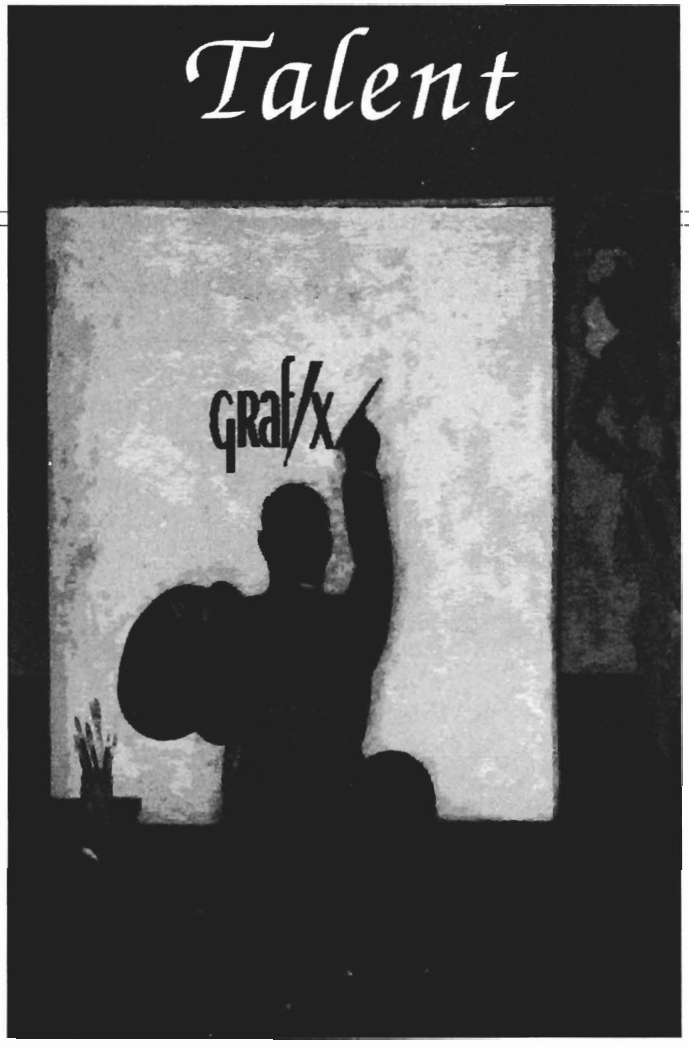
Animations

There are two animations this issue. Both require 1 Megabyte to view. They will also work from their icons. Both animation also include sound, so please make sure your volume is turned up, and plugged in!

Overall, enjoy. If you have any problems, please refer to our technical support line. And Thank You.

Animators & Artists

Showcase Your Talent



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6820 Distribution Drive
Beltsville, MD 20705

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DVideo

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sion of a lack of weight in the snowflake, the hand does not react when the flake lands. Therefore, the flake only needs a MoveTo effect.

The scene is rounded out by two more effects, a sound effect borrowed from a CanDo demo, and a ColorCycle effect on the Graf/x title at the upper left corner of the screen. The "boing" sound adds a familiar dimension to the ball's landing, and is Loaded, Played, and Unloaded just like any other Part. You can adjust the volume, frequency (or pitch), stereo position, and number of repeats, but we just loved the way it worked the first time we tried it, so we left it "as is". We created a cycle range of colors for the Graf/x brush in DeluxePaint, making sure that the colors in the range were not used elsewhere in the scene.

The third scene features a fleshtoned hand with a blue eraser that comes into view from the lower left, and proceeds to traverse back and forth across the scene, erasing whatever is beneath its path. We tried doing this effect in several different ways, with varying degrees of impact. One option was to wipe away just the brushes present on the screen, preserving the background patterned picture. To do this we added a Backdrop track to the scene, attached the Picture track to it, and put a Pattern effect on the Picture track.

This has the effect of assigning the image of the Picture track to the Backdrop track, which governs what image is replaced when a brush moves across the screen, concealing and then revealing as it goes. Checking the Restore To Pattern option on the Options effect when it is placed on the Backdrop track accomplishes this goal. However, we finally decided to have the screen erased to black to strengthen the audio entrance of the helicopter in the next scene. To do this, we added a Continue effect to the Backdrop track, which maintains the scene as it was in the previous scene. Then we changed the Options effect to Restore To Black, and left the Picture track in place. We could have removed the Picture track altogether as it turns out, but leaving the Picture loaded speeds up the video when it cycles back to the beginning after the fourth scene. If you own Deluxe Video III, experiment by changing the Options effect back to Restore To Pattern, or select and Turn Off the Picture Track entirely from the menu.

The last scene, Chopper, is filed with tracks and effects, so many in fact that we turned on Interlace Display so that we could see everything without having to scroll around. The helicopter animbrush we also borrowed from a CanDo demo, remapped its palette and shrank its size in Perspective mode in DeluxePaint III. We could have used Halfbrite or HAM modes, of course, as well as multiple viewports and resolutions, but we would have faced different problems had we done so. Deluxe Video allows the user to turn scenes or entire videos into Anims with the MakeAnim effect, speeding up the display of complex images, and cleaning up the smearing of HAM artifacts. However, the size of a typical Anim can start at 150K, too big for our purposes here.

The helicopter's path is actually two MoveTo effects, one to the point where it "drops off" the TV set, the other a faster exit out of frame left. The TV is not attached hierarchically to the chopper, and if you look closely you can see that it is not precisely coordinated. The bird on the screen, however, is attached to the Parent TV brush. We wanted to convey the impression at first that the bird was "on TV", so we locked them together until after the TV becomes stationary. Then we Traced a MovePath in a smooth freehand motion, making sure to have the bird fly around and across the front of the TV set to make its escape clear.

The final touch we left to Kara Fonts' stunning new AnimFonts release. Created by Kara Blohm, a key beta-tester on both DeluxePaint III and Deluxe Video III, these animbrush sets come with instructions for use with each program. We used DeluxePaint as a work area, stamping out each letter in sequence in a 70-frame animation. We then picked it up as an animbrush and Loaded it in Deluxe Video, where it provides a classy closer to our vignette.

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IMPULSE
A VISIT TO IMPULSE

BY MIKE HUBBART

Impulse, Inc., produces many different products, including the well-known Amiga 3D ray-tracing program Turbo Silver. Raytracing produces vivid images, and Turbo Silver generates animations that use these high quality graphic images. I recently toured their facilities in Minneapolis, and spoke with the president of Impulse, Mike Halverson. Mike discussed the past and present of Impulse and the Amiga.

I felt relieved after entering Impulse's building, since I didn't see a lot of people in ties rushing hurriedly about with piles of paperwork. I rarely wear a tie and hadn't bothered with one for the visit, and I was glad to notice Mike without one also. Renegades one and all. Inpulse's front office was set up with a secretary to recieve clients , but the main part was opened up for working for hardware and software engineers and support people. Several Amigas were in the area of Mike's desk, and he had one running Turbo Silver on his own desk while I was there visiting.

Impulse has one programmer - "the best anywhere" claimed Mike, "he can do anything we think of". An engineer is also on hand for hardware projects (like the company's new VOREC 1), and the other three people are available for supporting him, the programmer, and the end user. Impulse is "oriented towards the video market", Mike said. "Our products are low priced and high performance". The company has been around for 12 years, three of them in the Amiga marketplace. They've previously worked in the Apple and PC markets, but have no products in those markets presently. Their Amiga products include Turbo Silver, Terrain, Diamond, VD 1 (digitizer), and Vorec 1, which is a voice recognition device for driving the Amiga with *spoken* commands.

What is the Impulse policy? "Our goal is to listen to the end user and provide what they want," Mike said. I asked about customer support people. "Everyone here, all five people, will answer the phones. I talk with my customers, since I know how to use all our products".

THE PRODUCTS

As mentioned earlier, Turbo Silver is Impulse's primary product. Mike told me they have sold more than 25,000 copies of this powerful raytracing program. Now that is a lot for *any* type of Amiga program, and it's phenomenal for this type of software. Turbo Silver is an improved version of an earlier product, Silver, released in 1987. As for its future, "Impulse has and will continue to support the users of Turbo Silver. We want to help people use the Amiga effectively one hundred percent." Turbo Silver's most recent versions are Turbo Silver 3.0 and Turbo Silver SV. The SV stands for "stereo vision," meaning the program allows use of stereo glasses such as the Haitex and Sega 3D glasses for viewing realistic 3D images and animations.

Another Impulse product is Terrain, which generates fractal images of both mountains and water and is used in conjunction with Turbo Silver. Additional object disks are also for available, containing predrawn objects to trace.

Impulse's product, Diamond, a follow-up product to Prism, the first Amiga HAM paint program, is the only Amiga paint program that accommodates the special RGBN files that Turbo Silver generates. As for hardware, check out VD-1 and VOREC 1. VD-1 is a 24-bitplane frame buffer and video digitizer that will capture a frame from color or black and white video cameras, moving or still video tape, video disc, broadcast television, and NMR or CAT Scan outputs (from the medical and scientific professions). The VD-1 has a suggested retail of $1000.

Impulse's newest product, VOREC 1 is a low-cost Amiga voice recognition module. This product comes with a lifetime warranty, which the owners manual states is "100 years" only to those who return their warranty card, excluding shipping costs. Vorec 1 recognizes spoken words and uses them to control the Amiga, or insert into programs as an alternate input source. Impulse was sold out of this product during my

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MAC TO AMIGA

By: Jay Gross

You've seen a MacPicture before? That's one that originates on one of Apple's MacIntosh computers. You have to give 'em credit, their black and white graphics have a really nice look to 'em, owing mainly to the extensive use of dithering algorithms to portray varying shades of gray with only two colors. You can port those nice MacPictures over to the Amiga with a little effort, a little luck, and a potful of utilities from the freely distributable libraries of Amiga software. Oh, and a couple of expensive pieces of commercial software, and hardware, too, if you want to get really fancy.

To view a MacPicture on the Amiga, you first have to get the MacFile into the Amiga somehow. The easiest and least expensive way is with your old friend, the computer BBS. Many electronic BBS's around the country offer graphic files in the MacPaint picture format. The MacIntosh has many, many graphics file formats, including some new ones for the Mac II's which support color. However, for black and white pictures, the MacPaint format is a very common one. Look for those MacPaint formatted pictures first, 'cause they're the easiest to view on the Amiga. They're also quite attractive, pretty much defining MacArt from the machine's early days. Download the files from your favorite BBS using your favorite Amiga terminal program. If you don't have a modem, you're pretty well stuck, unless you're willing to spend the money to read MacDisks directly, which ain't cheap, but is rather a nice thing to have.

If you see files labeled Stuffit, or ones whose filenames (usually) end in the letters ".SIT", you'll need a program called "unSIT" on the Amiga to unpack them. Stuffit is a MacPacking program like ARC, LHarc, and ZOO, but unlike those it's not machine independent. Works on MacNothing else, in other words. Scott Evernden, a loyal Amiga fan from way back, has written a program called unSIT, which will unStuffit those files AFTER you get them to the Amiga side. Scott's program is freely distributable, and should be available on most any BBS you call, but if you can't find it, ask the SySop where you call if he or she will unMacStuff those files for you.

While you're downloading, or at your next usergroup meeting, try to collect up the following kit of utilities from the freely distributable libraries:

A. MacView, also by Scott Evernden. The most recent version, preferably. Scott's talking about doing an even newer one as this heads for the printing presses, so ask around and see if there is one "by the time you read this." MacView is a program for viewing - and *saving* as Amiga IFFs - MacPaint files.

B. Multiview2.0 by Wayne Hogue. Documentation comes with the first version, and the program isn't terribly easy to figure out without the docs, so you might have to obtain both before you have a workable set of program and docs. This program is much better in its 2.0 version, so you'll definitely not want to use the earlier program, even though you'll need it for its documentation file.

C. Your choice of graphic screen saver. Suggestions are Iffencode by Matt Dillon and ScreenX by Steve Tibbet. There are several others available, both commercial and not. If you have the commercial program GRABBiT, from Discovery Software, you won't need the others - although ScreenX does some additional neat tricks. In a pinch, you could get by without a screen saver, but it's nicer with than without. Also, if you plan to convert only MacView pictures of a small size (such as clipart), you won't need a screen saver program. They're nice things to have in your arsenal of software, however, so get one if you can, anyway.

The other pieces of commercial software (other than GRABBiT) needed for parts of this porting recipe are for serious picture porting indeed. First and most important is the $69.95 (ouch! that's the list price) PixMate from Progressive Peripherals. It's by Justin McCormick, and it has a *bunch* of neat features that will be useful for many other things besides porting MacPictures. PixMate's thing in life is to convert what-have-you to what-you-want. Many of the Mac's best pictures are bigger than a screen, either the tiny MacScreen or the Amiga color one. They were built to print as a whole letter-sized sheet, and on the Mac, the users get to scroll around in them on their screen before sending them to the printer for full-size viewing. To get larger-than-screensize MacArt converted to Amiga-sized screens, PixMate is the ticket. Deluxe Photolab (Electronic Arts) will accomplish the job, but not in the same way as PixMate, and a newer product on the Amiga paint market, DigiPaint 3 (NewTek), will do a pretty good job, too, although it converts everything it sees into Amiga HAM format pictures.

The other item on the shopping list is DigiView 3.0 from NewTek, or (your choice) Justin McCormick's excellent software sold with the FrameGrabber (Progressive Peripherals & Software). It's possible that some of the other digitizing and/or scanning software on the market will

work, but you're on your own to find out. DigiView's software, now in version 4.0, is most adequate for this purpose. However, it comes WITH the hardware for $199.95 list.

Both Multiview2.0 and MacView will show a MacPicture on the Amiga screen. Multiview offers a number of read options, and will sometimes correctly display MacScreens that MacView cannot cope with. MacView, however, offers the ability to SAVE a MacPaint formatted file, as well as the option to print pictures, and to scroll around the displayed MacPicture in Amiga high resolution or low resolution modes.

Try MacView first. If it complains that the file is not a MacPaint format, try invoking it from the CLI window with the command:

MacView -f <filename>.

The "-f" in there tells the program not to worry about an incorrect MacPaint file header. The MacIntosh's various softwares aren't too careful about writing that file structure out in an interchangeable manner, since their intent is anything but compatibility with each other, so files generated with different products may have variations of the file header.

If the file won't work with MacView, try Multiview2.0. Although Multiview2.0 has an option for saving to IFF file, it won't accomplish what is needed to make PixMate's job fit in only 512K of CHIP memory. Of course, if you have the current "Super Agnus" chip - variously called "Fat," and "Plump" Agnus - you might be able to disregard this concern, since the more obese chip permits a megabyte of CHIP memory (assuming you HAVE that much to appropriate).

Use MacView in hi-res. The program has a slider on the right side of the screen for choosing which part of the MacPicture shows. In addition, you can smooth-scroll the image with the mouse by pointing into the image area, holding the left mousebutton down, and moving the mouse.

Many MacPictures are smaller than the Amiga screen, particularly images intended for use as clipart. If the picture you're trying to import is smaller than the Amiga screen you're home free. Use MacView's SAVE IFF option, or GRABBiT, or IFFENCODE, or ScreenX. or whatever else, to save the screen to an IFF disk file and that's that.

Most artsy (as opposed to clipartsy) MacPictures are, however, more lines tall than MacView (or the Macs) can display at one time. On the original Macs, the screen resolution is 512 x 380, so who but Apple knows why the pictures're bigger than the Amiga's 640x400 screen? Whyever they're bigger, they just are.

To get the bigger MacPictures into a single piece viewable on the Amiga, you'll need PixMate's expensive features. If your intent is to use the finished image as line art, you'll also need DigiView 3.0 for the final conversion back to black and white.

Here's what you do for the bigger ones:

First, with MacView in 640x400 mode, get the top part of the MacPicture to show.

Next, save the screen. The latest version of MacView has a nice pulldown menu option for this - appropriately named SAVE IFF. However, if you have an older version, you can multitask a screen saver software to do the job. Using GRABBiT, that's a hotkey operation. With ScreenX, it's a menu proposition. Using IFFENCODE, you get a CLI, CD to where you want the files to go, and IFFENCODE. Left Amiga M shows the picture so IFFENCODE can copy it out to a file. Leave the CLI active, and click through the screens with the mouse. Press return when the picture is showing.

The next step is obvious - do the same thing for the bottom half of of the MacPicture. Be sure to use a different filename so you'll have two halves in two files. It's best to have some overlap, to make lining up the two images easier later on in this involved process.

The rest is a job for PixMate. If you don't have PixMate, PhotoLab, DigiPaint 3, or some other program capable of joining the screens, you're wasting your time making the halves in the first place.

Before you start, plan on using up some disk space for all this, as the file sizes for each half just about quadruple. Also, it's best to save frequently and with incremental filenames, so if you make a booboo (it's easy to do!) you won't have to start over at Step One. Allow at least three hundred kilobytes of disk space for *each* 40,000-50,000-byte MacPicture you want to convert. Of course, when the job is done, you can safely get rid of all the extra files.

MacView's display is four colors (note the green gadgets in its title bar). You want greys, not greens, but an IFF screensave will have a four-color palette to start you off. So, you crop out the green gadgets and reformat the picture to allow sixteen colors, instead of four. (Memory consumption goes WAY up!). Pictures saved with MacView are two colors. Nuch neater to start with.

Although other products besides PixMate will do the job so far, you need PixMate for the next part: diffusing the black and white image INTO those extra bitplanes, making a picture with shades of grey, instead of blobs of black. The purpose of converting to shades of grey is to keep the next step, which is removal of some of the lines of the image, from making a big mess.

OXXI ACQUIRES AEGIS PRODUCTS & PAR SOFTWARE

Oxxi, Inc. has announced the acquisition of the rights of the entire Aegis Development, Inc., product line, including the name "Aegis" and all associated trademarks. In addition, Oxxi has acquired PAR Software, makers of ExpressPaint and Spritz. John Houston, president of Oxxi, said in making the announcement that each company's products will continue to be sold and supported by Oxxi, with many planned upgrades and enhancements to be announced in the near future.

Aegis will operate as a division of Oxxi, specializing in desktop video, graphics and sound, while PAR and Oxxi products will continue to be dedicated to general productivity applications. All registered users of Aegis and PAR products will be completely supported in Oxxi's new capacity, with uninterrupted service, John said.

"We are extremely excited about the addition of both the Aegis and PAR products to our current line of software," Houston said. "These high-quality, performance-oriented software programs cover all market segments, including desktop video, business productivity and utilities, allowing Oxxi to become a full-service developer and publisher for the Amiga and other computers."

Houston said both acquisitions come at a time of changing market conditions, where consolidation of resources and product development efforts will be necessary to effectively compete in what is becoming an increasingly crowded market.

DISNEY ANNOUNCES SOFTWARE FOR THE AMIGA COMPUTER

There is already software for the Amiga to do a lot of things related to animation. Plenty of it, and good stuff, too. There's stuff for novices, stuff for the somewhat serious, and stuff for people who make their livings with Amigas in animation studios. So, what do Amiga animators need with another piece of software? Well, this new one is different (isn't that what they all say!). Moreover, and most interestingly, this new one (though still in the vapor column as yet) has the king of names behind it. Disney. The company announced . . . The Animation Studio - the ellipsis is part of the name - for Amiga animators to ship in February. The announcement has almost nothing about the product in it, relying (most confidently) on the Disney name to sell the product. It's not the copy, however, that does the best selling job. The actual letterhead is the best part. Disney Studios has pleniful of Amigas. They use them for prototyping things, among other things. They also have pleniful of money. Ever been to Epcot Center? Case rested. They can buy as many of whatever kind of computer they take a notion for, but they pick Amigas. Now that says something about Amigas!

