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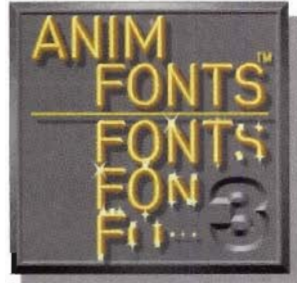
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*Video Toaster and ToasterCG are Registered Trademarks of NewTek Inc. TOASTER FONTS 1 requires 6.5 megs of Hard Drive storage and TOASTER FONTS 2 requires 6.1 megs of Hard Drive storage.

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January 1992



AVID
PUBLICATIONS
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Dealer Sales:

VERTICAL, Inc.
1-800-886-0048
International Periodical
Distributors (IPD)
1-800-999-1170

AVID is published 11 times/year
(monthly except July/Aug) by AVID
PUBLICATIONS, 21611A Stevens
Creek Blvd., Cupertino, CA 95014.
Subscription rate: 12 issues for \$36
Application to mail at second class
postage rates pending at Sunnyvale,
California.

POSTMASTER: Send address changes
to:

AVID PUBLICATIONS
415-112 N. Mary Avenue #207
Sunnyvale, CA 94086

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Bars 'N' Tone

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A few weeks ago I stumbled across an interesting story in the local newspaper that has tremendous implications for AVID readers and desktop video professionals in general. Apparently, a large New York-based cable company will soon begin delivering to its subscribers a much expanded offering of cable TV channels. Rather than the 30 to 60 channels that are the norm for most cable providers, these subscribers will have as many as 150 channels of programming from which to choose from (150 channels, Wow!). The article went on to state that the technology that makes this possible is fairly

straightforward and that this type of expanded cable TV service should become common across the United States over the next two to three years. The author concluded the article by projecting that one of cable industries biggest concerns would be where to find the programming to fill all 150 channels.

Most of us have had ideas for TV programs, but with a limited number of available channels, unless our idea had great economic potential, it would be most unlikely that it would ever get air time. It is a sad fact of broadcasting life that most metropolitan cable providers

are forced to deny access to programs of limited commercial potential. With 150 channels, however, the doors would swing wide open for a veritable video smorgasboard of diverse programming (that's almost a scary thought).

Suddenly, my long-time dream to watch SVTV has a chance to become a reality. (For those who are interested, SVTV (Silicon Valley TeleVision) is my idea for a cable channel that focuses on high technology. I've long believed that there should be a Bay Area channel that runs nothing but technology-oriented programming 24 hours a day. With the powerful combination of the Amiga's low-cost video production capabilities and 150 available cable channels, SVTV will have much greater chance of getting out of my dream waves and onto the air waves).

It will be very interesting to watch how this development proceeds. If this kind of expanded cable service does indeed become widely available, the demand for the elusive combination of high-quality yet low-budget programming will mush-

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room. Who better to meet this demand than the AVID readers who are using their Amigas in precisely this type of production environment? So, keep sharpening those video production skills. The time may soon arrive when they will be in even greater demand.

Low Cost Amiga-Video

Several readers have brought to my attention my increasing tendency to focus on the high-end of Amiga video to the detriment of those who choose to continue producing excellent videographics with an Amiga 500, a genlock and Deluxe Paint. I must admit that my own interests do tend to lean more towards the leading edge of Amiga-Video technology. Personally, I am most fascinated by the Amiga's encroachment on the traditional broadcast market. It is Impulse's Firecracker 24, and GVP's Impact Vision 24 and, most of all, NewTek's Video Toaster that are propelling the Amiga into the high-visibility broadcast environment.

I love to hear stories about how Amiga videographers use these devices to produce high-quality videographics at a fraction of the traditional cost. For example, I recently had the great opportunity to listen to Joe Conti, of Apogee Magic, discuss how he had recently used the Video Toaster to produce network quality graphics. Joe explained how a Hollywood producer had been trying to get a 3-D graphic segment created at a reasonable cost. The project was bid on by several graphic/special effects houses and the cheapest bid was \$40,000. Because this was far too expensive for his budget, the producer kept trying to come up with a more reasonable price. Finally, someone told him about Joe and his Amiga/Toaster system. Joe was given the job and the producer was more than pleased with the results. He was also more than pleased with Joe's bid: \$10,000. Joe also told how he and LightWave 3D programmer, Allen Hastings, were asked to create a rush 3D graphic for the recently released Star Trek VI movie. The director was so impressed with the quality of their graphic that he insisted on moving it from monitor to monitor so that it would be in the background of as many shots as possible. Later, the director

confronted the movie's art director and asked him why the rest of the graphics (none of which were created with the Toaster and had taken months to produce), did not look as good as the Conti & Hastings graphic which had only taken two days?

As fascinating as Conti's accounts are, I realize that there are many AVID readers who can only dream of landing a \$10,000 graphic job. I also realize that while Hollywood may be raving about the relatively low cost of a NewTek Video Toaster System, the entry price may still be too steep for the part-time Amiga videographer who's worrying about buying shoes for the kids. Sure, to the guy who's used to paying for a Wavefront or a Harry, the cost of an accelerated Toaster system and a single-frame-accurate VTR may be peanuts. But, we're still talking about a minimum of ten grand and, inflation notwithstanding, that is still a lot of money.

That leads us back to the roots of Amiga videographics. I am still regularly amazed at the quality of work done with the simplest of Amiga configurations. An individual with the aforementioned Amiga 500, genlock and Deluxe Paint still has a tremendous amount of videographic capability on the desktop. With Commodore's recent price decrease for the Amiga 500, it is now possible to put together an entry level for under \$1500. I recently priced such a system at my local Amiga dealer and this is what I came up with:

Hardware

Amiga 500 (1 MB) RAM
External Floppy Drive
RGB/Composite color monitor
Genlock
Total Price-\$1,155

Software

Deluxe Paint IV
Kara Fonts (2 sets)
Pro Fills
Public Domain utilities
Total Price-\$275

So, for a grand total of \$1430, I would have what I consider a minimum con-

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figuration for creating acceptable quality videographics. Add in another couple thousand dollars worth of video equipment and I could go into the video business. Would I have everything I need? No, but I would have enough so that I could start making some money to pay for the additional hardware and software goodies that would make my life easier. Stuff like a hard drive, even more memory, CG software, a sound sampler; add-ons that could easily double my investment. But, I'd pay for them with the proceeds from my special event production business. Or, produce and market a special interest video and really clean up. I know this is all easier said than done. But the point is, the initial cost of the appropriate computer hardware and software is no longer the economic obstacle it was just a few short years ago.

That is why AVID will continue to support the shoe-string videographer by running "how-to" articles on graphic techniques for Deluxe Paint, Imagine, DCTV, and other popular low-cost Amiga graphic programs.