So, here comes this letterhead with a picture of Mickey Mouse (who else!) in the corner. Not a big one - nice and tasteful, and of course, impeccably drawn and reproduced - in color, of course. The laserprinted letter, which is ON this letterhead says:

"In February, Your Favorite Animation Program Will Become Obsolete"

(That's the bold-type headline)
The Walt Disney Company's animators have joined forces with Disney's software designers to create the most exciting and innovative computer animaton program ever! . . . In February, Disney will unveil its latest masterpiece as:
(another headline:)

Disney Software presents. . .
The Animation Studio

Developed by Silent Software for the Amiga, Disney's ***...The Animation Studio*** is the first computer package to provide an easy-to-use interface with techniques based on feature film animation. Features include onion skin technology, full paint function, Disney

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desk TOP publishing

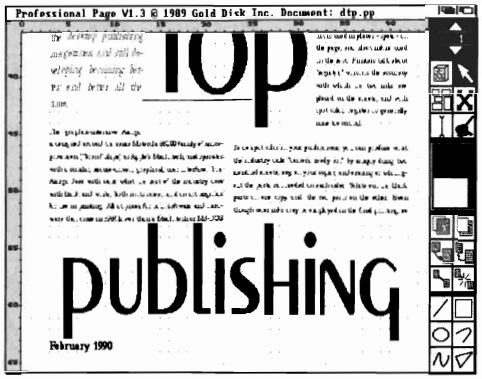
by Jay Gross

While the big computer powers battled over desktop publishing in black and white, an elite, little-known hardware system was quietly, step by step, becoming an enormously powerful, very affordable system with one magnificent thing to recommend it: gorgeous, full, living color. Of course, the secret system is the Amiga, still a secret, still largely ignored in the desktop publishing magazines, and still developing, becoming better and better all the time.

The graphics-intensive Amiga is designed around the same Motorola 68000 family of microprocessors ("brain" chips) as Apple's MacIntosh, and operates with a similar, mouse-driven, graphical, user interface. The Amiga does with color what the rest of the industry does with black and white, both on its screen and on art originals for use in printing. All at prices for both software and hardware that come in FAR lower than a MacIntosh or MS-DOS system for plain old black and white. While the Amiga's secret has been kept, however, Apple has patched color, in a very expensive form, onto the MacIntosh. Indeed, only recently the Mac's software moved up to some of the same capabilities as the Amiga in color separations for printing.

Before confusion starts, however, let's define color as it relates to publishing, either desktop or otherwise. If you draw with both a black pen and a red pen on a white piece of paper, and expect your printer to reproduce it exactly, the result is what's known in printing as "spot color." That means, color ink is used in places - spots - on the page, and black ink is used on the rest. Printers talk about "register," which is the accuracy with which the two inks are placed on the sheets, and with spot color, register is generally none too critical.

To do spot color in your publications, you can produce what the industry calls "camera ready art" by simply doing two identical sheets, say, on your copier, and erasing or whiting-out the parts not needed on each color. White out the black parts on one copy, and the red parts on the other. Even though color inks may be employed in the final printing, so



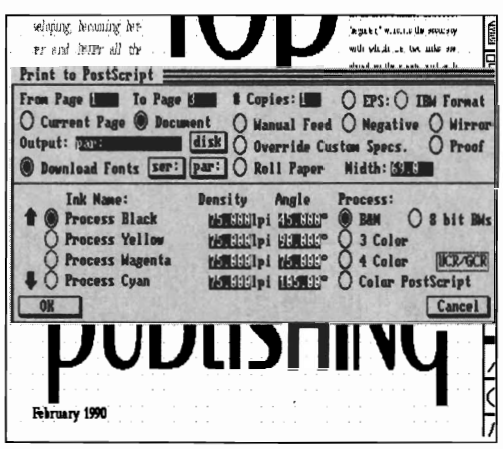
Above and Below, are samples from Professional Page by **Gold Disk.**

far we're still talking about black and white processes, not really color.

The other kind of color is "process" color. A process color image can be a color photograph, or an artist's color rendering, such as a watercolor, a painting, or whatever. It's not limited to having one color of ink for each color in the original - that would be quite a trick for a print of a Van Gogh, for example, wouldn't it! You get "process" color by adding the three primary colors together, in order to fool the eye into perceiving the image as "full" color. The trick is to make the image into thousands of tiny dots of each of the primary colors (Cyan, Magenta and Yellow, which for convenience and confusion are also called "Blue, Red and Yellow," and "process blue," "process red" and "process yellow.")

"Color" desktop publishing generally supports "spot" color across all computers that do desktop publishing. No problem. However, "process" color is important when you want a "full color illustration" in your printed piece. This very publication, for example, is produced ENTIRELY on Amigas, using color desktop publishing software. Everything you see here has been placed there electronically using the Amiga, only the Amiga, and nothing but the Amiga. No "color seps," in other words, and no "conventional" processes. You'll find spot color, as well as a great deal of process color throughout the magazine. The Amiga does all of the typesetting, as well as the color separations, and prepares (by outputting to a Linotronic Imagesetter) the one-piece, finished, printers' negatives from which printing plates are then made to actually attach to the press to print the paper.

In desktop publishing, the process color is what separates the pretenders from the real. It is the Amiga, in this case, that is the real world, and those "other" desktop publishing systems - the ones the "other" magazines rave on about - have to fudge the issue. Most of them still can't do it, and if they do, it's not as easy, and not NEARLY as inexpensive as the Amiga. Page layout and spot color's no problem, but throw in a full color photograph on them and you're left with the Amiga and the MacIntosh, and nothing else. And in *that* order! The Amiga has, in fact, a very sophisticated capability in its color separation abilities.



WHAT IS A SEPARATION?

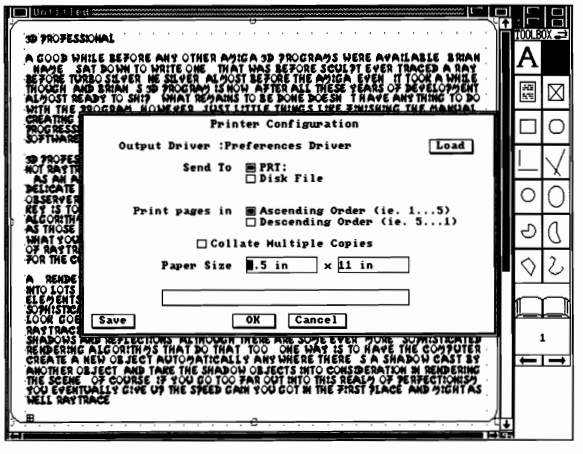
Take that color photograph. To put it on paper, along with the rest of your document, a printer first makes what is known as "color separations" from the photo. Through a complex photographic process, the "seps" will consist of a set of black and white negatives which isolates the red, blue, yellow, and black components of the picture. To get "true" color, you theoretically have to "separate" only the primaries - three colors. However, in the real world, color printing looks better if you also separate the black component, and print it with black ink, instead of depending on the combination of the three colors to make the black. Almost all seps are four colors, but for some applications (particularly in newspapers) they stop at three, and sometimes (usually in very high-quality art prints) stretch to five or more. The Amiga's color separation software handles three- or four-color seps without any coaxing, and *INFO* magazine (which is also produced on Amigas) has even done a five-color separation for one of their covers. The added fifth color was metallic gold ink, which created a very interesting and unusual, metallic effect. Since most color reproduction is in only four colors, just assume four from here on - though of course, more colors in the process is no problem for the Amiga.

A sample of encapsulated Postscript within Professional Page 1.3

To get the actual ink onto the paper, the printer will make a plate from each of the color sep negatives that the Amiga generates, and print each one in register in *exactly* the same place on the paper. If the quality of the seps is good, and if the inks are smooth and even, the result will be a picture on paper that looks like the original you started with. The printing process itself, however, has many, many variables, all of which must be skillfully controlled to get good color printing. One very nice thing about the Amiga's color separations is that they are automatically in perfect register, eliminating some of the mechanical steps in the printing process that can be a source of error. Color seps done the normal, mechanical way are very expensive. Even with the aid of highly sophisticated, computer-driven, laser scanners, a

good four-color separation of a business-card-sized illustration (usually from a transparency) costs about $150. For hand work on the finished seps, the bill can go much higher, even many times higher. If your page requires several such illustrations, you'd better stop by the bank for a loan on the way to the printer, because that's the charge for EACH separation. Count the number of pictures on one of this magazine's pages, and you easily get the idea how expensive the color sep process can be. One isn't too bad, but a dozen of them per issue makes a real pain in the checkbook.

Amiga computers do for color separations what desktop publishing software did for typesetting - bring it in-house and make it affordable. Specifically, there's Professional Page, a piece of software from a Canadian company called Gold Disk, Inc. Now in version 1.3, it's a professional, desktop publishing software package that runs on the Amiga. Its features include an impressive array of typography options, auto-hyphenation and kerning, an intuitive user interface, and built-in color separations to PostScript.



To use it, import any graphics file from disk into the Amiga, and with the click of the mouse-button turn it into color-separated PostScript files, which you can transmit to your typesetter to get those sep negatives (just as this very page was accomplished). The cost: $30-50 at the going rates for a letter-sized page, and that includes as many "seps" as you want to put on a page, not just one. A dozen of them cost the same as just one, though the Amiga will devote a lot more thinking tme to turning out the page. Drop the Amiga films off at your printer, and stop by the bank to invest the savings you just made.

Professional Page lists for $395. If you want to reproduce from materials other than Amiga paintings, drawings, and such, you'll also need a digitizing or scanning system. Add a couple of miscellaneous pieces of software for tinkering with the color disk files, Butcher 2.0 and PixMate, for example, and Digi-Paint 3, if you like. To get quick proofs for checking your work as you go, add your favorite laserprinter, either PostScript or not (with Professional Page v1.3 or some of the other Amiga desktop publishing software, you don't need a PostScript-capable device). And then presto! You're in the publishing business! Color publishing, too. Simple as that.

Most Publishing Is Black and White

Even with the Amiga to make color seps inexpensive, the cost of printing color is still much higher than the cost of printing black and white. For one thing, the paper still has to be printed three or four times in process colors, in order to achieve the color pictures. That means multiple press plates, more presstime, and plentiful waste for each pass through the press. So, much publishing continues to be done in good ol' black and white.

The software that handles the color, handles the black and white, too, but there are some other titles from which to choose, if you don't need the color separations.

For example, City Desk 2.0 is a black-and-white-only, desktop publishing software package that makes good use of many of the less expensive, non-Postscript laserprinters, and Soft Logik's PageStream is an up-and-coming professional-level product that offers many features not found in Professional Page, but with the limitation of having its own, proprietary font libraries and device drivers. PageStream works well to PostScript, too, and offers a wide variety of word-processing and picture import options, including an industry "standard," Encapsulated PostScript.

For many folks, too, Gold Disk's PageSetter program, which offers many of the same features as Professional Page and a similar user interface, will fill the bill nicely. It's excellent for the casual desktop publisher who wants to turn out the occasional church bulletin, club newsletter, or whathaveyou, without troubling to learn the complexities of the professional level products. PageSetter's output can be directed to an Amiga IFF picture file, too, so you can get a screenshot of the finished page quite easily, and tinker with it, if you like, in a paint program.

The line between desktop publishing and wordprocessing is steadily becoming less distinct, too. The newest wordprocessors on the Amiga market, mirroring the fashion on other computers, honor graphics and text on the same page, and many also support the use of Amiga fonts and even color. With some of these, Pen Pal, or ProWrite, for example, you might not need page layout software at all, if you're doing simple, one-column documents.

In short, regardless of the impression conveyed by those flashy desktop publishing magazines, the Amiga is a *dream* of a place to do page layout, graphics design, and all kinds of desktop publishing, either amateur or professional, and it's especially suited for color. You have but to acquire the software, and of course, the skills and techniques. The power (and the freedom) of the press is at your fingertips.

J:

CEL ANIMATOR

In my youth, getting up early on Saturday to watch the morning cartoons was an important weekly event for us kids. I was as fascinated by the techniques employed by the artists as I was by the subject matter. I never would have believed that making a full-length cartoon at home would be possible; it seemed that a horde of talented artists would be needed to produce even a single short episode in a reasonable amount of time. With the advent of the Amiga and certain software packages, short and simple cartoons have been a reality for many frustrated amateur artists/animators. What about the software for the professional artist/animator? Enter MicroIllusions' Photon Video Cel Animator designed with the professional in mind.

I was impressed by this product the first time I saw the included demos. Wow! I have never seen anything as beautifully done on an inexpensive computer. Take the demo of a waterfall. The color is simply superb for the water, rocks, sky, trees, and flowers. The deep blue sky had clouds in the far background, and the trees (both near and far from the viewer) are done in fine detail. I felt like I was seeing the best computer rendition possible, for a computer with less than a $15,000 price tag. This demo alone requires at least 1.5 megabytes of memory. From this, you can get the idea that this product can produce large animations, and you're right.

The program comes on three disks, two of which are examples. The manual is written for the complete Amiga beginner by Heidi Turnipseed - a professional animator previously affiliated with both Disney Productions and Don Bluth Productions. The manual organization is by chapter for each menu of the product. There is a short introduction chapter covering the program requirements - which is one megabyte minimum, although 2 to 8 megabytes is recommended for the animator to get longer runs without saving and running separate sections. Also recommended is a second disk drive.

This program is not for novices. You need to have the talent, inclination, ability, desire, time, etc. to learn all the product's features before starting any major project. A few samples included with this product demonstrate the program's abilities, and your first project should be examining them in detail. Animations created with Cel Animator can either be viewed, genlocked to standard video tape, or sent (via Photon Video's Transport Controller) one frame at a time to video tape.

This program can utilize display real-time animation in the Amiga's different screen modes - 320x200, 320x400, 640x200, 640x400, HAM, and Overscan. The number of frames displayable depends on the screen mode and the amount of memory available. Animations are also possible in two colors, a mode referred to as the "pencil test". As the pencil test mode will allow the largest possible animation length for available memory, it is used to observe the flow of an animation before adding color.

A powerful feature of Cel Animator is its sound syncronization with the video portion. The program uses realtime playback of sound for matching to video. Once the sound is matched to the video portion, the animator can print out an exposure sheet - which lists the frame numbers and their corresponding sounds. Although obviously a product aimed more at professionals, this program will enhance the library of any serious amateur animator.

Photon Video Cel Animator
List Price: $149.95
MicroIllusions
17408 Chatsworth St.
Granada Hills, CA 91344
818-360-3715

IMPULSE - From Page 27

visit, but explained it to me and gave me an owner's manual for technical data. The manual claims Vorec 1 can:

- *control all Amiga graphic functions;*
- *open/close main/temporary screens;*
- *control scroll bars;*
- *use the SAY command to let the Amiga speak;*
- *play digitized sounds;*
- *show pictures;*
- *display/read text strings;*
- *read software menu items and execute them;*
- *interface with ARexx, for all the vast power that brings to bear;*
- *make certain programs run "hands free".*

I was so impressed, I plan on making another trip to Impulse to take a look at a working VOREC 1.

Although the concept has been around for a while, Mike is pushing for a unified organization of Amiga developers. Their purpose? "To provide direction for Amiga developers. Apple states their machine is for desktop publishing, and IBM states they produce a business machine, but we don't know what Commodore wants for the Amiga. Commodore should tell us their future plans."

Unifying all developers would insure a majority would follow programming standards instead of going off on their own. "Why do we need four different anim formats?" asks Mike. Both IBM and Apple developers have developer associations which help provide direction. "We don't know what Commodore's plan is... Maybe this group could get Commodore to state a strategy, and keep to it. Unification would seem the best way, following the old adage that "there is strength in numbers."

Should the group be aggressive? "We developers want to cooperate with Commodore, and not be antagonistic. We believe in the Amiga and care about the end user."

I enjoyed the time spent at Impulse, and hope that they continue to produce products that enhance the Amiga's standing in the computer marketplace. With their unique software and hardware products, they add a lot to the Amiga marketplace. •

Disney - From Page 30

animation tutorials and a library of Disney character and background art.

...The Animation Studio, Disney makes it possible for you to create beautiful animation in the finest tradition of the art.

(One more headline:)

Disney Software presents...
The Animation Studio
It could only come from Disney.

That's it. That's the whole letter. As to the last part, "It could only come from the Amiga!" Anyway, all this advance publicity for the Disney program notwithstanding, it's the letterhead it's printed on that really shows beyond a shadow of a doubt that Disney's designers have class. That picture of Mickey over in the corner? It's VERY subtly pixelized! Now THAT's a clever touch. •

ON DISK

This Issue

GRAF/x Magazine Issue 1.1

Here is a sample of what you will find on this issue's Companion Disk.

Included this issue are three animation utilities. They are used to both create animations, and manipulate them. The instructions are as follows:

CombneANIM V1.0 - Join two animations into one.

CombineANIM is used to join two animations into one larger one. This is usually used in conjunction with the SplitANIM utility to combine animations that were split up due to lack of system memory. This program is freely re-distributable. This means that you may distribute it to anyone, or anywhere that you so desire providing that this unaltered file, and the original unmodified program are distributed together.

To use CombineANIM you must first have two animation that are of the same resolution and display modes. This information can be obtained through the use of the ANIMInfo utility. Once you have these two animations you can combine them into one.

To call CombineANIM from the CLI simply type:
CombineANIM <return>
to run CombineANIM from the workbench simply double click its icon.

You will be prompted for a pathname which will be used to create a new animation. You will then be prompted for two more pathnames. These files must already exists, and must be valid Opcode-5 type animations. These two animations will be combined into a new animation. If you wish you can give the information to CombineANIM on the command line when calling it from a CLI.
i.e. CombineANIM newanim anim1 anim2 <return>

ANIMBuild V1.0 - Animation creation tool.

ANIMBuild is a program that allows you to combine selected pictures into a standard OpCode 5 animation. This program is freely re-distributable. This means that you may distribute it to anyone, or anywhere that you so desire providing that this unaltered file, and the original unmodified program are distributed together.

Upon running ANIMBuild, you will be presented with a file selector. At the right of the file selector will be an empty file list area, and at the bottom of the screen there will be a place labeled "Destination ANIM :". To the right of this test will be a gadget labeled "ADD". When this gadget is highlighted (it is highlighted upon entering the program) it will be dark blue with light blue lettering. When this ADD gadget is highlighted it will force the next selected or given filename to become the "Destination ANIM :" name. Selecting a file will cause the selected ADD gadget to become deselected. When this

Continued On Page 24

The GRAF/x Companion Disk

DISK INSTRUCTIONS

The Disk#1 that you have is a compressed disk. There are actually TWO disks worth of information contained on that one disk! We did this to provide more information, and more value to you our readers. The one drawback is that you must decompress the disk to be able to use them. We have tried to make this process as simple as possible for your convenience.

1. Prepare two blank, unformatted disks., then boot from a standard 1.3 Workbench disk.
2. On Disk#1 there is a DeCompress Icon. Double click it to begin the process. It will give you instructions from there. Below are some guidelines to follow.

- Write protect your Workbench disk before you start. Try to use a standard 1.3 Workbench disk.
- 1 Megabyte is strongly recommended. 512k Owners, unplug your enternal disk drive before beginning.
- When the program asks you to insert a disk a disk in drive 0, be sure to put it in your internal drive.
- Two drive, 1 Meg. Owners, put GRAFX1 in your internal drive to speed things up.
- The decompression requires that RAM:T exist. A standard 1.3 Workbench creates this for you. So try to boot from a Standard 1.3 Workbench, or make sure you have the following in your startup-sequence: ***Makedir RAM:T*** and ***Assign T: RAM:T***

THE DISK PORTION OF GRAF/x" Why did we opt to include disks with GRAF/x Magazine?

One of the Amiga's strongest points is its graphics. To tell you about it on paper is one thing, but to truly feel the impact, and understand the Amiga's power, we had to show you on disk. So we included some of the hottest graphic images, animations, utilities and other items to not only show you, but to let you participate in the Amiga's power.

Why Compress The Disk?

While we were compiling the contents for this issue we realized that graphics on the Amiga take up a LOT of space. So we tried to find some animations, and images that didn't take a lot of disks space. And what we found, was not up to the standards of this magazine. We we opted to compress the GRAF/x Disk. Now instead of only 880K per Amiga disk, we are getting anywhere from 1.6 Megabytes to 2 Full Megabytes per disk! That means that we don't have to wince at high memory graphics, and you don't have to put up with low quality graphics!

But the moral of the story is... enjoy and learn. And please, if you have any comments or suggestions, tell us with your reader surveys... we WILL listen.

Clyde R. Wallace
Publisher

BAD DISK?

So you think you have a bad disk. Don't worry. Simply send your original disk back to us, and we will promptly replace it.

WHAT DOES A BAD DISK LOOK LIKE?

If you encounter a message saying that one of your disks has a "Read/Write Error", then you probably have one. Or, if your Amiga suggests using DiskDoctor to fix it.

WHAT SHOULD YOU DO?

Thats easy. Simply send that disk to us, with a small note as to the problem you encountered, and we will gladly send you a new disk.

Please send your bad disk to:

GRAF/x - Bad Disks Urgent
6006 Greenbelt Road Suite 189
Greentbelt, MD 20770

TECHNICAL SUPPORT

Technical support is being provided by NewAge computers. When you call, please say you are calling for GRAF/x technical support. Also please have the issue number, and any other relevant information ready.
1-301-220-1296

depth resolution. Remember the greater the depth, the longer the program will take to plot. The box isn't always visible, depending upon the picture and location on the screen, if this is the case use the cursor keys until it becomes visible.

Classic Fractals

What we have played with are classic fractals. These geometric objects are already ten years old. New and more powerful fractals, the kinds that create realistic landscapes, planets and plants, and even generate music are the latest toys in fractal math. There is a lot more that lies ahead of us than behind.

Practical Applications

Aside from the fractals' inherent beauty, fractals have a wide diversion of applications in most of the sciences. New applications of fractals appear almost weekly as scientists around the world massage these equations into revealing still another facet of nature.

Properties of Complex Numbers

There are two properties of complex numbers you need to know about in order to perform algebraic operations.

1) Squaring the symbol i = -1 therefore i^2 = -1

2) The conjugate of a complex number x + yi is the complex number x _ yi. Therefore, the conjugate of the complex numbers 9 + 3i and 4 - 7i are 9 - 3i and 4 + 7i respectively.

OK, with that out of the way lets do some math with complex numbers.

1) ADDITION: To add two complex number first add the real parts then add the imaginary parts like so:

EX.1 (9+3i) + (4-7i) = (9+4) + (3-7)i = (13-4i)
EX.2 (7+2i) + (3+4i) = (7+3) + (2+4)i = (11+6i)

2) SUBTRACTION: To subtract two complex numbers first subtract the reals, then subtract the imaginaries.

EX.3 (9+3i) - (4-7i) = (9-4) + (3 -(-7))i = (5+11i)
EX.4 (7+2i) - (3+4i) = (7-3) + (2-4)i = (4-2i)

3) MULTIPLICATION: To multiply two complex numbers, multiply as if they are ordinary binomials. Then replace i^2 with -1

EX.5 (9+3i)(4-7i) = 36-51i-21i^2 = 36-51i-21(-1) = 57-51i
EX.6 (7+2i)(3+4i) = 21+34i)+8i^2 = 21+34i+8(-1) = 13+34i

4) DIVISION: To divide two complex numbers, first take the conjugate of the denominator and multiply both numerator and denominator.

Our basic iterative function Z = z^2 +c where both z and c are complex numbers naturally can't be programmed without first putting these numbers into a form that is digestible to BASIC. We reduce z and c to their real and imaginary parts, thus z = x+yi and c = p+qi. To perform our iterative function:
x1 = x*x-y*y+p y1 = 2*x*y+q
*SEE program for complete breakdown
Other Reference Material

The Beauty of Fractals
H. Peitgen & P. Richter

The Fractal Geometry of Nature
Benoit Mandelbrot
W.H. Freeman & Co., N.Y. •

XapShot

Continued From Page 18

Shot provides NO built-in facility for viewing the pictures you've taken with it. You MUST run a cable from the "video OUT" jack on its AC Coupler/Battery-charger's base to some kind of television or monitor in order to see your pictures.

For sheer number of features and system flexibility the Xap Shot is easily outclassed by dozens of conventional "SLR" camera models. Although the Xap Shot has a "macro" mode switch, allowing you to get in as close as 12 inches from your subject, the ONLY other lens it accepts is a pitiful 1.3x "teleconverter" that comes with the optional Action Set grip. The camera's built in 11mm, f/2.8 lens is roughly the equivalent of a 60mm lens on a 35mm camera. There are currently NO wide-angle or real telephoto lenses available from Canon, and there's no way to connect or adapt or mount any other brand of lens, or binoculars or telescope.

Besides the limited number of lenses, the only other real major annoyance I found using the Xap Shot - and something I'd consider a design flaw - involved the rather idiotic finger dance one must endure in order to completely erase one of its little video floppy disks. Only one frame can be erased at a time, and doing that requires being in PLAY mode, holding the ERASE button down, pressing the shutter release button and then pressing the FWD button to advance to the next frame. That means pressing three buttons fifty times each to erase one disk. A royal pain.

A disk takes just seconds to pop into the Xap Shot via a spring-open door on its top. Each video floppy disk costs around $10.00 at camera stores, an outrageously high price considering that standard 3.5-inch computer disks are well under a buck each now, but at least the tiny disks can be used over and over.

Otherwise I found the Xap Shot to be well-built, precise-feeling, and it functioned perfectly - not surprising considering its Japanese heritage and its thousand-dollar price tag. Considering what Canon has managed to cram into such a tiny, portable package, the Xap Shot is really a rather amazing piece of hardware.

LET'S TRY THAT AGAIN ANOTHER WAY

Back again to our user group meeting. You've previewed the pictures on your portable television and decide you need to shoot a few more pictures from different angles. Finishing that, you're ready to pack up and head home. On arrival, you plug your Xap Shot's charger into a wall socket and run a cable from it to your FrameGrabber. Fire up the FrameGrabber's software, put the Xap Shot in PLAY mode and you're ready to start transferring the pictures you shot that evening onto disk as Amiga IFF pictures.

The FrameGrabber's software has a "multiple exposure" mode, and since the Xap Shot is sending it rock-solid still video frames, it's trivial to multi-expose them on your Amiga to get the cleanest possible results. Digitizing from the Xap Shot to the FrameGrabber in its 640x400 high resolution black and white (perfect for desktop publishing programs) provides astoundingly detailed pictures.

One special tip here - on the underbelly of the Xap Shot is a small black rubber plug. Pull this plug and you reveal what must surely be one of the smallest slide-switches you'll ever see. You MUST flip this switch in order to be able to FrameGrab from the Xap Shot in any of Amiga's "interlace" (400 lines high) mode.

You give your newsletter editor exactly what he wants. He's pleased, you're pleased, and your next newsletter is seen by a member of your group who happens to be the brother-in-law of the owner of a phototypesetting service who's cousin works for a prominent New York advertising firm who calls and offers you a job shooting stills for a layout for LIFE magazine. Well maybe, but we can all dream, can't we?

Any good photography shop who carries the Canon line should have a Xap Shot for you to try out. As this goes to press, Canon has just started advertising some "big brother" Xap Shot models with more features and even better video resolution - but at a higher price.

FRAMEGRABBER
List: $699.95 (includes software and monitor cables)
Progressive Peripherals & Software
464 Kalamath St.
Denver, CO 80204
(303)-825-4144

CANON RC-250 "XAP SHOT" CAMERA
Available in black or white finish
List $999.00
Includes one video floppy disk, battery pack, battery charger, AC coupler, Pin Cable, Mini-Plug Pin Cable, Soft case and wrist strap. Optional equipment at extra cost: Action Set (including action grip which provides tripod socket, and 1.3x Teleconverter), Macro Frame stand for close-up shooting at 12 inches, and RF converter.
Canon U.S.A. Inc.
One Canon Plaza
Lake Success, N.Y. 11042

ABOUT THE AUTHOR: Harv Laser is Senior Sysop/Chairman of People/Link's AmigaZone and writes about the Amiga for several magazines. Plink: CBM*HARV

Fleshing

Continued From Page 13

ground" so that you leave the background color behind).

4. Select "Copy This Brush" under Brush/Swap.

5. Select "TXT MAP" from the modes menu.

6. On the Control Screen menu, go to the spherical control on the right and the left. Place the point highlight in the center of each globe (you can experiment and alter these settings in a later encounter). The sphere on the left is a "wrap" tool, and the one on the right is the "highlight" tool. With the "HighLight" tool, move the accompanying sliders so they are both at the very top (100 percent). This means that your shapes will use both ends of the color spectrum at full value.

7. Return to the "Tools" screen, and choose the freeform/fill options (the squiggly line and the word "fill").

8. Erase your color rectangle from the screen by choosing "clear".

9. From here, I have included a series of step-by-step paintings of a hand for reference. Each of the segments of the hand have been painted one at a time over each other. You can begin by experimenting with some organic curved shapes to get the feel of the tools you're using.

10. After you have painted the basic shape to the screen (or a compilation of segments, like the hand, that form a unified subject), it's time to add some finishing touches. If you've used the left-handed dithering routine as I suggested earlier, your shapes will have a woodgrain-like texture. With practice, you can change the apparent direction of the "light" that illuminates part of your shape and gives it a pseudo-3D look.

11. Choose "Darken" from the modes menu.

12. "Darken" adds a dark shadow to areas of your work. Shadows work best when you control their transparency, and DigiPaint has some of the most delicate controls to help you do this. They are the same sliders that I mentioned earlier in the "Highlight" part of the Control screen. For "Darken", a good moderate setting would be to set the left hand slider (Foreground) about a third of the way down, and the right-hand slider (Background) all the way down. This will give you the effect of overlaying your image with a transparent shadow that fades at the edges. The effect can simulate a 3D reality quite nicely. Paint in some dark tints over your subject at the sides opposite the apparent light source.

13. Now, set the mode control to "Lighten" (leave the settings as they were for "darken"), and paint in some lights over areas of your subject that are closest to the light source. Continue until you obtain results that you are pleased with.

14. Step back and take a look. Now, make any final alterations. Always work light areas against darker areas, and vice-versa. In HAM paint programs, there is bound to be HAM artifacting (places where colors smear a bit over the range of their use). In my opinion, when dealing with organic subjects, this is O.K. It gives the subject a random look that is far more "real" than a metallic sheen. If you desire otherwise, change the range of colors in the "Range" palette by experimentation.

DigiPaint 3.0 has some of the best algorithms for minimizing these artifacts, but when you wander too far from the standard sixteen colors in the DigiPaint palette, you're sure to get some. Stay closer to the colors in the given palette if you want to avoid them.

15. As a final touch-up, I often use a one-pixel, black colored brush (turn "fill" off), and outline certain sections of the work. This really pops it out from neighboring color areas.

An alternate method:

Refer to the face picture for the look this technique produces. With this method, you use the range palette directly, instead of wrapping brushes to obtain textured areas of pseudo-3D color.

1. Get a color range you want to work with.

2. Select "Range" from the modes menu, and begin drawing your shapes.

3. Proceed as before, adding darks and lights in the final phase.

Notice the different feel that this method produces.

Fleshing

Continued...

When I work, I use both methods, as well as other experimental discoveries, all in the same painting. When my work demands an intricate touch, I switch to the normal dithering tool. I use several methods for painting in hair. The one demonstrated in the example picture was obtained as follows:

1. Paint a series of vertical lines of varying (but fairly narrow) thicknesses to the screen in the color of your choice. I often use a slight range of intensities and hues for different effects.

2. Pick up the lines as a brush (remember, no background), and select "Copy This Brush" under Brush/Swap.

3. Texture-Map the brush where you want the hair to appear. Work in layers for a layered random look. That way, no one will be able to tell that you've worked the area with only one basic brush.

Disrespectful History

Several months ago, I began developing a series of caricature-portraits that utilized all of the techniques that I've explained here. I'm eventually going to do a gallery showing of these works, using large Cibachrome printouts of the Amiga screens. The theme is what I call "disrespectful history", a comment upon the bloated and lopsided viewpoints that historians ascribe to certain figures, especially mythic military personages. If you are an Amiga artist, you should find these paintings worthy of some study, as they incorporate techniques that I have discovered over many hundreds of hours.

Traditionally, artists study the work of other artists in the same medium that they work in, and so I offer these to you with this in mind. For non-artists, these also make great collector's items (like warped baseball cards). Eventually, there will be about twenty-five paintings in the series, and several examples are printed here. If you want a disk of these images which you can load into your own computer, please send $10 to R. Shamms Mortier, Eyeful Tower Communications, 15 Rockydale, Bristol, Vermont 05443. •

Secrets

Continued From Page 45

animated variations can be created in this fashion. I have also discovered that it's much more memory efficient to pick up ANIMbrushes in Lo-Res and save them. Brushes have no generic resolution, including ANIMbrushes. That means that you can load them into another resolution, as long as you're willing to work with the commensurate size changes. The Lo-Res/Hi-Res change is a halving of the brush. DeluxePaint III (just like its predecessors) uses a lot of CHIP RAM, so Hi-Res operations (especially grabbing brushes) often will refuse to cooperate. Lo-Res grabs, on the other hand, can be much larger. When the brush is imported into Lo-Res, its edges sharpen up, and memory is managed much more cohesively.

There are other requesters and operations in the animation portion of DeluxePaint III that bear explanation , and those will all find their way into other columns in this series. The "Move Requester" should really be commented on by another vendor with a dedicated package (maybe named "Super-Move or something), giving us more animation options. "ANIMbrushes" should become an Amiga standard, as they're so easy to work with! For now, have fun with your discoveries. In the hope that these words will help you in your creative pursuits, I remain yours in ROMulan space.

* A small correction to my review of DeluxePaint III in A.X.: I have to take back my frustrated statement that there is no way to remove the pointer from the screen for videotaping purposes. There is a way, although it should be alluded to in a clearer fashion in the manual. Simply press the DELete key, and the pointer disappears. It's a toggle, so pressing it again brings it back. Utilization of this key is also necessary for painting with a one pixel brush in small areas. That way, you can see what you're doing.

Send questions, comments, and your own hints and observations you'd like to share with others to:
Dr. R. Shamms Mortier
15 Rockydale
Bristol, VT 05443

Okay, load the TOP half of your picture into PixMate; use the program's DISPLAY option to turn ON bitplanes 3 and 4. The program will automatically reformat the picture to 16 colors when you exit this option.

To crop off the green gadgets, you can either use the CLEAR AREA command, or scoot the image to the right with SHIFT-<right cursor>. What goes off the right side of the screen is gone forever, so center the image again for further work. If you go to far with the pushing off the right edge, reload the picture BEFORE you save it.

Next, do a PACK COLORS and a SORT COLORS (low to hi) on the image. Save the image - mainly in case of disaster. This is the TOP file.

The next step in all this is image processing to "soften" the image into those extra bitplanes. Most of the time, the softening should be done at this point. However, for particularly dense pictures, you might get better (and faster!) results by waiting till after you've reunited the halves to do the softening. Experimentation is the only way to figure out which is which.

Using PixMate's image processing panel, select "AVG." This will take a couple of minutes, but it's very entertaining to watch. The result is a grey-scale picture, and a very good one, too. Better save it, just in case.

Next, click back to the "DISPLAY" option, and select "COLOR" in the reduction/enlargement side. "Color," rather than "Even," "Odd," or "Average," is usually the best way to make a size change for MacPictures. With some images, "Average" will work fine, and it's much quicker, so you might want to give it a whirl and see if it works first. Use UNDO if it's not any good.

You need to reduce the image size in both directions. The dimension containing the most detail will suffer the worst, so you might need to experiment with choosing "Thinner" or "Shorter" first or second.

Use the "Pack colors" option again, and then do a "Sort Colors." You want "high to low." SAVE THIS IMAGE! It's (finally!) the finished version of the top half of your picture. If you don't like the way it looks, experiment with some of the optional routes described earlier.

Obviously, to get the bottom half, you have to go through the same steps. Do the same thing, in the same order, to get the bottom picture in the same state. You can use the OTHER SCREEN feature to line up the images with each other before you go into image processing, but the AVG function will insist on your closing down the OTHER screen. It's memory intensive, and it wants pure, uncluttered CHIP memory, too.

The final step is combining the shrunken, grey-scale images into one. Don't delete these files, however, if you plan to go to the DigiView step. Some images work better through that part as halves, rather than wholes. To save memory, you can try reducing the number of colors back to two after all the diffusing, packing and shrinking has been accomplished. However, you will lose detail from the picture.

To match the pictures, you want the palettes to be exactly the same, even if you use something besides PixMate to do the joining. To match the palettes, load both pictures into PixMate at once - one on each screen - pick out the one with the fewest colors, and then invoke PixMate's "Match Palette" - "With Other" option. You should go through this step even if there is no discernible difference between the palettes, and if you plan to work on the images in some other program, you should save the files after the palette matching is complete. To merge the two images with PixMate, toggle beteween them with "Flip" and adjust the position of the the images with <Shift> <cursor key>. When the two images match up perfectly, use the "Clip" option to get both onto one screen. Save the image, and it's (finally!) done.

The result so far is a grey-scale picture half the size of the original MacPicture as ported to the Amiga (The MacIntosh uses only a nine-inch screen, so the final image size isn't much different). However, if you want to use the image as line art, say, in a desktop publishing application, you'll want to go the extra mile with DigiView. Take heart. The DigiView part is not nearly as long and involved as the PixMate section.

Also, you can try MacView's IMPORT IFF function. It tries to dither Amiga color pictures into blobs of black and white acceptable to the MacScreen. Sometimes the results are quite nice, but HAM pictures don't take to the translation very well. After the MacVersion of the Amiga file is showing, save it either to MacPaint format (for torturing your local MacBBS's) or to Amiga IFF, to get a two-color image from a color image. The DigiView step is called for if this doesn't work. Especially if you like playing with DigiView.

First, load up DigiView. You don't need to hook up your camera and lights, 'cause this is a pure software operation. Set DigiView's palette to TWO colors, and make the first one black and second one white. You'll have to change the second one from grey to white with the sliders. Select FREEZE PALETTE, and click on COLOR. This brings you to the COLOR menu, where you need to reduce the contrast by several clicks (for a very detailed original), and/or raise the sharpness slider by three or four clicks (for a blocky original).

Then, simply LOAD the finished picture that you saved out of PixMate. DigiView will display its results as it goes, so if you see that the image needs more contrast, brightness, or whatever, stop the process with the left mouse-button, make the changes, and select DISPLAY. After some trial and error, you can get a pure black and white effect from the finished picture that's every bit as nice as the MacPaint original.

Whew! That's it. All this takes about an hour to go through the entire process start to finish - including the DigiView part. How long would it take you to redraw the picture?

ANIMATION SECRETS

By: R. Shamms Mortier

Secrets of an Amiga Artist: Animation The "Move Requester" in DeluxePaint III

Every Amiga artist I know, whether in graphic design or the fine electronic arts, uses DeluxePaint more then any other Amiga paint program. Even when you work in HAM modes (which DeluxePaint does not address), the program is useful for preparing many of the graphic elements that later will be exported to other wares and formats. DeluxePaint I set the pace for others to emulate. DeluxePaint II added tools found on no other micro paint program: stenciling and perspective. The recent release of DeluxePaint III (see my review in the August A.X. magazine)* has kept up the tradition and then some, by adding one of the easiest and most option-laden animation features of any other Amiga program.