PRO FILLS 2 (the sequel)

Well over a year ago I wrote about my discovery of a wonderful and inexpensive video background generator called Pro Fills from JEK GRAPHICS. I can still remember how impressed I was with the value and functionality of this program. I wanted to let as many people as possible know about Pro Fills so I decided to run a free full-page ad for the product (see July/August 1990). I'd like to think that AVID was instrumental in making Pro Fills the success that it is today. But, the truth is, Pro Fills would have made it with or without our support.

Recently, JEK GRAPHICS completed an update to Pro Fills that makes it even easier to use. In addition to several new patterns, palettes and textures, Pro Fills 2 now includes an intuitive graphical interface called the Screen Generator. With the Screen Generator it is no longer necessary to use another graphic program to load and display the Pro Fills textures, palettes and patterns. And, the Screen Generator is FAST too! It takes about 2 seconds to render any patterned background. Pro Fills 2 also includes a special

set of palettes specifically designed for the needs of the Amiga videographer. The best part about Pro Fills 2 is the price. New users can purchase it for less than 50 bucks and registered owners can upgrade for only 20 dollars (plus \$2 for S&H). For more information about Pro Fills 2 visit your local Amiga dealer or for more information (upgrades) contact JEK GRAPHICS at 12103 S. Brookhurst St. E-125, Garden Grove, CA 92642-3065 Telephone: (714) 530-7603.

Another Pleasant Surprise

I have mentioned before how much I enjoy getting review copies of the latest Amiga-video hardware and software. I also get a lot of videotapes of reader's productions. Sometimes I get so many that it's a couple of weeks before I get around to actually watching them. Such was the case with a tape I recently received from Amiga Friends, a graphic-oriented Amiga user group from Southern California. When I finally got around to viewing the tape, I enjoyed it so much that I regretted not having watched it sooner. This 40 minute long production profiles the work of some of the members of the extremely talented Amiga Friends user group. This tape contains dozens of "really cool" graphics created with everything from Dpaint to DCTV to the Toaster, but what really sets it apart are the interviews with artists who talk about their work and their reasons for using the Amiga. In my opinion, the rights to this tape should be picked up by Commodore and used for marketing purposes (of course, we all know how likely that is to happen). This tape could sell a lot of Amigas. The tape was originally created for club distribution only, but recently Amiga Friends decided to make it available to anyone who wanted a copy. They're selling the tape for only \$14.95 (plus \$3 for S&H). For your copy send a check to: Amiga Friends, 3367 Wisteria Circle, Costa Mesa, CA 92626.

NewTek News

I recently had the opportunity to drop in on the folks at NewTek. The occasion was their annual Christmas party and, while Topeka, Kansas may not be the first place you think of as the party capital of USA, for one night in Decem-

ber it held its own. I was somewhat disappointed that Toaster System 2.0 was not quite finished, but I could see that they were very, very close to completion. I spent several hours talking with former AVID columnist (and good friend) James Hebert who is responsible for the completely re-worked Video Toaster manual. He was able to provide me with some insight on how things work at NewTek and, coupled with my own personal observations, I've concluded that we will be seeing some great things from this company in the not-so-distant future.

I was very impressed with the dynamic, productive and just plain fun work environment that Tim Jenison and Paul Montgomery have created at NewTek. It was easy to see that the NewTek employees really enjoyed working there. One telling example illustrates this: I arrived late Friday afternoon and after getting a great tour of the company (thanks Donetta) I joined a group of about thirty employees and NewTek guests who were preparing to go out to dinner. As you might imagine, coordinating this group was a challenge. So, by the time we finally sat down to eat it was close to 9:00 PM. The dinner was quite a spectacle and I even learned a new game (bunny-bunny-bunny-bunny-bunny).

Anyway, by the time we finished up, it was close to 11:00 PM. By this time I was wiped out and was looking forward to getting back to the hotel. We drove back to the NewTek where I thought people would get in their own cars and drive home. But, no. Some of these people wanted to go back inside and work. Here it was 11 o'clock on a Friday night and the NewTekians were thinking about work! I heard later that many of them were there until the wee hours of the morning smashing the last bugs, making the other late-minute corrections and getting 2.0 ready to ship. When I wandered in about 11 o'clock the next morning (Saturday), many of the midnight oil burners were already back (or maybe they never left). I was impressed.

Maybe that's why it's almost not surprising that the Video Toaster was honored in Discover Magazine (January 1992 issue) as one of the top 50 science stories

of 1991. Part of the full-page article states: *The Toaster...was unquestionably the computer phenomenon of the year in 1991. Without the benefit of big-name backers, venture capital, or even advertising, it (the Toaster) has been hailed as personal computing's third revolutionary product (the first two being Visicalc, the first spreadsheet, in 1979, and the Macintosh in 1984). Congratulations NewTek!*

Call to Organize!

I recently received a letter from AVID subscriber Michael Meshew who writes: "Dear Jim...we have recently formed a Video Toaster user group called T.O.O.L. (Toaster Owners and Operators of Louisville) in Louisville, Kentucky...because the Toaster has so many areas to learn, it takes a group to be able to demonstrate all of its features. We also serve to answer many of the questions a new Toaster user may have...we are in the process of setting up a BBS for further Toaster support.

Why not establish a list of other Video Toaster user groups so that we can get in contact with each other and discuss ideas, problems, strategies and information...we are very much dedicated to the Toaster and any help you can provide will be much appreciated."

Michael Meshew

T.O.O.L.

4556 South Third Street

Louisville, KY 40214

(502) 363-2986

I think this is a great idea. But, I'd also like to start a list of not only Toaster-specific user groups, but general Amiga-Video groups, as well. If your user group has a Video or Graphics SIG (Special Interest Group) or a Toaster-specific SIG, send your group name and address and we'll publish the list periodically in AVID. Make sure to include the group name, mailing address, telephone number and contact person, and note if it is a general Amiga-Video or Toaster-Specific user group.

Well, there's lots of reading to do, so get cracking!