Like many programs that enter the ferocious Amiga marketplace, DeluxePaint III has a lot of attributes that need further and deeper exploration of use than an overall review. Some of the uses of microcomputer arts tools are never covered in a manual, but are discovered along the way by dedicated users. This also brings up an issue for this continuing series of articles on Amiga graphics ware. If you have discovered an item of interest that you'd like to add to the Amiga community's knowledge of tools, please write me a letter and describe your discovery. I'll incorporate it in a future article, and give you credit for the submission (see my address at the article's end). Now, back to our topic.

The animation capability of DeluxePaint III is by and large controlled from a "Move Requester" found under "Animation" in the title bar. I suggest that your first step, before actually accessing this requester, would be to turn on the "Coordinates" setting under Preferences. Why? Because many of the operations undertaken by this requester demand that you have some knowledge of the whereabouts of your brush on the screen, both where it's coming from and where it's headed. I've included a sample screen layout in Lo-Res non-overscan so that you can get an idea of the positions of the coordinate-numbered screen map. As you can see, the upper right corner is represented by 0,0, or X (horizontal position) equals zero, and Y (vertical position) equals zero. This is true no matter what resolution you're in. The difference comes when you move down and/or right from that position. Different resolutions address higher pixel resolutions in one or both cases than Lo-Res addresses. In Lo-Res, the rightmost position is 320, and the topmost coordinate reads 200.

The "Move Requester" allows you to input a series of directions and parameters that tell a "Brush" (a small section of a picture) what to do in a certain number of frames. Electronic Arts could have released this requester as a whole separate program - that's how good it is at doing what it does. Let's take a look at all of the buttons included in this requester, one by one.

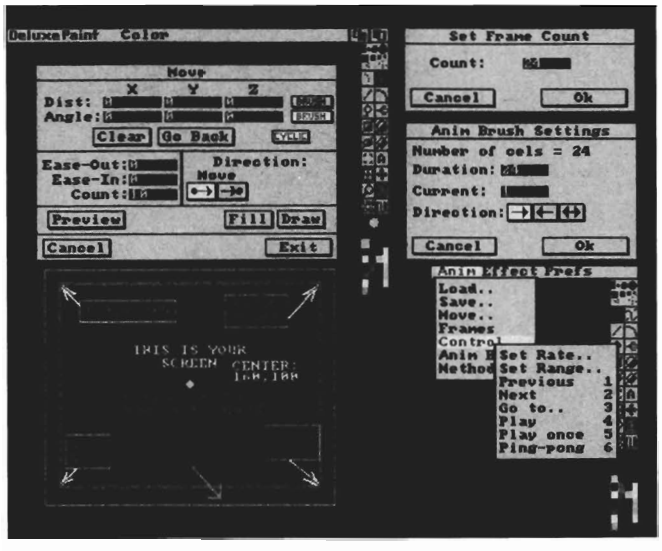
At the top of the requester are two rows of XYZ input boxes. The first row is marked "Dist" (distance), and it allows you to control the XY coordinates of the screen for brush placement, as well as a pseudo-Z direction. The X and Y input boxes determine where the brush will appear on the screen. A positive X number will move the animation to the right, and a negative number moves it to the left. A positive Y number moves the brush upward, and a negative one downward. Be careful here, because you can move your brush right off the screen for many animation frames. Knowing this, you can use this possibility to seemingly

pause certain aspects of the animation.

The Z direction is that which gives you a fuller illusion that you are working in a true 3D environment. The Z axis goes into and comes out of the plane of the screen. Inputting a number in the Dist-Z column will force a brush to go "into" the screen farther, while making it a negative number brings the brush apparently closer to you. The closer a brush gets, the fatter and more dominant the pixels of that brush become. The larger the brush, the more storage space the picture will take on disk in "compressed" mode. It's a good idea to consider saving your creations in a non-compressed fashion if you are working with an animation that requires radical movements of brushes, and/or incorporates oversized or -Z distances.

The next row is marked "Angle", and it's concerned with giving you the illusion that the brush is spinning in 3D space. Spins in the X direction turn the brush toward the top (a positive number) or the bottom (a negative number). Y turns move the brush left (negative number) and right (positive number). Z axis moves the brush in a circle to the right (positive number) or the left (negative number). 3D effects are best observed by using the Dist numbers in the Z direction, and the Angle numbers in the X and Y direction.

At the end of each row is a button that is marked "Brush". It is a toggle that can be turned on or off. Using it can greatly affect the outcome of an animation. When "On" in either instance (Distance or Angle), movement is centered on the Brushes X, Y, or Z axis. When off, it is the screens X, Y, and Z axis that is the reference anchor.



Let me give you an example. Let's set the X angle at 90 degrees and the number of frames (set beforehand in the frame # requester) at 12. This means that in twelve frames, a brush will spin around the X axis (up/down) 90 degrees, or until we see it edge-on. Now let's set the Z axis to 360 degrees, a full circle. Toggling the brush with the "Brush" selector on and off in succession will present you with very different animations. You can't get the hang of this by anything I say, but must experiment over a period of time in order to get a visual feel for the results. Just remember, using the "Brush" toggle at the end of these first two input rows makes a great difference in the movements of your images.

Under these rows are boxes marked "Clear", "Go Back" and "Cyclic". "Clear" removes all of the selections from the input rows, readying them for new input. "Go Back" resets the location of the brush, allowing you to experiment with new settings. Without using the Go-Back function, new animations will be drawn where the old one left off. With it, a new animation will occur at the beginning of the first. What this really means is that you can create a screen full of diverse animations in no time at all with only one brush image. It's a good idea to experiment with a small square before moving on to more complex images. This will allow you to pay attention to the animation, instead of getting seduced by the image.

The "Cycle" toggle produces some different effects. With Cycle activated, the computer assumes that your animation will run continuously, so that the first frame you produce is also your last frame. This causes a seamless flow in the looping of the animation. With Cycle off, however, the last frame will represent the final position of the brush as determined by the input requester. This assures that the final frame will place the brush in an exact screen position. This is useful for animating charts and graphs that need to arrive at a specific place without the need for backwards movement. If Cycle is off and you try and loop the drawn animation, you will see a slight delay. This is because the first and last frames have been rendered the same at the same place on the screen, so that there are two equal frames in the sequence.

To the left of the middle half of the Move Requester are three more controls: Ease-In, Ease-Out, and Count. Ease In and Out give you a chance to play with gravity. A ball, for instance, does not bounce at equal velocities in

its journey from the ground to the air and back. When it reaches the top of its bouncing curve, it stalls a little in response to gravity. In the same way, a projectile may leave a muzzle at a very high rate of speed, and slow down as it lopes towards a target. With the Ease buttons, you can input a number of frames at the beginning and/or end of a movement cycle, to slow the action down. The "Count" box allows you to input a number for frames to be rendered. You can enter a lower number than in the actual frame number requester. This will mean that your animation will finish and fade to black before the movie is through running.

It's nice to do this if you have several items moving on the screen at once to initiate variety in the playback. I've had some enjoyable and unexpected results here. If you put a number in this box that is a lot higher than the actual number of frames (maybe by a factor of four or five), the image will be redrawn on top of itself at points during the frame progression. This creates a long chain of images, useful for flow diagrams, turning gears, and pipe-like forms in perspective. If you also colorcycle the results, be prepared for visual astonishment.

On the right of this section are two sets of icons that perform other animation feats. The first set shows two arrows, the second of which is attached to a circle (target). Default position is the first arrow, which allows the movement of images on screen FROM a pasted down position TO the coordinates set in the Move Requester. Choosing the second makes the original, pasted-down brush the "TARGET" of the animated sequence, and your coordinates are used as the starting frame position of the brush.

Something that few DeluxePaint III animators realize is the power of multiple animations from the same brush. When you use the "Go Back" function in combination with the arrow/direction tools, the result can be totally mesmerizing. Your images can start their dance from anywhere on the screen, and several clones of the image can target specific, looped end points at once. The Move requester is not a one-shot deal in an animated sequence. By setting the frames at 12 in the frame requester and at 200 in the Move requester, your image will alternate colors (providing the color chosen is in a sequence of ranged colors in the palette). When played back, the animation will color cycle in one fashion with the TAB key on and another with it off!

The next icons we greet are Forward/In-Place/Backward. Forward and Backward render the animation frames accordingly. In-Place will render them all on one frame, and is a nice tool for getting some interesting in-place effects on a painting. The last tools are some of the best. The "Preview" command allows you to see a wireframe rendition of the animation before it is permanently drawn. Always use it prior to rendering. It's fast and exact, and can prevent the destruction of hours of labor. At the other end is the "Draw" tool, which initiates the rendering. In the middle are two of my favorites, "Fill" and "Trails". "Fill" will fill the entire screen with the brushes as they move from frame to frame. My experience has been that Hi-Res compressed mode moves the completed animation too slowly when this is chosen, so it's best to use this in Video-Res for recording or genlocking purposes. "Trails" leaves a copy of the images that preceded the current one on each frame, so it's great for evoking an image that grows and then shrinks into itself, like a Jack-In-The-Box. The last two commands are "Cancel" (which removes the requester without saving any new changes you've made), and "Exit" (which remembers the changes before removing the requester).

Most of the normal DeluxePaint III brush alterations will not work with an ANIMbrush. The exception is the "FLIP" command, which does a nice job in flipping the ANIMbrush horizontally or vertically. Lots of

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MONI

By: Jay Gross

The Big Picture

The Amiga's graphics are noted far and wide. About 708 wide, in fact, if you count overscan. However, you can't see a single pixel of those graphics without a monitor. Turn yours off if you don't believe it. Nothing, right? The image is there, being generated inside the computer's circuitry, but unless there's a tube connected, there's no picture, pure and simple. Although most people will opt for the plain, vanilla monitor sold with the machines - and many dealers make "bundle" deals that include a monitor in one low-low price - you're not limited to choosing Commodore's monitors to go on your Amiga. In fact, if you crave a really high quality computer display, you'll have to leave the Commodore fold altogether, and get something from the likes of Mitsubishi, Sony, Taxan, Princeton, or any of dozens of others. How do you shop for a fancier Amiga display? And what do you ask for? And what questions do you ask, in order to decide which will work, which will look good, and which should be left on the dealer's shelves? This is the layman's guide to monitor shopping for the Amiga.

The first thing to decide is what you WANT. Do you want a bigger picture? A sharper picture? Both? Less flicker? And are you willing to pay a premium for what you want? If you won't pay for it, of course, you probably won't get it. With monitors, as with many other things in life, quality costs money. However, the monitor business seems to be organized into several plateaus. After you get to a level, the next jump is a major one.

The Amiga's normal monitor is what is known as an "analog" one. Computering is all digital, of course, but an "analog" monitor puts that digital stuff back together, directing its color guns to draw a picture onto the screen for you. The "analog" part of that really translates "More colors" for all practical purposes. When the Amiga was very young, analog monitors were very expensive beasts - the Amiga ones were the first that were really affordable by normal humans. Since then, the MS-Dos computers and clones have invented analog monitors, and the competition in that market has driven prices quite low.

One thing you have to realize in monitor shopping, though, is that any old analog monitor won't necessarily make the Amiga happy. Besides that, there are many different kinds, colors and varieties of analog monitors that happily work with MS-Dos computers, but not with the Amiga.

The key to knowing whether a given monitor will work with your Amiga is a specification called horiizontal frequency (and a few other choice names, as well). This is usually stated in "kiloHertz". A "Hertz" is a "cycle" by its engineering moniker, so a kiloHertz (frequently written kHz) is a thousand cycles per second. For the Amiga, the desired scan frequency is around 15.75 kHz.

Monitors also have a "vertical" frequency capability. For the Amigas in the USA, that's 60 kHz. A monitor that works at those frequencies will generally work with an Amiga. However, (you knew there'd be a catch, didn't you!) you might have to engage a committee of electrical engineers and a magician or two, in order to get a functional cable to connect it.

Besides looking for quality in an Amiga display, you might also be looking for compatibility and interchangeabilty with other computer systems. There is, at least, hope in this realm. High-end monitors that work with the Amiga will work just fine with any other computing boxes that might strike your fancy. If you plan on adding a MacIntosh or an Atari you your collection, however, watch out for the specifics of the monitors those machines require, and get a so-called "multi-sink" (or a hundred different trademarked spellings of the same thing) monitor that has sufficient "auto" range to accommodate those "other" computers. More on "multi-sink" after a bit of other confusing jargon has its turn.

When MS-Dos-oriented people go into an Amiga store, a frequent question they ask is: "What kind of graphics card does it have?" Respectable store people will courte-

ously retire to the back room to laugh, but the fact is, a "graphics card" is (currently) a foreign concept to an Amiga, which does its graphics and display creation right in its very own family of custom (and high-powered) graphics chips. So, for MS-Dos folks, here's the scoop on the Amiga's "graphics" cards. First of all, the "CGA" mode that many MS-Dos computers do is about the same level of resolution as the Amiga's normal Workbench screen. However, the Amiga offers 16 colors in that resolution, selectable (through the Preferences program) from a palette of 4,096. A "CGA" monitor will indeed work on an Amiga. However, since a normal CGA monitor is digital, not analog, it will produce a boring, and FIXED eight-color palette. That's eight colors selectable from a palette of only eight, plus half-brights of each. Hardly does justice to the Amiga's display. If you're planning to do only boring things like wordprocessing and such with your Amiga, a CGA monitor might do just fine for a while, till it bores you to tears. The cabling for connecting the CGA monitor should be well within the capability of any half-decent hardware vendor.

TORS

EGA is another level up in price from CGA on the MS-Dos side, but it's not much of an improvement if you try to hook it up to an Amiga. Just forget it - it isn't worth the extra money anyway, on either side of the fence.

VGA. Now THAT's a computer buzzword if there ever was one (and there was!). A VGA display on a MS-Dos computer is a quite nice display, indeed. Its resolution is about the same as the Amiga's overscan modes, but it doesn't deal with the computer's picture borders (almost nothing does, besides the Amiga), and for performance, it's a bit on the slow side. Forget any fast-moving animation - but of course, MS-Dos computers aren't animation-friendly, anyway - unlike the Amiga. Most VGA monitors will work just fine on the Amiga. Indeed, some of them will truly impress even a jaded AMIGA person.

If you're going to have one monitor that makes both sides of the fence happy, a VGA one will probably do it. Watch out for the horizontal frequencies, though, and if you have any doubts, see it work on the Amiga before you plunk down your cash. The safest way to deal with this compatibilty puzzle is to spring the extra bucks for the "multi" monitors. Originated by NEC, the "multi" ones (note careful avoidance of treading on anybody's trademarks) take in whatever signal you choose to give them, figure out where the synch is, and adjust themselves accordingly. A key consideration in a multi (ahem!) monitor is the range over which it will consider an incoming signal acceptable. This can be rather narrow, as in some of NEC's own current merchandise, or it can be very wide, as with some of the Sony products that will work with almost anything on the planet.

Different manufacturers call the "multi" thing different names, most of them containing the words "scan", "synch," etc. Don't assume, however, that everything labeled "multi-something" really is capable of scanning an incoming frequency and adjusting itself to it. Some of the newer NEC products, for example, would be more aptly named "multiple" than "multi" as they originally defined "multi." Some of their models honor several specific frequencies (multiple), but they can't deal with anything you throw at them (as in "multi").

To work correctly with an Amiga, a "multi" monitor has to honor the Amiga's 15.75 kHz horizontal scan frequency, which is ever so slightly BELOW where a few of those monitors start multi-ing. To work with the Amiga and a flickerFixer (MicroWay), a monitor needs to be able to accept a horizontal scan frequency of twice that number - 31.5 kHz. That's very close to VGA's specification, but not exact. The flickerFixer is a board for the Amiga 2000's video slot which de-interlaces the Amiga display, removing the "flicker" from its high resolution modes. It works only with a "multi" monitor, not a regular RGB-analog one like the Commodore ones generally sold with the machines.

Quality

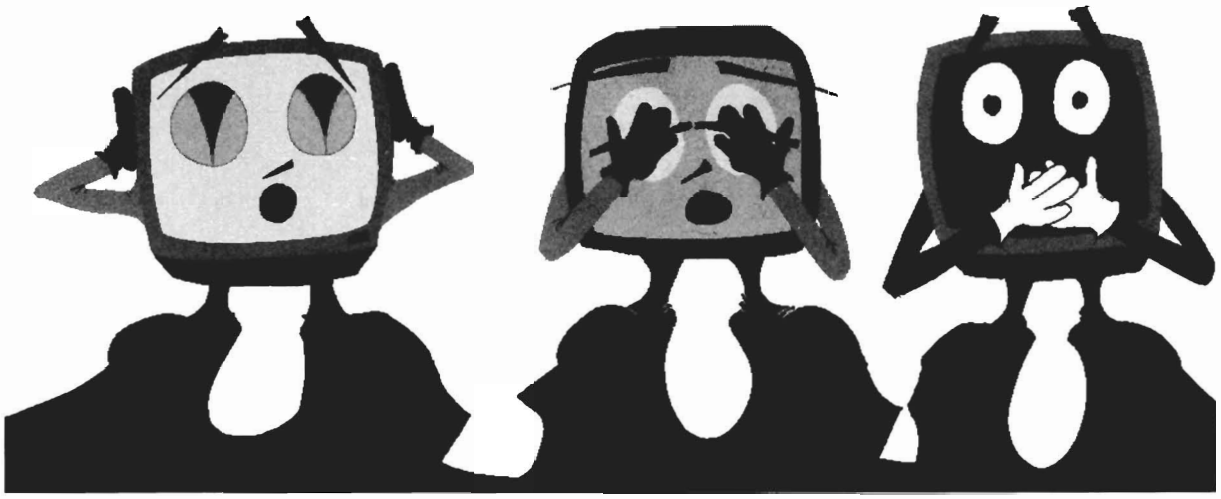
Other than accommodating the flickerFixer's monitor requirements, one of the main reasons you'd get a more expensive monitor is so you can see a better picture from your Amiga. So, it'd be nice if on your monitor shopping trip (charge card at the ready!), you knew what to ask to find out whether a monitor is higher quality than the vanilla one at your house. Here's the scoop.

First of all, the physical size of a monitor's screen is generally specified, like TV sets, as a diagonal measurement. The usual display is "13-inch", which really means 12 inches that you can see plus some wraparound inside the plastic case that only the diodes will ever experience a picture on. Disregard any reference in the monitor's spec sheets about resolution. That generally is stated in so-many dots by so-many dots. Doesn't mean a thing in the real world. That's only a maximum figure, and you'd only see that many dots if you had the exact computer and software combination to produce it - which may be a lot more obscure than you'd find particularly useful.

To decide whether a monitor has a sharp image, look at the spec for "dot pitch" and compare it to the size of the tube. Dot pitch isn't a relative term, but the sharpness you perceive will be. For example, a .31 dot pitch on a 13-inch (or so) monitor is pretty sharp, but on a 30-inch monitor it would be incredible. Dot pitch is the size in millimeters of the dots that make up the phosphor clusters which in turn form the picture out of (you guessed it) a thousand points of light.

If those points of light are large, the picture looks fuzzy and mushy, and the color saturation is low. Tinier dots makes for sharper pictures and richer colors. However, the larger a screen size, the larger the dots can be and still be considered tiny. In the 13-inch picture size, a dot pitch over .4 is coarse and mushy, coarser and mushier as the figure increases. Over the years, some of the monitors Commodore has sold to connect to Amigas have had dot pitches well over .4, although the original Amiga 1080 monitor (and a few of the others from time to time) came in at a respectable .38. Thomson sells an Amiga-capable RGB-analog monitor with a dot pitch of .51. Excellent (and cheap) for playing games, useless for anything else.

Higher end (and nicer looking!) monitors offer dot pitch in the .31, .28 and even .25 range. The 13-inch Sony that Apple remarkets for use on the color MacIntoshes has a dot pitch of .25. Now that's SHARP! NEC and Mitsubishi, as well as Sony, sell Amiga-capable monitors with dot pitches in the .31 range for the 13-inch models.



For example, the Mitsubishi Diamond Scan (Mitsubishi's version of "multi") AUM1381A is part of a line of "multi" goods which now includes a 16-inch model and a whopper 30-inch one. The Diamond Scans, nice as they are, require very wierd cabling to connect them to Amigas; however, they've become rather popular, and several cable companies now offer convenient, manufactured products to connect them with.

Engineering types say that the only real measure of quality performance in a monitor is its "bandwidth," and that's correct. Bandwidth is a measure of a monitor's ability to turn its voltages on and off in a precise manner, thus to address a number of dots of resolution, and so forth and so on. It is indeed a good measure of a monitor's capability. To really understand it all, however,

you'll have to first spend a few years and a few thousand smackers getting an engineering degree, so it isn't really all that practical to shop with.

Most manufacturer's state the "bandwidth" for their products, however. The higher the bandwidth, the more capable the monitor. This figure won't, however, tell you anything about the quality of manufacture, or the beauty of the picture. For those elements, LOOK at the monitor (while it's RUNNING), and consult the case somewhere on the front panel, usually, for a brand name. No matter what the fast talking salespeople might claim, you don't get something for nothing - either in monitors or anything else. Any specification that isn't stated should be explored thoroughly, too. If the dot pitch, for example, isn't listed in the sales brochure, it's a safe bet there's a REASON it isn't.

Don't let the specs fool you, either. LOOK at the monitor, and if it doesn't look good, no matter what its specs, it's NOT good. Simple as that.

You might also, take a gander at the monitor's documentation if you'll be making your own cable. You can't just guess which signal is where or you'll blow your Amiga, your monitor AND your top. A very popular, inexpensive, VGA-capable monitor, the AOC, for example, comes with documentation that's so poor that only a graduate engineer could figure out how to make an Amiga cable for the thing. For example, in a specification chart under "input voltage," the monitor's "manual" states that it requires "house current."

It really isn't as much of a jungle out there as it may seem from some of this. However, if you don't watch out, you'll quickly mire in a pool of engineering jargon. The safe and sure way is to buy something with a respectable brand name on the front - but don't take the salespeople's word for what's respectable and what's not. Ask around.

MONITOR CHECKLIST

Here's a checklist for things to consider in evaluating a monitor for use on the Amiga:

Will it WORK?

Check for RGB-analog and correct horizontal scanning frequency.
Are you going to use a flickerFixer? Buy "multi-scan" if so, But be sure you get real "multi", not just "multiple," as explained in the main article. Again, check the horizontal scanning frequency.

What's the Dot Pitch?

If it's not stated on the sales brochure, ask. Then see it in WRITING before you believe it. The SMALLER the number, the better the monitor for a given size tube.

What's the Bandwidth?

This is mainly for techno-types, but it's the real measure of a monitor's capability. The LARGER the bandwidth, the more capable the monitor.

What's the BRAND NAME?

Nuff said.

What's the Length of the Guarantee?

A monitor that's guaranteed till donkeys fly is likely to be better than one that's guaranteed till you get it home. Monitor (and TV set) makers often specify a different length of guarantee on the picture tube, too. However, these days you can probably forget changing the picture tube - you can get a whole new monitor for what that would cost, most of the time.

Who Makes (or Sells) the Cable?

A store that doesn't speak Amiga will have a hard time answering this question, and unless you can dig into the nitty gritty of the cabling process yourself, you're stuck. There is almost NO standardization among cables for the different monitors, and the Amiga's side of the proposition is an odd beast in its own right.

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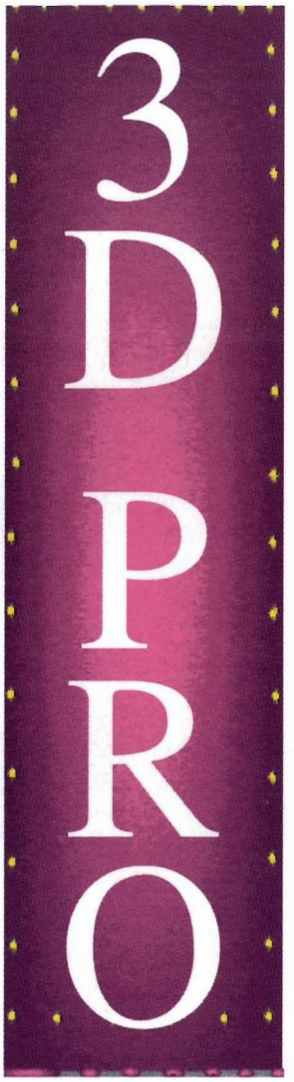
A good while before any other Amiga 3D programs were available, Brian [name] sat down to write one. That was before Sculpt ever traced a ray, before Turbo Silver, ***n***e Silver, almost before the Amiga, even. It took a while, though, and Brian's 3D program is now, after all these years of development, almost ready to ship. What remains to be done doesn't have anything to do with the program, however, just little things like finishing the manual, creating the packaging, and things like that. The program is being marketed by Progressive Peripherals & Software under the title "3D Professional." Brian's software development company is "Cryogenic Software."



3D Professional is a new rendering package for the Amiga. That's "rendering" not raytracing, but Brian says he's probably going to add a raytrace module (as an add-on option), too. In the world of computer graphics, there's a delicate distinction between "rendering" and "raytracing", but only skilled observers can tell the difference if the "rendering" is skillfully done. The key is to look for shadows, translucency, and transparency. Rendering algorithms, for the most part, don't produce the same precision in such things as those for raytracing. You get something for the trade-off, however, and what you get is speed. Any rendering process zips along at many times the rate of raytracing, since the process isn't nearly as mathematically laborious for the computer.

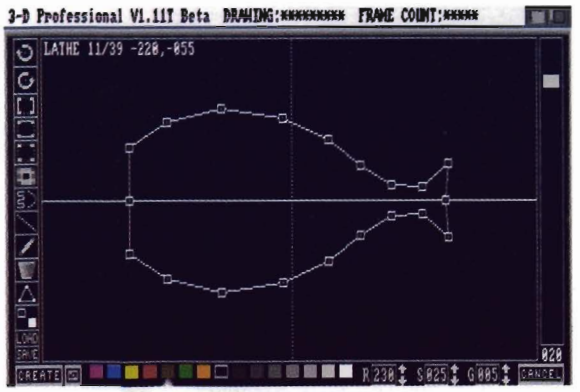
A "rendering" program does its thing by divvying up any objects you feed it into lots of triangles. "Polygons," really. It then figures out how these tiny elements of the surfaces are lit, and shades them accordingly. Other sophisticated algorithms perform smoothing on the results, so that "faceted" look goes away. Math intensive as all of this is, it isn't as much so as raytracing algorithms. Rendering programs have a hard time dealing with shadows and reflections, although there are some ever-more-sophisticated rendering algorithms that do that, too. One way is to have the computer create a new object automatically anywhere there's a shadow cast by another object, and take the shadow objects into consideration in rendering the scene. Of course, if you go too far out into this realm of perfectionism, you eventually give up the speed gain you got in the first place, and might as well raytrace.

The rendering algorithms in 3D Professional are quite sophisticated, judging from the program's output. However, one thing that really sets the program apart from the rest of the Amiga products is its ability to render directly to Encapsulated PostScript. Sure, you can have a gander at the program's output on the Amiga screen, but the resolution of the screen is fixed in space and time (dramatic echo effect), and although what you see is what you get, what you see is ALL you're going to get. To get more colors and more resolution, you have to render to some other hardware. Say, for example, you wanted an overhead-projector transparency of a nice, rendered vase (one of the example objects in the accompanying screenshots from the program).

Would you set up your SLR and click the Amiga screen? Sure. Then make a big transparency. Or, print to your printer, and Xerox the result onto transparent material. Then when you project the image, your audience will be wowed, indeed, by the nice computer display, but it'll LOOK like a computer display. It won't look like some talented artist sat down and drew the picture with pen and paper.

Suppose, instead of shooting the screen with a camera, you did your original rendering of the vase to Encapsulated PostScript. You then send this humongous chunk of code to a PostScript service bureau and print it to film in a laser typesetter. Project the result, and there will be not a pixel to be seen, since the rendering is being done at the resolution of the output device, not the resolution of the Amiga screen. The results will look very much like it would if a talented artist drew it, but with delicate shading and precision of perspective that would truly require a talented artist to accomplish.

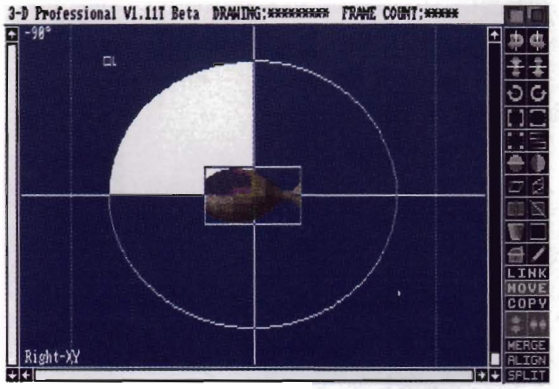
If you crave more and better "eye candy" that you're getting with the Amiga's standard display, 3D Professional

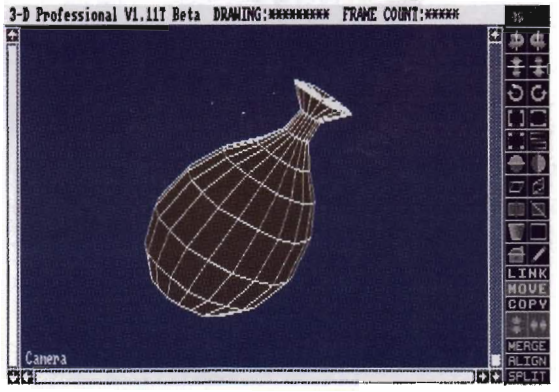


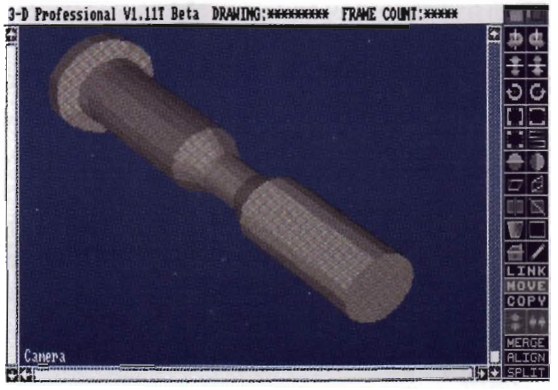
also supports one of the most esoteric add-ons the machine has ever seen. It's the Mimetics FrameBuffer. This is a board that plugs into an Amiga 2000, 2500, or 2500/30, that adds display capable of a much larger palette. The board supports only an NTSC composite video monitor, but displays a 21-bit-plane image - that's a palette of about 2 million colors. Much is made in computer graphics circles of twenty-FOUR bit imagery for "broadcast TV" and other video uses. However, home television sets are restricted to being able to display an NTSC signal ("NTSC" is engineering jargon for "Standard This-Continent Television"), and cannot do better than about 21 bitplanes anyway - the same as Mimetics' FrameBuffer.

Anyway, if you have one of these boards, 3D Professional will render images to it. Brian plans to support the new 24-bit (aha!) Amiga IFF standard, as well. A 24-bitplane picture sports a palette of 16.7 million colors. Notwithstanding TV set's inability to display such an image, the 24-bit imagery is the "standard" of most broadcast-quality rendering.

Look for 3D Professional to be shipped around the time this magazine makes it to the dealers' shelves, if current plans and promises hold true.







GRAPHICS ROUNDUP

By R. Shamms Mortier

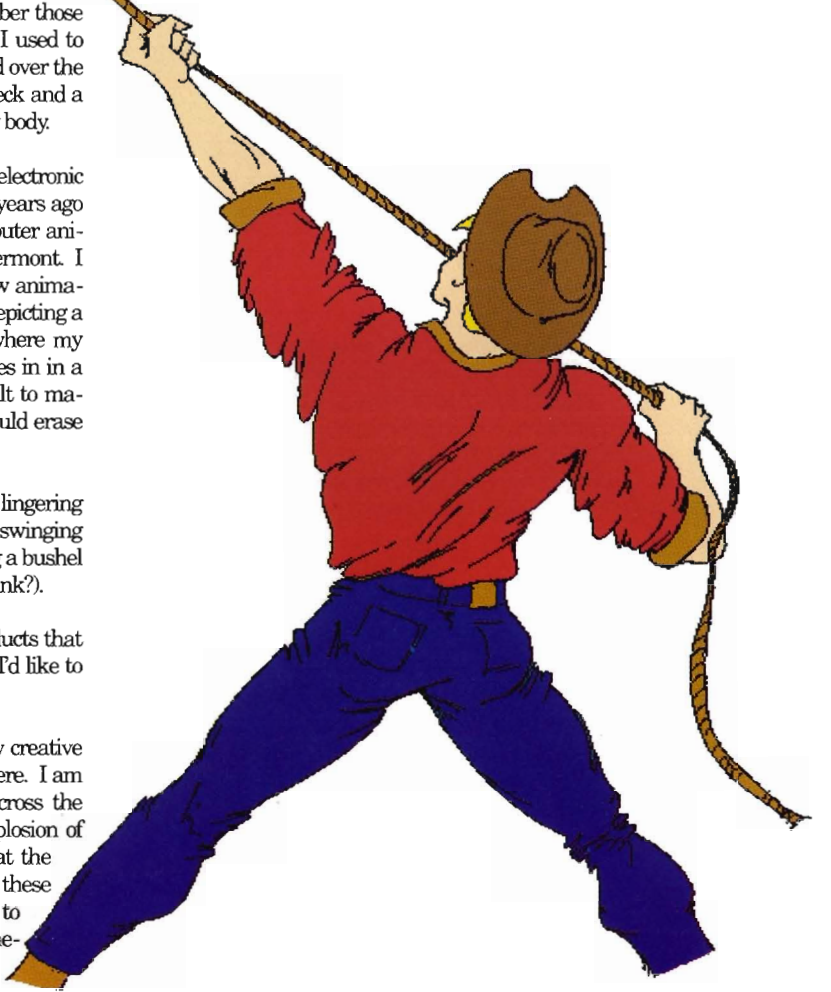
Where can we begin? Certainly not at the beginning, because in the bad ol' days the amount of software tools available to Amiga artists and potential artists was almost none. Remember the thrill when Aegis released their paint and animation packages, and Electronic Arts followed suit with the progenitor of the DeluxePaint series (or are you too young)? I remember those old days with a degree of nostalgia, however, since I used to get more sleep then. Now, my wife finds me slumped over the computer, and I leave for work with a crick in my neck and a case of CRT radiation burn over the upper part of my body.

The things I used to fantasize doing within the electronic medium when I started out on the Apple about ten years ago are now realizable. I had one of the first microcomputer animation showings at a gallery at the University of Vermont. I produced a rather silly little computerized slide show animation called "Planet Bang!". It was a series of images depicting a planet being struck by an asteroid (don't ask me where my head was at), and it consisted of twelve single frames in in a dazzling eight colors. The software was very difficult to maneuver around, and the attached graphics tablet would erase any disks left in its vicinity.

But then was then, and now is *tomorrow*. The only lingering reminder of those days is that sometimes I dream of swinging a large multi-colored Amiga checkmark, deftly slicing a bushel of apples into fragmented pulp (do I need to see a shrink?).

There are a number of graphics and animation products that I use constantly. I can't mention them all here, but I'd like to call some of them to your attention.

This small sampling of excellent packages from very creative developers is only a small indication of what's out there. I am in contact with enough developers and vendors across the country (and across the seas) to know that the explosion of professional Amiga products is on the rise, and that the state-of-the-arts is pushing all of us ahead. All of these products require time to learn to use, and projects to motivate their incorporation. Just learning to use these creative engines and to compare their potentials



Scene From Fantavision

like wares has almost become a full-time occupation for many of us obsessive Amigoids. Sometimes, one of my schizophrenic personalities can be heard chanting strange ritualistic phrases, commanding that the development stop (or at least pause), so that other things besides learning new tools can be accomplished (like electronic painting and making MIDI music). But then I remember where we came from, and the ridicule we've had to bear for our choices. It is then that I say to the gods, "Let the developing commence!". And now, since it's 3 a.m. and a peaceful snow is falling on the Vermont hills, I've got to get some sleep. Enjoy!

Video Effects 3D (version 2.0)
Innovision Technology
P.O. Box 743
Hayward, California 94543
415-538-8355
Retail: $199.00

This is version 2.0 of a product that I consider to be one of the finest Amiga professional animation tools, and it is significantly faster in operation and image generation then 1.0. I ran across the initial advertising on an obscure back page of a magazine. No phone number was listed (which is seldom a way to make the prospective purchaser feel secure and protected), so I tracked one down and gave Innovision a call. I have never regretted that investment.

I do a fair amount of videographic work for the University of Vermont. Much of it involves preparing titles, credits, and textual slides for instructional programming. After a while, both I and my clients start looking for ways to bring these visuals to the screen in new and interesting ways. A little novelty never hurts, even in the classroom. Everyone in the country is bombarded by so much video that all of us have become jaded concerning state-of-the-art looks and processes. Software like this gets all of us in deeper. But isn't that part of the advertising and marketing strategy behind all this anyway? Isn't that what a full blown Amiga obsession is all about?

The manual that accompanies this software is first rate. It is packaged in a large three-ring binder that folds out flat for easy study. This makes the later addition of new pages for upgrades easy. VidEFX-3D is substituted for your Workbench disk. Version 1.0 was not copy protected, but version 2.0 is. When it pops up in CLI, you are given several choices. One command allows users with 1.5 megabytes of memory or more to boot it, and another is used for those with one megabyte or less. I strongly recommend that you have at least 1.5 megs to play with this package. Another separate command will bring up the VIDPLAY module once your creation is rendered. It is in High Resolution, full overscan.

One of the most helpful features concerning the user interface design is that the moment your cursor is positioned over a gadget, a paragraph of helpful text pops up. No help keys need apply. This is especially helpful on the initial screen. Before you are a host of step-by-step functions, which must be accessed in a linear order. Each has an accompanying pop-up help text to guide you along the way. Every care has been taken by the developers to make sure your creations are first rate!

After initializing a script disk, we move on to the "import object" sequence. "Objects" can be paintings, text material, or any other graphic configuration. The only stipulations are that they are in High Resolution and that they contain no more than eight colors. If they contain more then this, they will be translated into what the system sees as the most suitable eight colors of the palette. The wisest thing to do is to design them this way originally with your favorite paint program. Much of what you do here, and the ultimate success, is based on an initial process of planning, which holds for all serious video work.

Color 0 will be transparent if you are going to genlock your final work, so keep this in mind in the design stage. If you can keep your graphic in one color (color 1), your movements will achieve maximum smoothness. From my own extensive experience with this package, however, I can assure you that if there is a penalty to be paid for working in eight colors, you will hardly notice it when viewing the finished animation.

Color 3 is reserved for one-color extrusions when you want them, and colors 4 to 7 will give you multicolored extrusions in the same way.

Deluxe Paint III

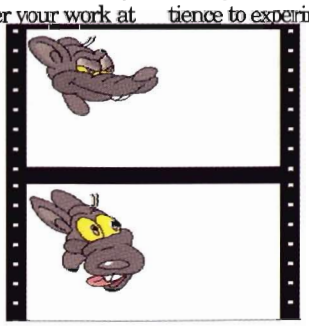
After you select an object to manipulate and it is translated, the initial cropping screen pops up. A one-fourth representation of your graphic is deposited in a view screen. You can position it in any Cartesian coordinate (X, Y, or Z parameters), and then crop it so as to save unnecessary mathematical adjustments when it is generated. As many as nine separate IFF HiRes objects can be sent flying and spinning all at once, as long as you consider disk space and RAM in their generation. Of course, they must all have the same palette. Here is where you also can determine the objects' center of rotation, useful in generating common and erratic movements.