Jim Plant

Editor/Publisher

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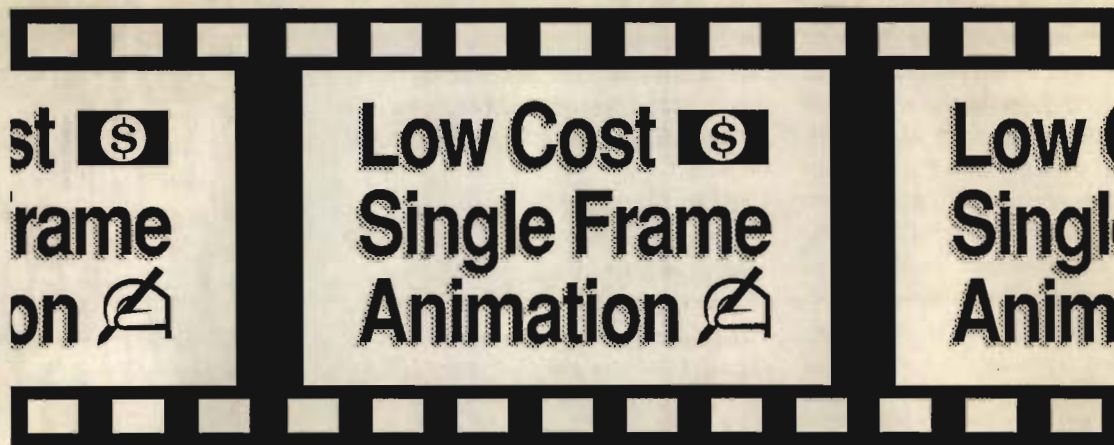
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I'm going to describe a method of single-frame recording which I think you may find to be a legitimate alternative to the expensive hardware costs of single-frame video recording. I've used this method to create an 8.5 minute animated film which has been doing pretty well at various national film/video festivals. If you are interested in a way to get your animations out to a broadcast quality medium for a hardware cost of around \$500 or less, read on.

Since I am an independent artist, I lack the funds to build a full blown system for single-frame video animation. Presently, the cheapest video deck that can do true single-frame accurate recording is a deck that sells for about \$6000 (with TimeCode options). The cheapest software controller for this deck would be the Personal SFC for \$425. Together, this is way beyond the range of many individual artists.

A primitive work-around is to compile anims on your Amiga, play them back through an encoder onto a video recorder in lots of chunks, either taking your best shot at pausing the deck on and off to make seamless 'edits' (not very likely), or to rent time on a video editing system somewhere, in order to edit all these 'chunks' together. In this case, you

are at the mercy of the quality of your encoder/genlock as well as the quality of the VCR you are recording on. This is fine for playing around or testing motion, but for any large scale or serious projects, it's rather futile.

So.... my solution? GO TO FILM!!!! Yes, film. 16mm color negative will give you better color saturation, better contrast ratio, better gamma levels, better resolution, etc., than ANY video recorder or encoder can provide. The only competition would be if you could use the very high-end stuff, like 1" or D2, and even that would only be in terms of resolution, NOT color saturation or contrast. As you may know, most quality television commercial productions are shot in film for that reason. (35mm AND 16mm). And what's more, there's nothing quite as exciting as when you get your film back from processing and project it on a 12 FOOT WIDE SCREEN!

I am NOT talking about using a 'film recorder'. Those too, are very expensive devices. I'm talking about setting up a 16mm movie camera with a nice lens in front of your RGB monitor in a darkened room.

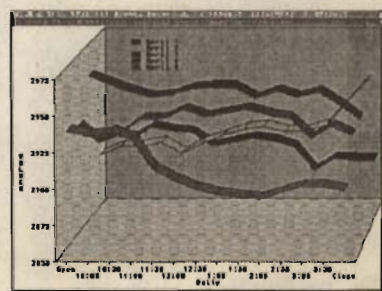
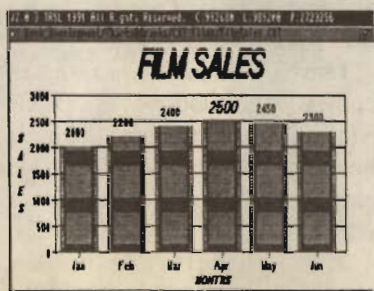
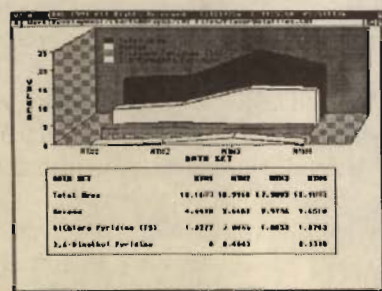
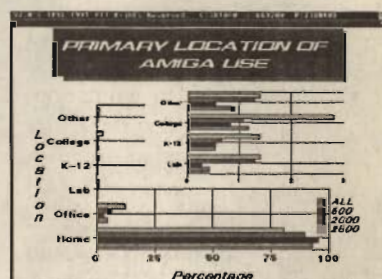
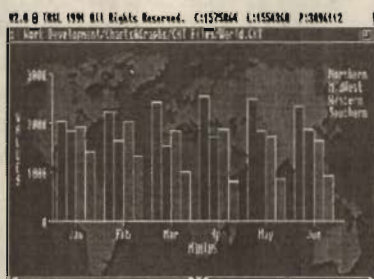
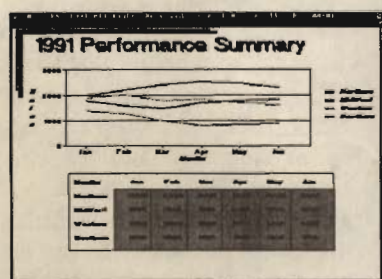
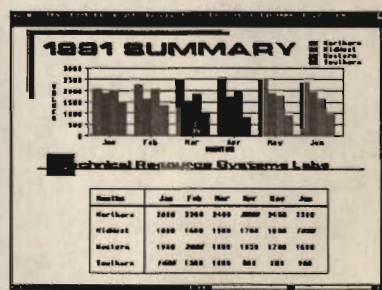
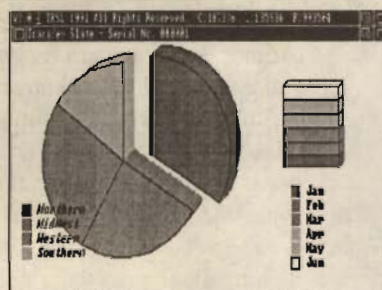
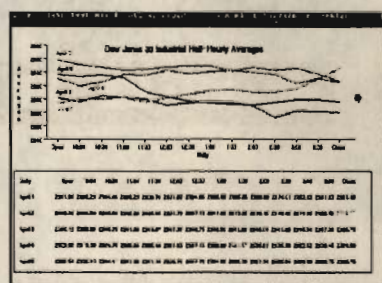
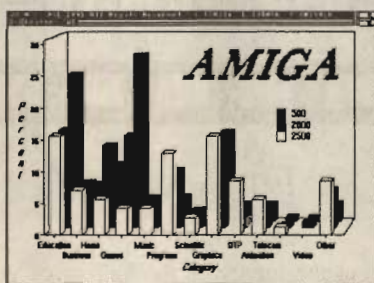
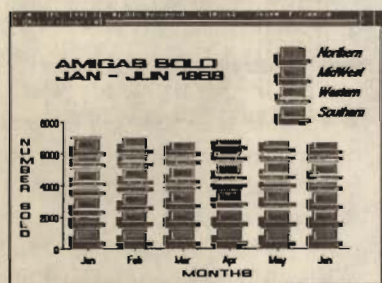
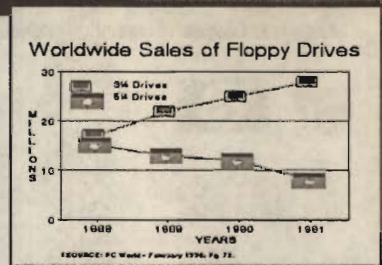
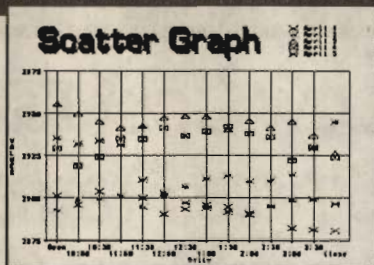
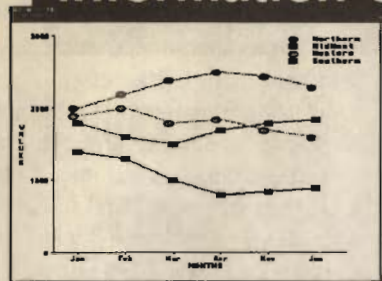
Next question: Isn't film ridiculously expensive? Answer: NO. Three minutes of film stock is by far more expensive

than three minutes of video tape, BUT 16mm film equipment is CHEAP compared to video equipment. You can buy a used 16mm Bolex camera for as low as 250 dollars (Though I have known people to buy Bolex cameras for as little as \$25 at yard sales or flea markets). These cameras have been around since the 1940s and were the predecessor to the 8mm home-movie camera, so you might even ask your grandparents if there's one in the attic. If you buy a new Bolex from a commercial dealer, you'll pay more like \$1500. (Though some retailers still carry older non-reflex versions for as low as \$250). But that's still cheap compared to video equipment. Besides, you can run around and shoot live-action movies with the thing, too! A Bolex can hold a 100 footroll of film internally (which is about three minutes worth). A 100 foot roll of Kodak color negative film costs about 25 dollars. Add another 30 dollars to process AND get a positive print.

Obviously, once you have your animation on film, you can get it transferred to video at various levels of quality. Do it at your local video store for 20 bucks or so, or pay a film/video lab to professionally transfer it to the video format of your choice with a flying-spot laser system such as a Rank-Cintel. Doing it this way

Charts&Graphs

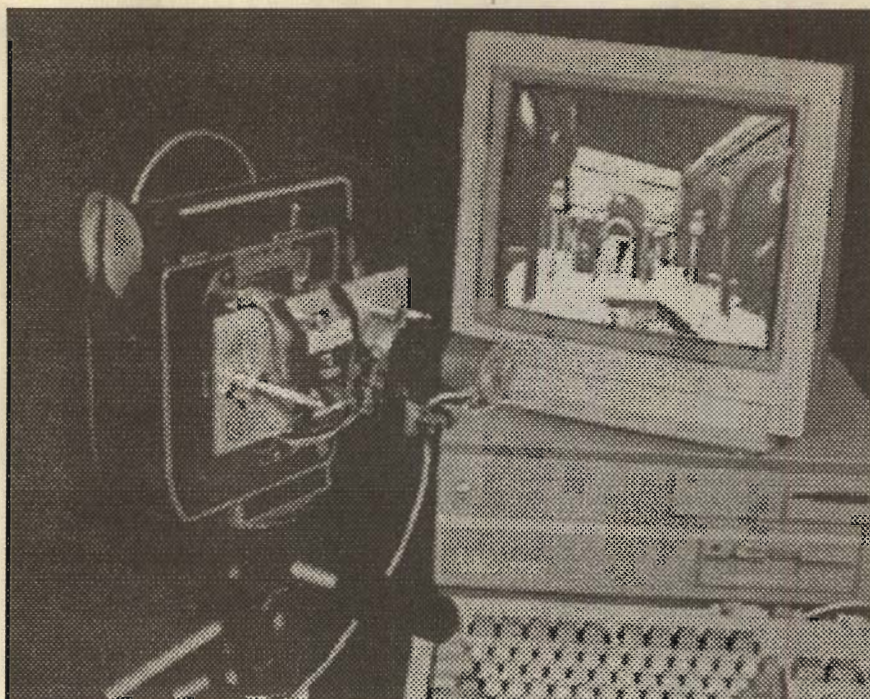
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will make it look like you mastered on 1" or D2! Another advantage to note is that color negative film has a huge latitude for exposure and color-correction when the lab prints it for you. Also, film has a longer shelf-life than video tape. Imagine the awful feeling one gets in the gut when you look at the video tape that the computer spent days rendering to, and there's a big 'drop-out' right in the middle of it. This will NEVER happen to film.

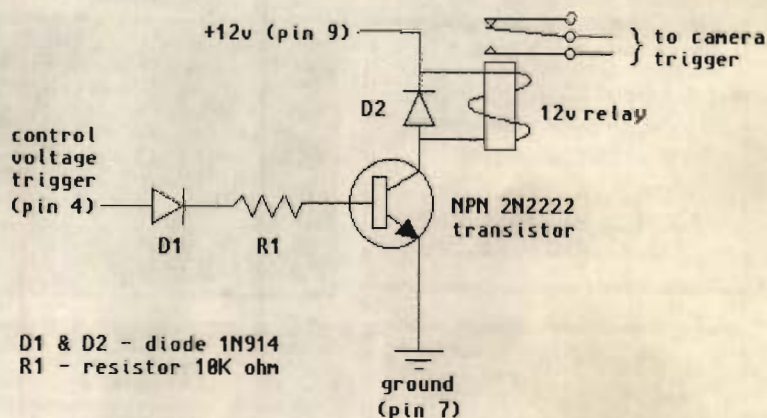
This method relies on only two things for 'top' quality. The first is the relative quality of your RGB display. This would, of course, include display boards such as DCTV, HAM-E, Firecracker 24, and theToaster. The other thing would be to have a good, sharp lens on your camera. Most Bolex cameras have a nice set of lenses. (If you look for a used package, make sure it has a lens or lenses. If not, you could wind up paying just as much or more than you paid for the camera to buy an individual lens). A 25mm lens is the 'standard' focal length lens for 16mm. A 50mm is good for shooting your monitor because it will help 'flatten' out the curvature of the screen. Avoid glare and reflections by shrouding the camera/monitor set-up with black-out cloth, or

just render during the night and go to sleep happy. Since the camera and film just sits still if you interrupt the process for any reason, you'll be ready to pick right up again at any time. With video, you have to always rely on time-code

accuracy, and the deck has to pause and search, and do pre-rolls.