Something I've learned is that objects designed and rendered in 3D also work well, if they are imported from packages that have good Phong Shading routines (ie., if the eight colors contain mixes of each other, so that the eye sees more than eight).

Next is the main EDIT screen. The quarter screen view of your object is replaced with a wire-frame border. This is so that generation of the movement files can be easily demonstrated in real time. Timing is an all important part of professional videographics. Often the designer is requested to show a specific movement in a very boundaried timeframe. In this software, you always have control over the time element. You can control movements in increments of seconds or thirtieths of a second. I suggest you string three "tracks" together for a completed animation. The first determines the originating position of an object. Unless you want it to fade on at this point or to start from a standstill, no time is allocated to this track. The second track involves the spins and turns and zooms, as well as the final positioning (where you want the object to wind up). The third track allows you to program the amount of time that the object remains in place at the end.

More and fancier tracks are possible, but memory is a consideration. Even with great compacting routines, zooming an object to 300 percent and then animating it can strain the most evolved system (at least until those magic laser read/write drives hit the market). On this screen, you can shape the movement paths of your object in very fine increments, and then hit a playback button to see how the wire-frame representation reacts. This is also the place that you would select either a depth increment and/or a shadow for your creations.

Lastly, you are allowed to access the rendering screen. Normally, for professional results, you would choose to render your work at sixty frames per second. You can, however, choose ten or thirty seconds for previewing purposes, as long as you don't mind somewhat shaky results. You could also have everything rendered in IFF files instead of the VidEFX compressed mode (which means the frames could be imported into DPaintIII for more extensive color rendering). With version 2.0, it's seldom more than a few hours between this step and a viewing of the finished product.



When the rendering is accomplished, you retreat again to the CLI. With the command "VIDPLAY", the "show" screen pops up. You can play back your masterpiece in two fashions. If you select PRESENTATION, the animation will play once after you click the left mousebutton. If you select PLAY, the animation will start automatically and loop until you hit a mousebutton. either in a one-time or a looped mode. All of your files are saved to a disk previously labeled "PLAYFILES". Between this and your script disk, all of the movements of your work can be stored. Actually, you could select the same script to alter the movements of other object files in the same way. After loading a PLAYFILES disk on this screen, you are ready to preview your finished work. If you have enough memory, you can string animations together back to back.

Forms in Flight 2.0
Micro Magic
261 Hamilton Ave. #320C
Palo Alto, CA 94301
415-327-9107
Retail: $119.00

Many animation and rendering programs have hit the Amiga market in the last few months, and this one frequently gets overlooked, probably because it is fairly complex to operate. It's results, however, are very nice. The program's complex syntax and user interface will be completely revamped in the next major upgrade (due in the Spring of 1990, so I'm told). Meanwhile, Forms In Flight deserves more recognition as a professional tool. All of the Amiga 3D sculpting/animation programs have strengths and weaknesses, and Forms in Flight is no different, so the serious Amiga designer/animator will have many or all of them in her/his library. With the help of programs like "Interchange" by Syndesis and its various conversion modules, each of the formats can be transformed into the other, thus providing the Amiga artist the best of all worlds.

Forms in Flight has paid extra attention to Phong shading, as opposed to the creation of polygonal surfaces. This means that your final pieces will show smooth transitions from one surface to the next, not the often blocky appearance of a faceted work. Also noteworthy is the very fast redraw time, which allows you the patience to experiment with getting just the right view of your creation. Forms in Flight uses a whole series of hierachical menus and unique-to-itself command terms in the actual sculpting of a project. You'll have to live with the manual at your side for awhile.

Two of the terms that are central to your ability to manipulate Forms in Flight are "FSURF" and "QSURF". FSURF stands for "Flat Surface", and is made up of curves joined end to end. QSURF stands for "Quad Surface," which

means that it is made from four surfaces. FSURFs are flat, QSURFs don't have to be. By "pulling" on the vertices of a curve, an infinite series of curved surfaces can be constructed. Most FSURFs and QSURFs can be translated back and forth to each other. Forms In Flight handles 3D construction very differently from all other 3D programs on the Amiga, but it produces professional results in all non-HAM resolutions (the next version will address HAM as well).

The manual is designed with the beginning user in mind, and a long list of summations at the end of each chapter (just as with any well designed instructional text) reinforce the learning and computerese terminology. This way, when you return to the program after a long absence, you can reference the summations at chapters' ends. Forms in Flight has an instructional method that should be emulated by all professional Amiga 3D software manuals.

One of the most exciting parts of this program is the way it can be integrated with standard IFF Backgrounds and Foregrounds. translated into "Texture Maps", IFF images can be wrapped around any QSURF. That means that any 3D shape you design can have a "skin" made from an IFF graphic - leading to some pretty interesting visual results. As long as the colors and resolutions remain constant, IFF images can also be imported as Background and Foreground elements in your paintings. If you attempt to wrap a resolution different from the screen on a QSURF, Forms In Flight will default to the resolution of the brush. This might promote you to name your saved brushes with either a resolution extension (such as .HI) or a code that designates the resolution (such as PICLo). If not, you run the risk of suddenly seeing your scene pop into an unwanted resolution.

Painted with Deluxe PhotoLab

Another matter to consider is to render the 3D model in a limited section of the color palette (say colors 3 to 7) and to render your brush in another color list (colors 8 to 16). That way, when you wrap your brush on a dedicated section of the model, you'll still leave the rest of your creation in the designated color palette.

The present version has no options as far as refraction indexing. The "light source" is behind the "camera" at all times, but since it will wrap IFFs, you could design a whole series of IFF textures and brushes with that in mind. It also does not allow for variable light sources and reflections, and a finished High-Resolution sculpture has the apparent texture and feel of a hard plastic or soft metal material, dependent entirely upon the colors used to define its shaded shape. Not only is overscan addressed, but you can also input any supportable overscan in a customized window. As a 3D sculpting tool, Forms In Flight II produces some of the smoothest and sharpest renderings around.

One would wish that all of the Amiga 3D sculpting/animation wares used the same terms to describe like events and processes. There are a list of commands in Forms In Flight whose operations you may be familiar with, but whose commands and syntax will be foreign to you. There are two modules on Forms In Flight 2.0: "Editer" (their spelling) and "Fast Flight" (the Player). It is the editing process that allows us to shape our sculptures. Both FSURFs and QSURFs are usually drawn on the screen in one of the three 2D orientations (XY, XZ, YZ), although you can draw in three dimensional space as well. The advanced user can also determine another 2D orientation commensurate with needs to display a certain viewing angle. Only one orientation is possible on the screen at any one time, unlike other Amiga 3D programs that allow all at once. I personally favor this, but I know that there are other artists that like the standard draftsman's and CAD format.

An FSURF is a flat surface made up of curves joined or unjoined. There are five FSURF combinations: Circle, Closed, Open, Straight, and Open-Straight. All of these lead to designing the basic forms that can be spun and extruded to form various 3D objects.

QSURFS, on the other hand, are what is commonly referred to as "surface patches". They must have four points, and four points *only*, so the program can create rounded surfaces based on their design. FSURFS can be transformed into QSURFS and vice versa. Because an FSURF can have any number of curves, while a QSURF can only have four, conversion from one to the other often produces unexpected results. Experimentation here (as with all other Amiga creativity software) is vital. Translation to a QSURF places grid lines inside of the object. The finer the grid, the finer the roundness of the shape. I have, however, found that too many grid lines crashes my system. Even with 4.5 megabytes of memory and a 68020/68881 chip set onboard, some renderings in Forms In Flight 2.0 are too complicated. The wireframes come up OK, but solid models can really tax the program (especially in 16-color Hi-Res).

The camera can be moved from side to side so that you may investigate the operation thoroughly. The manual continually defines the terms used in layman's language, comparing operations to familiar everyday materials and events. As you view the object from alternate sides and watch it get redrawn to the screen, each new rendering can be saved as an IFF image.

If you select a curve for modification, it can be stretched or turned into a straight line at will. By changing it in the dynamic box, you alter its Direction and "Speed" (size). If you select just one of the nodes of the curve, more precise control over the sculpting can be achieved. One end can also be "modified", and the whole curve can be "rounded". Curves can also be "split", which gives them extra control points to manipulate.

A few commands are my favorites because they give me the chance to experiment with 3D object creation in ways that are unique to Forms In Flight. One of these commands is "Mirror". Forms In Flight lets you decide which plane the object is to mirror around, and also the axis that will be used.

Forms In Flight uses the command "Sweep" to accomplish what other 3D software calls "Extrude". Extruding (sweeping) gives a 2D object depth, and Forms In Flight allows you to determine the extent of that depth. This is very handy when creating 3D letters and numbers for animation. Objects can also be swept along a "path", which is any curve in any orientation imaginable. Any QSURF can be set to receive an IFF texture map, a full color brush imported from another painting session. Up to 15 such brushes can be in memory at any one time, depending upon the extent of your extra memory. Since this is not a HAM program, though, you'll have to be careful about colors.

New IFF images will change the whole screen to that palette. Texture maps appear on QSURFs only. Another nice feature of Forms In Flight is that resolutions and number of colors can be changed at any time, and your object then displays the result (if "shaded" mode is chosen). The object is not resized, but maintains the same proportions and screen size that you previously determined, though you can reduce or enlarge any object at any time. In all resolutions, Forms In Flight tries desperately to render your work in the smoothest possible range of shades. It has the smoothest non-HAM shading routines ("Phong" shading) that any Amiga 3D renderer can boast, with no hint of polygonal edges to ruin the results. I absolutely love the way that Forms In Flight shades images.

The screen is always open to the alternate views provided by a selectable roving camera. These viewpoints can be manipulated in all of the ways previously mentioned. "Look Points" (the direction the camera is pointing) can also be determined and set. The whole view can be PANNED, left-right and up-down. Specific coordinates can be given in all cases. The camera can be rotated and rolled, and then set aright with the "Heads-Up" command. The camera can also be moved in and out, so you can create "flybys" of your object.

In addition to texture mapping IFF images onto the object, IFF foregrounds and backgrounds can be incorporated. Backgrounds are rendered "under" the 3D image, while foregrounds are rendered on top. For animations, this can generate some very professional results, especially if you have the memory to allow for overscanning at the same time. In animating an object, wait until the last frame to incorporate these effects, as redrawing time between frames can be excessive if they are brought in at the beginning. As with texture mapping, make sure that you are working with the same color palette and resolutions. Any object can be copied, resized, or put on a "lathe" and spun, creating a multitude of fantastic shapes. The artist in love with shapes for shapes' sake will spend hours on this operation alone, and hopefully the divorce courts will not feel the pressure.

Animation

When you get the hang of it, animating objects in Forms In Flight is as easy as drawing. The manual could make it easier though, by devoting more than two tiny chapters to it (the latter of which focuses on the demonstration animation included with the program). There is a fairly complex animation requester that is not given nearly enough attention, containing a complete hiearchy of animation structures within animation structures. The basic idea revolves around setting your object on a "path" and telling it what to do while it follows that path. All along the way, various positions and other objects can be brought in and edited, until fairly complex animations are obtained. Add to this texture mapping, background/foreground importation, and camera manipulations, and you can imagine the extent of the finished animated piece.

Changes for version 4.0... I'm told that they'll skip "3.0", just as DigiPaint (NewTek) skipped 2.0. This is probably for the same two reasons: extensive changes and P.R. hype). Here are a few of the promised changes that will appear in Forms In Flight 4.0 (originally set to enter the market in late summer of 1989):

1. Support for the 68020/68881, which will allow Forms In Flight to run considerably faster on machines (such as Amiga 2500's) with this configuration.

2. Far more complex objects constructed with the same amount of memory, as the software will store only the polygon currently being worked on.

3. The renderer will map textures across entire surfaces.

4. HAM mode support

5. Antialiasing (edge smoothing) will be computed from the best colors in a 16-million color range, and Extra HalfBrites will be allowed.

6. 4.0 will be import compatible with 1.0 and 2.0.

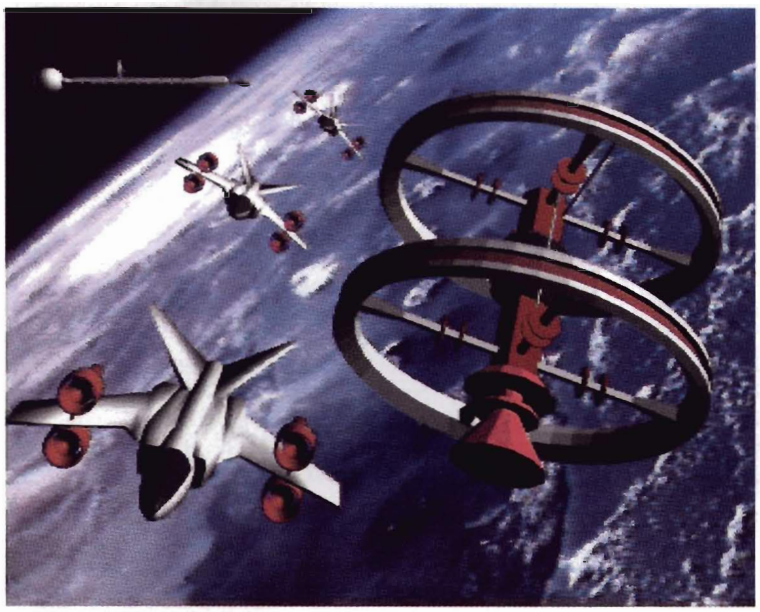
7. It will be broken into three separate modules: Editer (again... their spelling), Renderer, and Animator.

8. It will be priced around $199.00, with an upgrade pricing for owners of 1.0 and 2.0.

9. The new "Editer" will have a multi-windowed approach like other Amiga ware, and the hiearchical menus will no longer be used. There will be fewer commands, and more control points will be added to curves. Some commands will be accessed by doubleclicking the mouse.

Forms In Flight 4.0 will be distributed by Centaur Software 213-821-5995, so that additional information will be supplied by them prior to the release of the new version. I recommend this software highly, and can't wait for 4.0.

Comic Setter
Gold Disk Inc.
PO Box 789
Streetsville
Mississauga, Ontario
Canada L5M 2C2
416-828-5636



Above and Facing Page. Raytraced objects from Polar Arts.

I first saw the Beta of this package at AmiExpo in 1988. It was so complex that nobody could do a demo of it (the developer never showed up). I started my visual life with comic books; "Entertaining Comics" to be exact, the originators of Mad magazine. In the fifties, they had about twelve titles on the shelves (before the McCarthy era wiped them away). When I saw the Beta of Comic Setter, I was immediately thrown back to my obsessive past, and couldn't wait for its release. Gold Disk, of course, is well known for its dedicated Desktop Publishing wares for the Amiga, so I was confident of a quality product.

Because the options that desktop publishing processes demand are so complex and intertwined, the software that is able to generate a good end product is often not easy to learn to use. Comic Setter is no exception. The icons that address specific tools are not at all initially intuitive in their use or visual design, so a fair amount of time spent going through the tutorials and referencing the manual is necessary. Comic Setter's manual has no index, which can be an unnecessary frustration at times. The manual does, however, contain a number of very complete tutorials. If you follow these tutorials in a step-by-step fashion, you shouldn't have many problems identifying the right tools for the right function. If you skip the tutorials in favor of muddling your way through the software, I wish you luck.

Comic Setter's output is meant to allow you to emulate the classical "look" of American comics, and the clipart that is included (plus the extra disks of clip art that Gold Disk markets) does indeed replicate this style. As a cousin to Gold Disk's other desktop publishing wares, it allows the incorporation and creation of both IFF and structured graphics (brushes and full pictures). Comic Setter works in the two Amiga sixteen color resolutions, Medium and Hi-Res. Like any other Amiga graphics package, the colors can be edited to represent any of the 4096 possible. I am sad, however, that it does not address HAM. Maybe a future version will.

Comics are based on very specific design elements: panels, text balloons, sound text (Ka-Booom!, Splat!, etc.), backgrounds, and foreground figure characters. This package addresses all of these. Doubleclicking the left mousebutton on the icon that resembles a small portrait changes the cursor into a cross-hair that allows you to define an area for graphics. When so defined, this area can be used as a canvas for your own creations, which are subject to the drawing/painting tools at the side of the screen. More probable, though, is the fact that you will want to import graphics from your own IFF creations. Each page must use the same palette, so this is a consideration best taken to heart when you go about designing your own comicbook graphics. If you have a black and white printer, design your work in gray scale or black and white. Color does not convert well to gray. Of course, you could always alter the palette colors from within the program before sending your page to the printer, but this can be cumbersome, time consuming, and still not guarantee you the best results. It makes a lot of sense to sketch out your ideas in a storyboard manner well beforehand.

Placing the panels on the page can be done either prior to the design of each individual story element, or beforehand in a full-page fashion. If you choose the second method, you'll probably want to view the entire page at once. Comic Setter has a built in zoom feature (200 percent, 100 percent, 50 percent, and "full page").

The outlines and colors of the panel frames may be selected according to your tastes. The placement of panels in a comic book, their size and relationship, has a great deal to do with the progression of the story. Normally, graphics placed within the confines of a panel will be cropped (cut off) by the places where the frame crosses the graphic. However, Comic Setter also contains a toggle that allows the graphic to bleed off of the panel, thereby allowing very dramatic visuals to leap from the page. Any object on the page can be moved and resized. As in wordprocessor environments, objects can also be cut, copied, and pasted.

Text that tells the story and allows the characters to speak can be placed on the page in two ways. The first, and most used in comics, is the text balloon. Comic Setter allows you to choose from six shapes of text balloons, define the color and width of their outlines, and place them anywhere in a frame. Once placed, a text requester pops up, allowing you to spell out the wording of the message or dialogue. The finished text appears in the balloon. The text style may be selected from any Amiga disk font, so we see that the developers have given us as many creative options as

possible. A number of comic book fonts are included on the Comic Setter clipart disk.

The second way that text may be written to the screen is without a balloon - necessary for the narrative comments.

There are a number of tools that work with the bitmap drawing mode (paint, airbrush, fill, smear, line, rectangle, ellipse, and bezier curves), and a smaller number that work with just the structured drawing mode (line/polygon, rectangle, ellipse, and bezier curve). In the bitmap mode, the smear and airbrush tools have associated requesters that allow you to set their parameters. Structured graphics take less memory to store but are a bit more difficult to execute. Once drawn, however, they can be resized and repositioned without losing any clarity or sharpness. Bitmapped graphics, however, can suffer greatly from resizing, but are usually the choice for more complex subject matter.

The hardest tool that I found usable in Comic Setter was the fill tool. The software expects you to first click on the background before the fill tool addresses an enclosed space, and I found this to be unlike any other graphics program I have had experience with. I found this over-complicated, especially since the icon is the familiar "paint can" used by many Amiga painting programs. Either the icon needs to be redesigned before version 2.0, or the manual needs to be enhanced to offer a more complete "fill" example.

In addition to color fills, Comic Setter also addresses pattern fills. These alternate fills are selected by double-clicking on the pattern fill box at the bottom left of the page. A requester with 25 patterns pops up from which you select. Each pattern is made from four colors, any of which may be edited to change the design of the pattern.

I have printed Comic Setter pages to a Canon PJ1080A color printer with really good results. Choosing "half-toning" in the print requester prints some authentic-looking comic book screens in the panels. High Resolution seems to be a better choice for both clarity and symmetrical structures (circles and squares) than the Medium Resolution mode. I've had a bit of trouble, however, with dot-matrix output, due mainly to the color-to-grayscale transitions. That's why it's far better to design your IFF screens from the start in grayscale if you're going to import them into this program.