Here's what I set up: I have written an ARexx script that runs as a background task while Imagine is busy rendering frames. After waiting an interval, estimating the length it takes to render each frame, the ARexx script checks to see if the pic file exists yet, and if so, uses a display program to bring the pic up on screen. It then sends a message to the serial port, which sends one of the pins high, thus triggering a relay I wired up using Radio Shack parts, which in turn triggers the motor drive attached to the Bolex to shoot 1 or 2 frames (or more, depending). The ARexx script then systematically deletes the pic file in order to avoid filling up my measly 50MB drive. A variable is included in the script if I don't want files deleted. When the script is first executed, it prompts you for seven different variables. I chose to have the script perform this with individual "say" and "pull" commands for each one. This way I never forget what the purpose of each is. You could choose to use the "parse arg" command to include all seven variables on the opening command line.

Notice that the ARexx script looks for 'pic.0002' when it is preparing to



— shoot a frame of 'pic.0001' and so on. This is because Imagine actually begins writing the pic files to disk while it is rendering it. If the ARexx script checked if 'pic.0001' exists and immediately tried to display it, it would fail because the file is only partly complete. This way, if checking for the existence of 'pic.0002' gives a positive response, we know that 'pic.0001' has been completed.

At first, you should render one or more frames in Imagine in order to estimate the average time it will take for each frame to generate. The script prompts you for this information in order to set its 'wait' period. Since Imagine may take a little longer rendering one frame than it does others, there is also a built-in 'time expander' that waits extra ten-second intervals before checking again if the file exists. There is a prompt given that allows the user to determine how many times the script will check for the file before it will abort. Notice that you are also prompted for 'start' and 'end' frames. This way you could render frames 1 through 53 one night, and then pick up again at 54 the next.

One minor problem with the script is that it does not shoot the last frame it checks for. So, if you have a 400 frame animation to shoot, just 'tell' both the script and Imagine that there are 401 frames and it will work fine. Notice that the script executes a program called "show" in the C directory. In my case, this is SuperView 3.0 renamed as 'show' for convenience. One nice thing I found was that I can leave my screen-blanker running during the rendering process and when SuperView is activated it overrides the blanker to display the image, then the screen goes blank again. Also note that the path to the directory where I keep my Imagine files are permanently embedded in the script. Once you see how the script works, you should modify it to your own needs.

The Bolex has a 1:1 drive shaft on it for the use of animation motors. The film-advance mechanism is tied directly to this shaft. If it is turned slowly, the next frame will be moved into place and then exposed for however long it takes to get the shaft the rest of the way around. You

ARexx Script

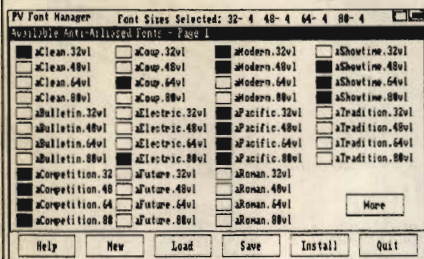
```
/* arexx render&display */

/* NOTE: this script assumes that 'show' (superview3.0 or equivalent */
/* renamed as 'show') exists in C: */
/* Path to Imagine directories may also have to be modified. */

address command
say "This will display and photograph each file after it has been rendered."
wait 2
say ""
say "Enter the name of the project directory. (.imp will be appended.)"
pull IMP
say ""
say "Enter the name of the pix directory. (.pix will be appended.)"
pull PIX
say ""
say "What frame number to start with?"
pull START
say ""
say "What frame number to end with?"
pull END
say ""
say "Enter estimated render time of each frame in seconds."
pull INTERVAL
say ""
say "Delete each frame after displayed? (type YES or NO.)"
pull DELETE
say ""
say "How many times to try finding queue file before failing?"
pull CHECK
say ""
NUMBER = END - START
I = START
do until I = NUMBER
  NEXT = I + 1
  if I < 10 then PRE = 000
  if I >= 10 then PRE = 00
  if I >= 100 then PRE = 0
  if NEXT < 10 then PRE2 = 000
  if NEXT >= 10 then PRE2 = 00
  if NEXT >= 100 then PRE2 = 0
  say "Next frame up: pic.'PRE'|"
  wait INTERVAL
  TRIES = 1
  CONFIRM = NO
  do until CONFIRM = YES
    if exists('work:imagine/projects/'IMP'.imp/'PIX'.pix/pic.'PRE2'|NEXT) = 1 then do
      CONFIRM = YES
      /* you could insert ifmodetv command here and show it instead */
      'run >nil: show -s10 work:imagine/projects/'IMP'.imp/'PIX'.pix/pic.'PRE'|I
      'wait 2'
      'copy rexx:trigger to prt:' /* small text file triggers camera */
      if DELETE = YES then do
        'wait 12'
        'delete work:imagine/projects/'IMP'.imp/'PIX'.pix/pic.'PRE'|I
      end
      ADD = I + 1
      I = ADD
    end
  else do
    AGAIN = TRIES + 1
    TRIES = AGAIN
    say "Queue file has not rendered yet. (pic.'PRE'|NEXT)"
    wait 10 /* this may be changed for longer intervals */
    if AGAIN = CHECK then do
      say "Frame has not been found after 'CHECK' tries."
      say "Quitting program due to error."
      exit
    end
  end
end
end
end
end
```



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can buy these motors made especially for Bolex, which usually have a shutter speed of 1/5 or 1/10 sec., or make one. I made one using a DC voltage-controlled gear-head motor cannibalized from one of those funny miniature satellite dishes. There are also surplus catalogs where they can be had for 20 bucks or so.

The optimum shutter speed for shooting an exposure of your monitor would be a full second. This allows the scan to complete a total of 60 times. It would also allow you to use a low ASA film stock which would result in a very fine-grain, high-res image. In the case of my home-built motor, I simply adjust the motor's speed control to expose each frame accordingly. I have used ranges from 1/5 sec to 1 full second exposure and enjoyed very good results.

The next step was the most problematic for a non-programmer such as myself: How do I send a signal out of a port to trigger the camera? I can do almost anything I've ever needed done with commercial programs such as AmigaDOS and ARExx, but none of these allowed me to specifically address the serial port for this purpose. If I had known a language such as C, I could have written a very simple program that the ARExx script would then execute. This seemed like an awfully big task for me since I wanted such a simple thing to happen. So, once again, I took a 'shortcut'. I figured if the CLI command "copy 'filename' to PRT:" would send a file to the printer port specified in Preferences, (whether a printer was actually attached or not) then I could find a pin that would be activated during the 'printing process'. (By the way, the file I use to send to PRT: is called "trigger" and it is simply a text file that has the word "trigger" written about 15 times).

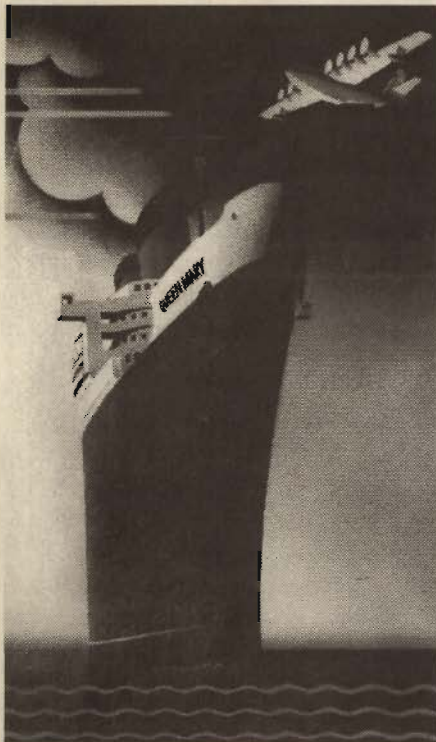
First, to simplify matters, I used the Preferences editor to assign the printer to the serial port. Sure enough, with a multi-tester in hand, I found that pin 4 (RTS - Request To Send) went high (about 10 volts) when the CLI command was used. This signal stayed consistent for the duration of the process of "printing", and then dropped back to a negative 10 volts when finished. This is a control voltage, how-

ever, and cannot trigger even a very small relay. This control voltage is used instead in conjunction with a transistor in a circuit I built. The control voltage triggers the transistor which acts as a switch. This in turn allows a current to flow to the relay. I used a diode in line with the control voltage in order to prevent the negative state of pin 4 to activate the circuit. A second diode is used to cross the leads of the relay to avoid any false triggering when the relay is opened. I also used pins 9 and 7 (+12v and GND, respectively) for powering the relay.

I do not pretend to be an electronics expert, and I did rely on advice from others to make sure this circuit design worked. If you are uninitiated in electronics and feel hesitant about this step of the process, I highly recommend you take a trip to your local Radio Shack and pick up some handbooks that they carry. One series is titled "The Engineer's Mininotebooks", by Forrest M. Mims III. These books are easy to read and illustrate many interesting electronics projects, including a timer that I employed which follows the first relay circuit. This timer, using a 555 IC, is triggered by the first relay and holds a second relay closed for a duration which the user can preset. This allows the camera to shoot one, two, or even more frames after being triggered once by the Amiga.

I have this system working. I just completed some rendering with a friend using his DCTV. It looked real nice running at 24 frames per second on a big screen. (Though shooting off an RGB monitor is considerably sharper). In addition to having the film transferred to video, you can buy or borrow a projector to show your animation on a large screen. Amiga animation projected in theatrical dimensions are sure to be a big hit! It may take a while to piece together everything you need to make this system work, but it will certainly cost less than the investment in single-frame video equipment. I hope this helps some of you budding animators who've got the desire but not the dollars to do traditional single-frame animation recording.

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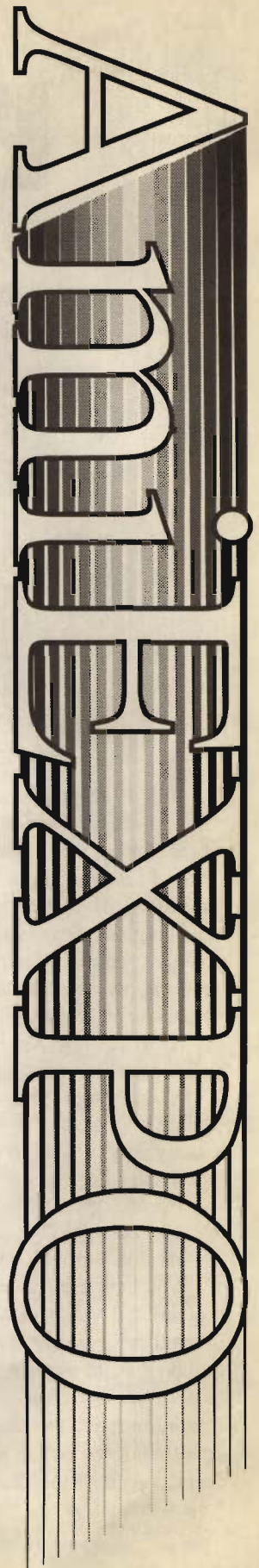
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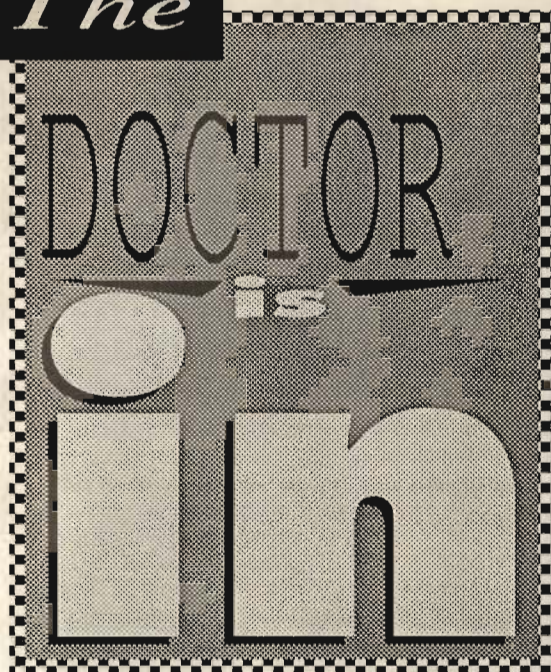
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If 1992 is anything like 1991, Amiga users will be able to rejoice all the more. This last year has had more than its share of new and upgraded releases, especially in the area of Amiga videographics. Several brand new products were released, and all of the best Amigawares were blessed by improved upgrades and revisions. It is customary for me to list my best twelve software picks of the previous year in this volume of AVID, though I fully realize that my choices may or may not reflect your list entirely. If you want to argue or debate your picks, drop me a line at:

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My choices are based upon my use in professional videographic pursuits, the needs that the products address, and the ground they prepare for new products to come. Here is my list (I have not prioritized it, meaning that these twelve products are not competing with one another for placement on the list, but are in alphabetical order):

1. Art Department Professional 2.0

As stated in my review last issue, this is really hot stuff. It is so far removed from its parent releases as to make them seem like animals of a different species. Being able to import/export and translate most of the useful file formats around in a flash remains the most well known of its functions. The addition of JPEG formats is a great boon to all Amiga video users, since it allows us to severely compress our graphic imagery for storage. Even at

a 100% setting (meaning no loss of data when the file is decompressed), images can take about 1/3 to 1/6 of the file space! If your storage medium is getting filled up too quick, you can readily see how useful the JPEG format can be. The Preferences Printer option allows printing in 16 million colors and/or 256 grays on your Preferences printer, meaning that graphic output is greatly enhanced. The Postscript option works flawlessly. And then there are the "Operators". These are image manipulation modules that allow you maximum control over all of the possibilities, from adding proportional text to a picture to creating compositions made from several picture files. The way that this software addresses WorkBench 2.0 is so superlative, it forced me to upgrade to WB 2.0 months before I intended to. This is a definite MUST HAVE for any dedicated Amiga creative person involved with the generation and manipulation of images for Video and/or publication!