The one change that I think this software needs in order to find its niche in the Amiga market is to make it HAM compatible. If and when this occurs, panels on a page could all address different palettes, and be far more interesting. Color is used in comic books to set moods, not just to colorize graphics. More than sixteen colors are needed to really make this work. This is not an easy program to use, but the possibilities are very addicting, especially for old comic book fanatics like me.

Two from Mindware International

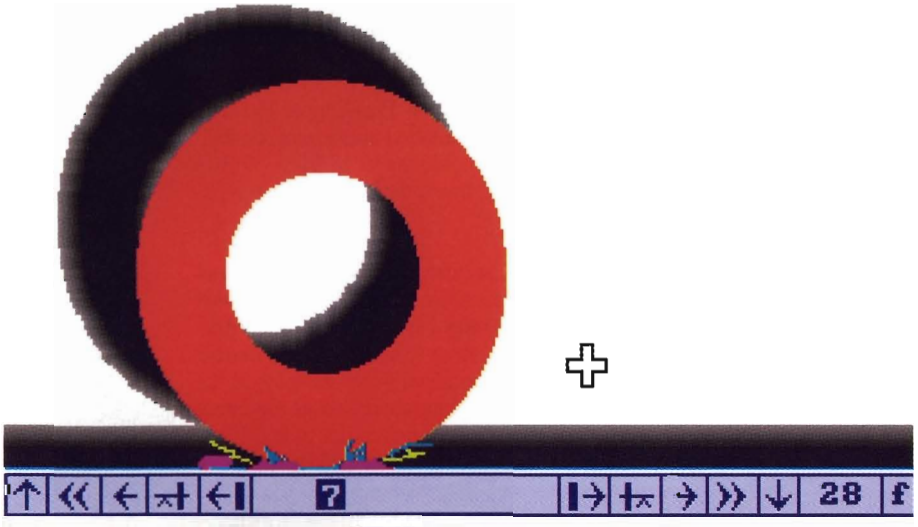
PageFlipper Plus F/X
Mindware International, Inc.
230 Bayview Dr., Suite 1
Barrie, Ontario, Canada L4N 4Y8
705-737-5998

This software is the professional version of Mindware's "PageFlipper" program which I saw at AmiExpo in 1988. The original "PageFlipper" software was one of the first Amiga software creations that allowed you to flip frames of an animation. Different from any other animation engine, PageFlipper allows you to script the individual frames in any order. PageFlipper Plus F/X goes much deeper into the Amiga animation universe of possibilities. Pageflipper Plus F/X allows animations to "slave" (drive) other animations, much as MIDI music devices can drive separate keyboards.

The manual, like the software, is extremely complex and is not intuitive, but Mindware has done their best to present the user with very intricate tutorials. You must have patience while learning this software. Be prepared to study long and hard to master this program, but given that, be prepared to obtain some of the finest results imaginable in Amiga animation, and at rendering speeds unmatched by any other Amiga animation utility. There are many built-in transitional effects, and a method for designing unique customized effects as well. Pageflipper Plus F/X uses terms and syntax that must be either mastered or continually referenced in the manual as your production moves along. Pageflipper Plus F/X works in all Amiga resolutions, including HAM.

Pageflipper Plus F/X has an on-board conversion module for translating ANIM files to a Pageflipper Plus F/X usable IFF format. This means that any creation you have completed using the ANIM convention will be usable in Pageflipper Plus F/X, as well as separate frames of IFF animations. Animations can also be chained together over more then one disk, which can save you a bundle in the editing suite. Pageflipper Plus F/X works within the confines of its own scripting language, which means that you must know the syntax of that language before attempting to master the program's variable results.

The scripting screen lowers like a slow curtain, and allows you to witness the production of the animation as it is being manipulated. When it's finished rendering, it's ready to play and be saved. The built-in effects are listed and described in the manual, and can be previewed from the WorkBench. There is also a listing of error codes at the end of the documentation. I must tell you that I have already ordered the professional upgrade to this software,



and Mindware assures me it will be out sooner than "real soon now." Because of their learning during the preparation of their other Amiga product (PageRender-3D) and the magical touch of Andy Thut, the next upgrade of Pageflipper Plus F/X promises to be even more spectacular.

The people at Mindware could hold seminars for all other Amiga developers in customer service and congeniality. They are the most helpful and genuinely concerned developers in the business, as well as the producers of some of the most professional and useful Amiga products. They are also one of the motivating forces behind the move to ARexx as a command language standard.

PageRender3D
Mindware International, Inc.
Suggested Retail Price: $149.00

Mindware has jumped into the 3D arena with both feet, with the introduction of this astounding product. Some of the things that PageRender 3D does are not only new to the Amiga, but new to computer graphics in general. Mindware sees PageRender 3D as part of a larger total package of Amiga-specific animation products. They have other modules in development that address animation utilities, soundtrack editing, and scripting.

The manual comes packed with hints, tips, tutorials, and an index. It's spiral bound so that you can open it flat as a reference tool. PageRender 3D operates in all of the Amiga's resolutions and drawing modes, including HAM and full overscan. Overscan and super-bitmapping is approached on a scrolling screen. You can sculpt in a Low Resolution, and then change the screen to High Resolution for rendering and animation. The objects are vector mapped, so no size differentiation results.

An UNDO is provided for rendering, and a multiple UNDO function is provided while you are drawing the pre-3D outlines. This means that you can backtrack your drawing one line at a time, all the way back to the beginning. The 68020/68881 version of the program (found on the program's "Extras" disk) speeds up all PageRender 3D processes tremendously, some by as much as 400 percent.

Items can be entered on the screen in four ways: as 2D shapes that are extruded in depth to form 3D objects; as 2D shapes that are spun on an axis to become 3D objects; as preformed 3D objects from a disk-based library of "primitives"; and from a script file that describes not only the object, but may contain its animated choreography as well. The scripting language is really a subset of the ARexx format, and PageRender 3D can be "called" by any program that sends out ARexx commands. No secret is made in the manual that the developers hope to coax you in this direction as soon as you are able.

As in PageFlipper+FX, your icon/mouse/menu inputs are written to a portion of the screen in the scripting syntax (you could be saving the script at the same time for reference, learning, and revision later). There are variables and nested functions that can be called upon by the advanced user to make the writing and production of the visuals even simpler, and they are fully covered in the manual as well.

Not only can you shape your sculptures, but you can twist them, and set them up in cloned arrays. These arrays can be used in animations, or saved as IFF pictures. They can also be saved/loaded as Object files for later PageRender 3D work. The two array parameters in the disk library are "rectangular" and "hexagonal". The rectangular version gives you a 3D world of shapes that are cubically strewn in all three dimensions, according to the parameters that you have set (XYZ) and the limits of your computer's memory. The hexagonal array sets objects out on a plane, and is the first step in shaping them further (into 3D arches, crevices, waves, funnels, and columns).

Words alone cannot express the visual power and beauty that can be achieved in this manner. You can also adjust several of the observation points so that you get just the angle and size that you require. Syndesis is reportedly working on a PageRender 3D module for their Interchange program.

PageRender 3D allocates colors by using a "dynamic palette". You can break the limit of sixteen colors in Hi-Res, because when you assign a color to an object, you can have it any color you desire. The object's color is overwritten with dithered patterns to indicate light and shadow, so that Hi-Res, multi-colored 3D objects are fully realizable. When 32 colors are used (Lo-Res and Video-Res), PageRender 3D reserves twenty-eight color registers for facet colors. A seven-level dither provides 28 times 8, or 224 maximum facet shades. "Hi-Res" has 12 reserved color pots, for 12 times 8, or 96 maximum facet shades. The placement and brightness of light sources also effects the overall color.

The animation processes in PageRender 3D are very intuitively designed. The icons were designed with much thought as to their use. Design your animations in Lo-Res wireframe first, then with a text editor, you can revise the script and render the objects in Hi-Res overscan. But don't design animation sequences that are too big, unless you're saving to a harddisk, or across several floppies.

Presently, PageRender 3D doesn't support reflection/refraction indexing. "Ray Tracing" in PageRender 3D is really fancy dithered rendering. There is a great "disk check" that doesn't allow you to overfill a disk with saves (if only Electronic Arts had implemented this on DeluxePaint III!).

This software is an absolute jewel, and from my experience with MindWare, I will bet that they are continuing to polish it.

ExpressPaint 3.0
By Stephen Vermeulen
Distributed by OXXI

ExpressPaint is the best kept Amiga secret in the electronic painting category. This is true because of its dual nature as a painting program and a desktop publishing accessory on one disk. To be sure, future upgrades of this software may opt for one realm over the other, but for now, it services both arenas. It is a multifaceted and varied painting program.

Until the release of version 3.0, I considered this program to be much more of a desktop publishing tool than a videographic utility. I still consider it as leaning more in this direction, although some of the added capabilities of 3.0 make it valuable to the videographic designer. The main detriment is that you cannot view overscan pictures all at once, but have to scroll them. This means that videographers have to export their results into other Amiga packages to tape it in full overscan.

ExpressPaint allows for six independent color cycle ranges at the same time, which is great for animators. It has so many unique Brush manipulation features that it may be just the tool needed to construct very large graphic environments that can be shown and scrolled by other wares. There are also ExpressPaint utilities and extras disks that give you more tools. The screen layout and tool access is different from all other comparable programs.

It incorporates screen pages which rest within edit page boundaries which rest within "virtual page" dimensions, making it very handy for desktop publishing requirements, but somewhat difficult for other Amiga uses. If hiearchical menus are your joy, however (menus that call up sub menus), then ExpressPaint is definitely for you. Some of the tools, airbrushing for instance, have sub-controls over its usage that extends its capacities into unexplored territory. Another great feature of ExpressPaint is its capacity to store an almost unlimited number of brushes (limited only by memory). Large, small, multicolor - they can be called up at the flick of a gadget to be placed on the screen. They can also be reconfigured in ways not dealt with in any other program.

ExpressPaint's unlimited UNDO option allows the Amiga artist to erase each step of a work *backwards* to the very beginning, instead of the one step UNDO offered by all other similar Amiga paint programs. There's a "Tint Tool", and grabbing Brushes from your painting can be set so that you peel them off the page, rather then just cloning them. The Dither Fill requester allows for some of the most revolutionary fills of this kind in any program on the Amiga market. The Perspective Fill tool (though a bit difficult to learn to use) can give you spectacular results as well.

Brushes can be set to a 3D grid, and the Antialiasing feature has its own dedicated menu, including the incorporation of various dithering modes for specific screen resolutions.

Other utilities:

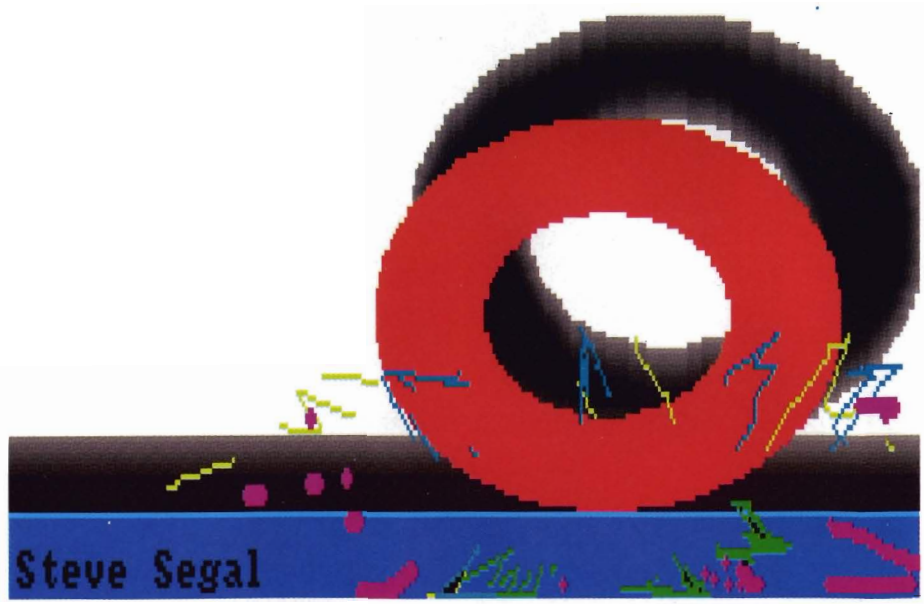
ExpressExtras
Suggested Price: Bundled with ExpressPaint 3.0
ExpressTools
Suggested Price: $5.00 to ExpressPaint Registered Owners

ExpressExtras has a number of additional ingredients that the ExpressPaint owner will appreciate: artwork, brushes, and examples. There is also a "half-tones" drawer, that allows you to fill specified areas of a page with grayscale patterns. "ColorText", for enabling ColorFonts, can be accessed, and there are controls for turning the overscan mode on and off.

ExpressTools was released with an earlier ExpressPaint version, and contains four programs. One is called "VHAM", and it allows you to convert HAM files to Lo-Res. Another, "VGRAB", is a screen grab/save program. It is comparable to dedicated screen grabbers that cost as much as $50, and grabs everything on a screen, converting it into an IFF picture file. The third is VPAGE, which translates, manipulates, and saves ExpressPaint pages in a Postscript file format for use with quality laser printer output, including the translation of color into grayscale.

It is the last selection, however, that will be of most interest to the Amiga videographic community. Its unassuming name is "DISPLAY", and what it does, as far as I know, has been duplicated nowhere else. DISPLAY allows you to smoothly and automatically scroll any non-HAM non-Extra Half-Brite IFF file left and right. The horizontal dimensions of the IFF picture in question can be anything your expansion memory can handle. There is a demo on the disk of a file that is 2400x200, meaning smooth animated storefront and exposition displays, or (for the Amiga videographer) smooth credits, titles, and panned scenes transferred to videotape. It will also function with a whole list of separate files, fading at the end of each. You can preset the number of times the scrolling occurs (cycles), the fadetime, the speed, the direction (left or right), and whether it alternates direction in the scrolling process (PingPong) or not (Loop). Depending upon your needs, this tool alone might be worth the cost of the program.

-=>



HalfBright

Every Amiga artist, I'm sure, has a favorite paint software with particular modes and features that feel good for doing the best works in. DeluxePaint III with its halfbright mode and animation capabilities has consistently been the package I look to, both for my buisness and personal applications. I will attempt to explain the technical steps from start to finish, using as an example my latest halfbright picture created for this article. It's entitled "The Wizard."

Mixing the Palette

I like to mix my palette before I get down to buisness. Having a good idea in my head of what the finished visual will look like, I create blends of colors on the 32-color, definable side of the halfbright palette, the fixed 32-color halfbright side will automatically calculate half intensity values of the original 32 colors chosen, providing more overall usable shades - 64 total colors. I had four basic priorities in mind while mixing colors for my palette, shades for fleshtone, clothing, objects that would appear to have a goldish quality and a small blend of grays to have in reserve for whatever else may pop into my mind during the creative process.

Starting Off

I start off in much the same manner I would, doing a

conventional pen and ink illustration, starting with an outline sketch of the foreground subject. I find it very helpful and not really all that much more work to split the background and foreground images, so that they may be used separately for other visuals or possible animation work. I quickly block in with a solid color from the mid area of the blend I'm working with, the ripples in the fabric of the wizard's cape. This gives me some discernible shapes to place my highlights onto -- see figure 1.

Having the outline in place and fairly clean, I can then figure out where the main light source will be. This will determine where to place highlight and shadow on the figure giving it its shape. I wanted lightning bolts to be emanating from his raised and pointing hand and decided that it would be this lightning that would serve as my main light source.

Starting with the light end of the blend I'm currently working with, I place a line following the contour of the shape I'm trying to achieve, in this case the folds in the wizards cape, placing it favoring the direction of the main light source and shading back from that, placing the next darkest color in the range directly next to the previous color, repeating until faded down to the black background - see figure 2.

Figure 3 shows what I would call the 90-percent finished foreground image. Just about every edge where two shades come together can be aliased in one form or another (Aliasing is the way you can smooth out a jagged line by filling in between the stairsteps with an average of the two colors coming together). Some areas will be harder than others, especially where the stairstepping is extreme and on curved areas. Aliasing, however is the key to cleaner, more profesional visuals. For now I can save it here and go on to start the background which will complete the scene - see figure 3.

Starting the Background

The steps toward background completion are nearly identical to those discussed with creating the foreground image but with one small change - the colors I use in creating the background will be shades taken from the halfbright side of the palette. In doing this I will not have to worry about any of the colors from the foreground image possably matching and disappearing when placed onto the background. It also allows me to keep the background subdued, so that the viewers attention goes to the foreground image first, then scans around the picture. Once again we start out with a simple outline form, in this case the entryway to a castle with a winding staircase leading off to parts unknown. To attain proper proportion between the two images I included the initial outline of the foreground while drawing the background out - see figure 4. I not only had to take into account the light source from the foreground image (remember the lightning) but a much more subdued light source that would illuminate the entire background. I chose a central point straight up off the screen, somewhere on the ceiling of this place.

I used black to color over the mixed foreground outline, touched up the background outline where lines were broken, then filled the enclosed outline areas with solid colors of varying shades from the halfbright side of the palette to give a slightly more dimensional look and a good feel for the lighting, giving me good indication of where to place highlight and shadow - see figure 5. Additions of some more details, skull over archway, more defined shadows, highlights, cracks and pits in the walls and staircase, pretty much completed the background picture - see figure 6.

PAINTS

by Christopher Roy

Combining the Two Images

Having the background and foreground images each at a stage where I can now combine them, I load the background into the main screen, swap to the spare screen with a quick press of the 'J' key, and load in the foreground image. Having left the background the default, black, Color 0 value - which happens to be transparent in DeluxePaint - I could easily grab the foreground image as a brush. I swap back to the background screen, but before I can successfully combine the two, I align the brush where I want it to be and hit the right mouse button, leaving a black matte of the brush image knocked out of the background picture.

Having used some black areas in the initial foreground drawing some small areas of background showed through inside the matte outline, these are filled in or

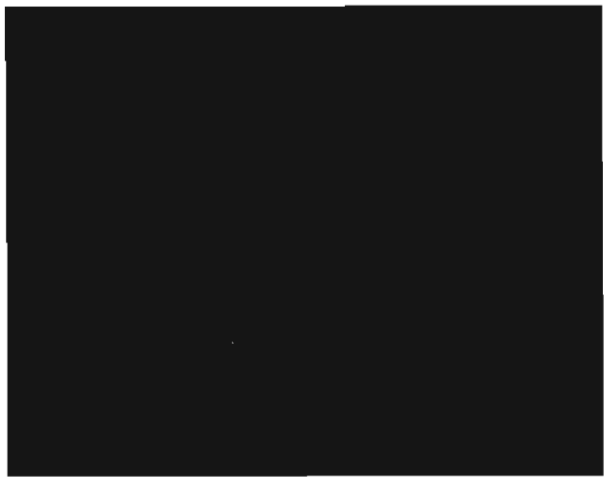


Figure 1.

palette I had previously mixed, and with slightly erratic mouse inputs I draw the inital form for the bolts a single pixel line thickness where I want them, coming from his hand. I then cut just the white lines out as a brush, pick a shade of gold from the palette and hit the "o" key, which is the keyboard equivalent for the brush outline mode from the pulldown menus. I place an outline of that color around the white. I repeat this about five times with progressively darker values of gold, going into the halfbright side of the palette if necessary. When I have the glow effect I want I simply carry that brush to the main screen and drop it into place, aligning it with the hand. This creates the effect that's pictured in the finished visual, very quickly and easily.