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2. Broadcast Titler 2.0

Amiga animators and video obsessives have their favorite tiling programs, and this happens to be mine. In its 1.0 release, this software was full of nasty little critters that made video life miserable. All of that has changed with 2.0. For one, it is now mouse interactive, though it still offers the same 16 colors per scan line of resolution. That means many more colors per screen, so that hi-res screens are not limited to only 16 colors. All of its fonts are nicely anti-aliased, and when it works with WB 2.0 software, they can be of true broadcast quality. Any Amiga IFF bit-mapped font can be transformed into an anti-aliased font for use with this software...including ColorFonts. The page transition capabilities have been expanded, as have the line transitions. I vote for this software as the best the Amiga can do when a character generator and character effects generator are called for.

3. The New Caligari

This software was previously called the Caligari "Home Version", and it was differentiated from the professional end of the software by a lack of animation tools and addressable formats. No more. This is the version of Caligari that Amigans have been waiting for, with all of the bulging tools attached! There is nothing like the Caligari interface. The only thing that can compare is that of the Toaster's LightWave screen, and even that does not allow you to build objects so interactively. This software now has a very intuitive animation editor, as well as the ability to load and save in the videoscape format, so it can be married to your Toaster work. It addresses other Amiga formats as well, including HAM-E and DCTV. If you buy this software, good luck on trying to ever sleep again!

4. DPaint IV

Electronic Arts released its awaited flagship software in its fourth incarnation during 1991, and it is a gem. No Amiga library would be complete without DPaint, and this version is another step up the ladder. Besides adding a 256 color HAM mode, it boasts many new fill options. The "Morphing" function allows you to

create unexpected transitions between brushes, which can then be saved out as ANIMbrushes and used in later creations. The palette requesters have gone through major retooling and design, and offer many new options. In addition to its new and revised painting options, this software remains as a vital animation control device for animations created with other software.

5. DCTV Paint 1.1

This is without a doubt the best Amiga extended format painting package. You have to have the DCTV unit attached to appreciate it, but the paint functions are truly extraordinary. Though NTSC is not my best choice as a painting environment, with a little care as to choosing your colors, the results can be almost 24-bit comparable. The paint package is very intuitive to use. True 24-bit work can be imported and recolorized, as well as can any IFF brush. The DCTV unit is wonderful for seeing and manipulating photos taken with the Canon Xapshot still-video camera, and the paint package offers an almost infinite way of playing with the images. The addition of a "Spiral" generator is only one of the exciting changes that the upgraded software has gone through. Like all of the Amiga developers that have exhibited longevity, Digital Creations listens actively to user feedback and then implements new tools. This software is only the first in a series of new rendering and animation software that will set the pace for Amiga graphics in the years ahead.

6. DRAW-4D Professional

A year ago, only a handful of Amiga insiders knew about a small Ohio company called ADSPEC PROGRAMMING. Today, Adspec's DRAW-4D Pro is quickly becoming one of the most widely distributed and useful 3-D animation products around. Why? Because it features 3-D design options that are easy to understand and quick to implement, because it offers tools that no other package supports (with many more on the way), because you can apply texture maps to 3-D surfaces in a clear and easy to understand manner, because developer Greg Gorby offers the level of service to

his customers that is a rare commodity in the industry, because the software supports the DCTV unit from Digital Creations directly, and for a bucket of other reasons that the experienced Draw-4D Pro user understands by using this software. Though not at a ray tracing program (no shadows or reflection capabilities are supported), shadows, bump mapping, environment mapping, and other features are soon to be added in the next release due in late Spring or Summer of '92.

7. Image Professional / ImageMaster

From the minds at BlackBelt Systems comes this super image manipulation software. When you use it with their HAM-E device, it comes in the "Image Professional" (IP) flavor, and when you use it in its generic or other forms (like the one made specifically for the Impulse FireCracker board), it's known as "ImageMaster" (IM). This software has so many options for altering your images, that it would probably take you a year to experiment with them all, and by that time, they will have added more in future upgrades. This software operates on true 24-bit pictures, so that it can be used in conjunction with any of the 24-bit display devices. The more generic versions will work with standard IFF resolutions as well. One use for this software is to develop animation frames as single pictures, and then to recombine them in another program (like DPaint for non-24-bit images or DCTV paint for the 24-bit ones). If you are involved in manipulating Amiga graphics for any reason, purchase this the first chance you get.

8. Imagine 2.0

I was one of the first Turbo-Silver owners, and have watched with admiration as Impulse has continued to upgrade and revise its imaging software throughout the years. I have watched as the 3-D and animation tools have evolved into more high-end modules with extended capabilities, and as the animation capacities of the software became more refined. This is some of the best design and animation software around on any computer, and has gone under tremendous change in every module from its 1.0 release.

Coupled with the Impulse' FireCracker-24 display board, this software can be the core of your Amiga animation system. The rewriting of the Imagine manual just adds icing to an already delectable cake.

9. Pixel-3D 2.0

The primary function of this software is to translate various 3-D file formats from one to the other, including Sculpt, VideoScape, LightWave, and other formats. It would be fine if this was all it did, but like all really useful Amigaware, it crosses its own boundaries. Its interface is as superlative as the Toasters, and almost as interactive. You can also take an Amiga 2D drawing and transform it into 3D on the spot, adding extruded depth and increments of spin around an axis. For anyone doing video logo work, this software is a must. The interface has been redesigned for that WB 2.0 look and feel, and its speed has been tremendously upgraded.

10. Pixound 2.5

If your bag is creating music videos with the Amiga, then you should run down to the corner Amiga store and pur-

chase this product! There is nothing else like it, so it has no competition. What it does is to "read" an Amiga graphic (HAM included, and soon...24-bit as well), and then it translated the chroma-luma into sound! Got that? By carefully designing graphic screens which act like painted piano rolls, you can automatically "play" your designs, watching the cursor jump from one color area to the next. The software is also MIDI compatible, and generates MIDI files that can be saved for later playback in other Amiga software. The keyboard can also be triggered to change scale patterns, modes, octaves, and other parameters while the music is playing. Palettes can be changed, and color cycling induced for audio and video effect. All of this, obviously, can also be videotaped on the spot for some very abstract and wonderful video work. Contact Oxix-Aegis for pricing.