One quick note on using the outline mode however. Try to keep the shades of color you are outlining within the same general color range as your background, you'll achieve a much more realistic effect. Using this outline feature is also a great way to alias an object by picking a color value between the background and the image you want to smooth and outlining the object with that color.

Figure 3.

colored over so that the matte is a solid black image - see figure 7 - I then go back to the spare screen, grab the foreground image as a brush once again, this time swapping to the background, align the image over the matte and hit the left mouse button, popping it into place on top of its designated area. Simply 'undo' the image, if it dosen't align the first time, and try again; eventually it will line up perfectly.

See Figure 8. "The Wizard" - the completed pic.

All that's left to do now is to put in whatever other details I want to add. One very important detail is the lightning bolts emanating from his hand. They were easily created as follows. . . I have my finished picture loaded on the main screen, I then reload into the spare screen my completed foreground image with the default Color 0 background. I pick the color white from the

Figure 2.

Two Other Halfbright Examples

There are two other important example pictures to show how halfbright can create instant effects for depth and shadowing for a much more realistic image. The first ("Amiga Video") is an example of creating a drop shadow of a foreground subject, in this case the video camera, which was easily done by creating and saving the camera as a separate image. I then grabbed it as a brush, selected halfbright mode from the pulldown menu, and stamped the resulting shadow over the background slightly off to the left, and down from where I wanted the full color image of the camera to be. Restoring the mode to matte, the full color brush could then be put in place. I then went to the smooth mode and simply wiped over

the edge of the shadowed area to blend it into the background.

The second example (Making the Deadline) shows an example of creating a reflective surface for your image to sit on. It was easily created in halfbright by once again creating the images in separate pieces so that they could later be composited. The Amiga chassis was rendered first. I then grabbed it as a brush, inverted it along its vertical axis and aligned the top of that brush to the bottom of the existing image, stamping it in place. Keeping the currently inverted brush, I went to the halfbright mode setting, aligned it over the inverted image I just created and stamped it down, creating an instant reflective surface.

The same technique was used on all the other objects in the visual. If you have enough colors left in your palette, the inverted reflection can be recolored by hand or possibly by using the tint mode, to simulate a reflection in a colored surface.

Smoothing or not smoothing this halfbright image will give you either a dull or shiny appearance. I did an example of a car which used even another type of reflective surface approach, that of simulated water. In this case the initial car image was once again grabbed as a brush and inverted along its vertical axis, as was the case for the Making the Deadline picture, and stamped it down below the existing car picture. Maintaining my current brush shape (the inverted car) I went into halfbright, stamping the resulting shadow over the inverted car image. In this case, however, I wanted the car to appear to be reflecting into a shallow area of water that it was sitting in. This effect is very easily achieved utilizing the smear mode in DeluxePaint. I do this by selecting smear, activating the straight line function and picking the third largest default dot brush. Starting just outside and nearest to the top of the inverted halfbright image, I draw lines across the image at slight angles (somewhere around 60 degrees) being sure to alternate sides with every other line drawn. What this will do is pull the image where the line was drawn, in the direction that the line was drawn creating a rippled surface very much like a disturbed water puddle makes. I then use 'smooth', to go over the image I've just smeared, further enhancing the effect by softening all of the edges.

Things to remember when using halfbright

There are a few things to keep in mind when utilizing the halfbright capabilities of DeluxePaint III. One, when your going to use halfbright to create a drop shadow effect onto a background, the background you're using must be created with the first 32 colors in the halfbright palette. Remember you can't halfbright a color that's already from the halfbright side of the palette. This logic also goes for creating a reflection of an object, as discussed in this article (Making the Deadline, and the car), the initial objects must be created in the first 32 colors of the palette for you to be able to halfbright them afterwards. Remember that going into the matte mode will transform your current halfbright brush back to its original form, and going to color mode will only give your brush a solid filled shape of the current color selected on the palette. (athough this may be advisable for certain effects).

The only drawback I can see about the halfbright mode is that in many of the cases that I've used it, I don't get a true 32 different colors from my original 32 colors. It seems that when you create shades on your palette or several shades of colors, some of the resulting half intensities of those shades can actually match some of the original 32 colors. It seems to directly correspond to the number of colors in your original mix, and seems to only match some of the lower intensity originals (maybe one or two per color blend).

Halfbright is one of my favorite modes to create in because of the various instant effects that it can create. In the sample "The Wizard," I use it more for subduing and aliasing; in "Amiga Video," I use it to create instant dimension not otherwise possible with the standard 32 colors, and in "Making the Deadline", I use it as a quick and easy way to create reflections, smooth or sharp. I hope these examples will give you some ideas for further enhancing your own visuals.

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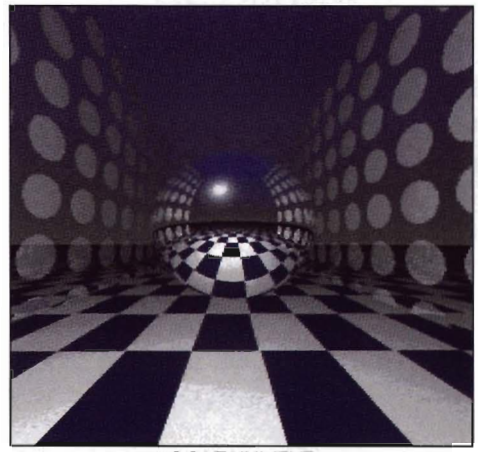
On Disk Continued

RayTraces

Two sample raytraces (Containment and Ghostball) are included on disk to preview Ken Goerke who will be writing on Ray Tracing next issue.
ON DISK

Dome

This was a very old raytrace, dating back to the original raytracing programs that were ported to the Amiga from the VAC. This image was created by actually hacking the program, tricking it to create a sliced sphere!
ON DISK



CONTAINMENT

BoingApeel

This interesting picture was created with a combination of scanning and editing with Deluxe Photolab. This image was also created here in GRAF/x's studios.
ON DISK

Animation Utilities

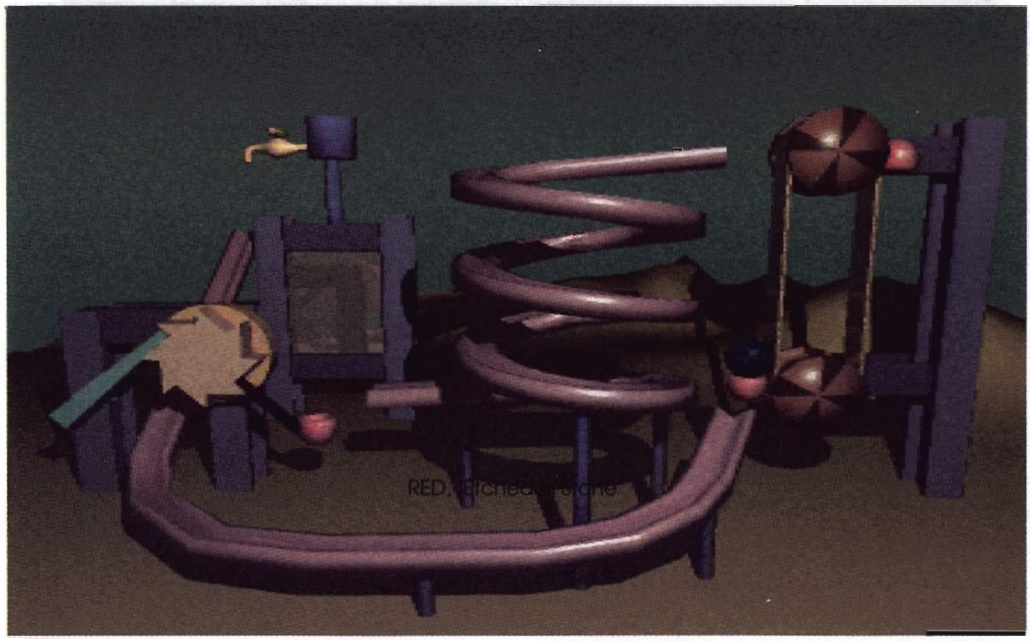
These are a series of valuable utilities which are used in editing, and creating animations. They include SplitAnim, BuildAnim and Combine... all of which are explained in detail on page36. ON DISK

DeluxeVideoIII Animation

This animation demonstrated the multibrush and animated brush prowess of Deluxe Video III. This animation is complete with a timed musical score, animated brushes and more. In addition, you can load and use the animated brushes in your own animations!
ON DISK

Special Bonus Disk

Because this is the Premier Issue of GRAF/x Magazine, we have included a FREE Bonus disk. We hope you enjoy it.



Trackball • The Animation

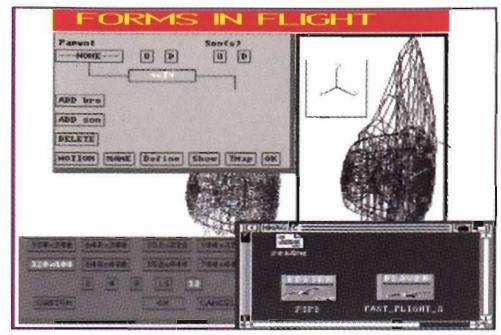
One of the more talented animators in the Amiga community is Eric Fleischer, also known as Dr. Gandalf. He has allowed us to offer you the ***Trackball*** *animation. It is complete with multiple digitized sounds, all flawlessly timed to the amazingly smooth animation. We hope you enjoy. ON DISK*

GRAPHICS OVERVIEW

Continued From Page 63

Video Effects 3D (version 2.0)
Innovision Technology
P.O. Box 743
Hayward, California 94543
415-538-8355
Retail: $199.00

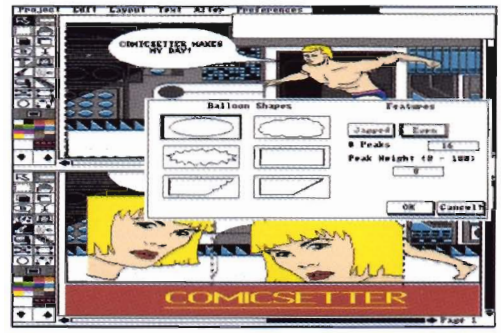
This is version 2.0 of a product that I consider to be one of the finest Amiga professional animation tools, and it is significantly faster in operation and image generation then 1.0.



Forms in Flight 2.0

Forms in Flight 2.0
Micro Magic
261 Hamilton Ave. #320C
Palo Alto, CA 94301
415-327-9107
Retail: $119.00

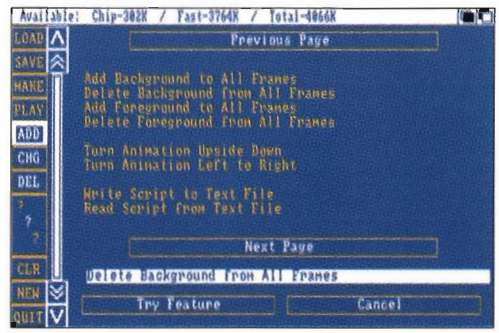
Many animation and rendering programs have hit the Amiga market in the last few months, and this one frequently gets overlooked, probably because it is fairly complex to operate. It's results, however, are very nice.



Comic Setter

Comic Setter
Gold Disk Inc.
PO Box 789
Streetsville
Mississauga, Ontario
Canada L5M 2C2
416-828-5636

I first saw the Beta of this package at AmiExpo in 1988. It was so complex that nobody could do a demo of it (the developer never showed up).Gold Disk, of course, is well known for its dedicated Desktop Publishing wares for the Amiga, so I was confident of a quality product.



PageFlipper Plus F/X

PageFlipper Plus F/X
Mindware International, Inc.
230 Bayview Dr., Suite 1
Barrie, Ontario, Canada L4N 4Y8
705-737-5998

This software is the professional version of Mindware's "PageFlipper" program which I saw at AmiExpo in 1988. The original "PageFlipper" software was one of the first Amiga software creations that allowed you to flip frames of an animation.

PageRender3D

PageRender3D
Mindware International, Inc.
Suggested Retail Price: $149.00

Mindware has jumped into the 3D arena with both feet, with the introduction of this astounding product. Some of the things that PageRender 3D does are not only new to the Amiga, but new to computer graphics in general. Mindware sees PageRender 3D as part of a larger total package of Amiga-specific animation products. They have other modules in development that address animation utilities, soundtrack editing, and scripting.

Express Paint

ExpressPaint 3.0
By Stephen Vermeulen
Distributed by OXXI

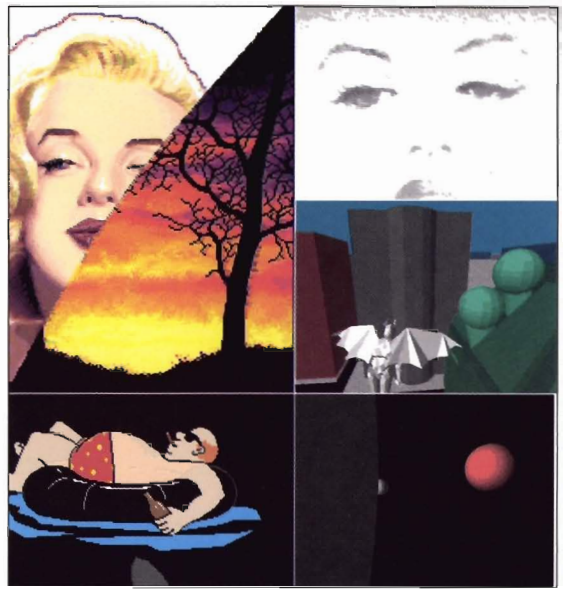
ExpressPaint is the best kept Amiga secret in the electronic painting category. This is true because of its dual nature as a painting program and a desktop publishing accessory on one disk. To be sure, future upgrades of this software may opt for one realm over the other, but for now, it services both arenas. It is a multifaceted and varied painting program.

Now Available...

Disks Inside

ANIMATION

Amiga Animation • A Limited Edition



Animation Program Included so you can try your hand at animation!

Covered This Issue

- *Deluxe Paint III*
- *Videoscape-3D*
- *Turbo Silver*
- *Framegrabber*
- *Fantavision*
- *Sculpt/Elan*
- *Zoetrope*
- *Interfonts and more*

About This Special Issue
What you get, and how to get more information about the products mentioned.

Taking a Good Look at Amiga Animation
by Jay Gross
Overview of Amiga Animation Software, Hardware, techniques and expectations for the future. News about new developments and new products and improvements to come.

MakeAnim Program
Get in on the act, and make your own animations, even if you don't have one of the commercial animation programs, yet. Here is MakeAnim, a freely distributable program for putting your own ANIM format files together from pictures. Complete and working, on the disk, along with a how-to file to tell you how to use it.

Product Review: Zoëtrope
by Mike Hubbartt
Here's a look at one of the newer Amiga animation products on the market. Zoëtrope. It has serious limitations for serious video enthusiasts, but if you just want to make things move for the fun of it, it fills the bill.

ZoeAx2.RIF Animation
This neat animation gives you some idea about what you can do with Zoetrope in the way of moving titles around on the Amiga screen. Animation by Mike Hubbartt.

Frogmovie Animation
First thing you notice about this neat tree frog is his eyes. Then his lunch flies into the picture and kerpop! Yummy.

DeluxePaint III: The Next Generation
by Mike Hubbartt
Electronic Arts' new upgrade to DeluxePaint adds animation to the world of Amiga paint programs. DeluxePaint III makes it easy by keeping track of the frames for you.

Example Animation: DeluxePaint III
by Mike Hubbartt
This is an example of what you can do quickly and easily with DeluxePaint III and a little poring through the manual to see how it works.

AX Animation
The car on the cover of Ami Exchange Magazine Issue 2.2 springs to life, and a few other rather startling things occur, as well. This animation was created with DeluxePaint III from digitized images (and a little tinkering here and there) by Shamms Mortier.

Product Review: Fantavision
by Brian Roberts
Brian explains a little about what was involved in creating the NCR Fantavision animations.

Marilyn - Fantavision Style
A colorized Marilyn Monroe animation done with Fantavision.

Objects
This is a whole subdirectory of objects for your animating and raytracing pleasure. The first batch goes with the Videoscape tutorial. Next is an object for raytracing in Sculpt-3D. It is: HangGlider.scene

3D Font
Some of the most difficult to make objects in raytracing packages are alphabet characters. They're complicated and time-consuming. Here for your raytracing pleasure is a set of capitals in a 3-D font named AX.Bold. It's in Turbo Silver 3.0 format.

Turbo Silver: Animation Made Simple
by Clyde R. Wallace
A walk-through tutorial on how to do an animation with Turbo Silver 3.0 (and the new "SV" update) from Impulse, Inc. What to watch out for, and how to get the most out of the time you invest.

Spacial FlyBy: A Turbo Silver Animation
by Clyde R. Wallace
The animation, *Spacial FlyBy* depicts a planetary system in 3-D space, through which the viewer (that's you!) moves, taking in the sights as you go. This is the tutorial's demonstrtian animation.

Marilyn
By Clyde R. Wallace
This is an explaination of how the Marilyn animation was created. This was not just your average frame grabbed animation. Several consideration were kept in mind when creating the animation. For instance, the animation was designed to have many frames that would create a long running animation in a shart amount of memory.

Marilyn The Animation
By Clyde R. Wallace
This is the accompanying animation from the *Marilyn* article. Clearly, Norma Jean and the Amiga belong together.

Where to Get More Information
This is a list of company names, addresses, and telephone numbers for the products mentioned in this issue.

Selling Your Animations
by Jay Gross
After you get all the hardware and all the software you need, and after you gain all the experience and skills you need to do animation on the Amiga, what then? You don't have to sell your animations, of course, but if you want to, here are some suggestions for marketing your work, your services, or your animated features.

Get Set for MovieSetter
by Chris Bailey
Gold Disk's animation entry on the Amiga scene is MovieSetter, one of the so-called sprite-based animation products. Here's an article on the program, including a discussion of how the demostration animation was produced.

MovieSetter Animation: AX Movie
by Chris Bailey
This MovieSetter animation shows off the smoothness of MovieSetter's animations. In only about 60 kilabytes of disk space, and within the memory constraints of a standard, 512-K Amiga, it produces an animation lasting a full 42 seconds. The program supports sampled sounds, too, but they couldn't fit into a 512-K Amiga on top of this slick animation, so the saunds have been omitted from this demanstration.

You can order this Special Issue with your Order Form, or by calling 1-800-284-3624.

Coming To A Screen Near You.

If you're ready to become your own studio producer, there's only one desktop video system that will bring NTSC and S-VHS to your Amiga's screen. The Scanlock system by VidTech. Other systems give you a genlock that's "either-or." They either support NTSC or S-VHS. But not both.

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With Scanlock, you get two genlocks for the price of one. So you can migrate from NTSC to the newer S-VHS format without investing in another system. We also offer a Scanlock model that is compatible with the International PAL TV format, including its new S-VHS version.

Scanlock's dual-genlock system gives you broadcast-quality video at consumer prices. And our system offers all the bells and whistles, including front-panel fingertip controls, multiple monitor connections for viewing and editing, and independent fade controls for both reference and Amiga videos. If your Amiga is supporting a load of peripherals, we provide a connection that lets you use an optional external power supply.

Scanlock is a breeze to use. A "glitch-free" vertical interval switch lets you insert, reverse and remove reference video and Amiga graphics at the touch of a finger. And you can switch between NTSC, S-VHS and analog RGB formats without moving cable connectors. When you're done editing, you can resume normal Amiga operation with the flip of a switch.

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So if you're ready to become your own producer, choose the desktop video system that doesn't lock you into one genlock — the Scanlock system by VidTech. Coming to a screen near you.

Call or write us today: VidTech International, Inc., 2822 NW 79th Ave., Miami, Florida 33122. Telephone 800-727-2261 or 305-477-2228. Fax 305-591-1651. Prices:NTSC-$995, PAL-$1,095. Distributed by Southern Technologies, Dallas, Texas.

VidTech