11. Real-3D Pro 1.4

Addressing both HAM and 24-bit graphics in some unusual ways is this newcomer from the Netherlands. It's a real raytracer, meaning shadow and re-

flectance generation, and it also has the capacity to texture map 24-bit files. But that's just the beginning. With its Boolean functions, you can also drill holes in objects, and combine them in ways that other software cannot do. You can also turn pixelated logos into 3-D objects that use each pixel as part of an extruded surface, giving you unexpected logo looks. Amiga video designers who are also involved with CAM (Computer Assisted Manufacturing) would also be advised to consider this software, as it has unique capabilities to track each element in the design as a separate and costed part of the whole. The "exploded views" generated by this software make it very useful to folks who are involved in mechanical pursuits and industrial video work.

12. SpectraColor

Not many folks are aware of the way that this new incarnation of PhotonPaint uses expanded tools to address Amiga animations. Even with its competition from DPaint and other Amiga heavies, I still get great use out of this software in my library of tools. Its most useful func-

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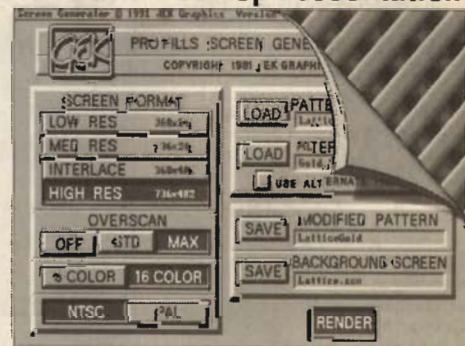
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tion is in the area of taking ANIMbrushes and wrapping them on animated objects, the primitives for which exist in the program. It also has tools for manipulating ANIMbrushes in ways no other program (including DPaint) can handle. This software might not be your first choice for electronic painting, though even here it offers unique tools, but it definitely belongs in your library if you are doing animation on the Amiga. For around \$100.00, you can't go wrong with this Oxxi-Aegis product. HAM-E users should get the version that directly supports that product.

And...

I haven't mentioned Toaster stuff 2.0 because that stands alone. The TOASTER has sold so many Amigas, that it makes us forget for an instant what a poor job Commodore has done on the marketing end. Even if NewTek doesn't advertise the fact that its turnkey systems are really Amigas, so what! The fact is the fact, and that is that we have got the best of the best in our hands. So there you have it...my twelve plus the TOASTER picks for the

Amiga year 1991. Again, if you want to refute my picks, drop me a line, and I'll see you get some space in an upcoming AVID to publicize your choices.

ASDG

Even though my article last month lauded ASDG and ADPro 2.0, I haven't had a chance yet to tell you how helpful Mr. Perry Kivolowitz was in making that article an in-depth AVID experience. We spent about ten or twelve hours in putting ADPro through its paces on an Impulse FireCracker. Again, I want to copiously thank Perry and all of his staff for their warm hearted reception, their informative responses, and a huge Italian Sausage sandwich for lunch! Thanks, folks. Be talkin' to ya.

Help Me Rhonda!

Whenever I've asked for your help, it has been forthcoming, underlining my respect for the way that Amiga people help each other. Well, here's another problem. Jorge O. Valesquez, who is responsible for various tasks at a cable TV station in California (PO Box 1239, Grass Valley, CA 95945/916-273-6111)

wrote me concerning an Amiga need. He likes the Amiga, especially the way that it interfaces with Broadcast Titler 2.0 for a televised public bulletin board. The problem is he wants to operate it from a remote location, inputting information while the system is on air. No one will be on the other end, so it has to be an automatic updating procedure. I've tried to research folks in my area who might have hardware/software solutions for him, but so far have had little luck. He says that someone gave him a price of \$6000 plus to set up modems and dumb terminals, but needs to do the job for less. Any suggestions? If so, contact him and me. I will make sure your advice gets published so others can read about it.

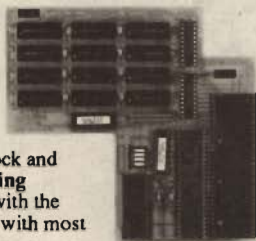
Toaster Fonts

I've run across a great new package of 3D fonts made specifically for the TOASTER that you should take note of. They're called "Broadcast Fonts 3D" from Unili Graphics (143 Lorraine Ave., Pittsburg, CA 94565 / 510-439-1580), and they sell for about \$100.00. Each character supports phong shading for very

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smooth broadcast results, and the nine fonts cover the gamut of recognizable typefaces that are a standard in the industry, from casual to helvetica-like styles. All come in a compressed format that install automatically to the hard drive partition of your choice. A heavy three ring binder accompanies the disks, and a full tutorial for use with the TOASTER is included. This should be just the ticket for TOASTER 2.0 users. Having worked with these fonts for a while, I can attest to their craftsmanship and usability. A separate "Imagine" set will soon be available.

FAT!!!

New from the CanDo people (INOVAtronic, 8499 Greenville Ave., #209B, Dallas, TX 75231/214-340-4991) for \$59.95 is "OPUS", a mega-optioned disk utility. I've been using it to do various tasks in my studio, and it hasn't disappointed me yet. In fact, it has so many properties, it will probably replace other utilities that you use that may be on several disks. Like its superlative multimedia parent, CanDo, OPUS addresses all of the environments in which the Amiga lives. Being totally ARExx controllable, there are probably edges of it that nobody has discovered yet. It can be "iconified", that is, made into a WB icon that can be called up when needed. It can do the usual, copy and move or delete files from source to target, but also can be used to view pictures and animations, as well as to allow you to hear sound files with the click of a mouse. It can also run executables. It also has printing capability. If you have a mountain of disks like I do, then check it out. The price is right.

An Amiga artist

If you are a wedding videographer and are in need of someone to produce hardcopy (invitations, etc.), then I know someone whose work you should investigate. Dennis Martelli (32-08 75th street, Queens, NY 11370) sent me a large bundle of samples of his work about a month ago. He uses an Amiga to generate it, and prints it out in either full color or black and white as the situation demands. Too often, wedding videographers lack either the will or the knowledge to supply a full service answer to their clients. Amiga

Artists like Mr. Martelli remind us that we can add elements to our video businesses that make contacts more lucrative and creative for all concerned.

One last Hint...

I couldn't resist telling you about something that I discovered while using DCTV Paint from Digital Creations. If you are adding ColorFont text on a full color background screen, try this. Reduce the text by 1/2 and then bring it back to full size by doubling it. You will see a thin one-pixel outline around the text, making it pop out from the background a lot clearer. Why it does this, I don't know, but there's nothing in the manual that mentions it. All I know is that it works, and the text is a lot more readable. By the way, I seldom use my ColorFont text at full size because it's too big. DCTV Paint, however, really does a nice job when you reduce it, and the colors lose none of their clarity or effects.

Well that's about as much as I can cram into one article this month. I wish all of you a most prosperous New Year, and hope that it is filled with creative Amiga endeavors. Enjoy!..and see you in ROMulan space.

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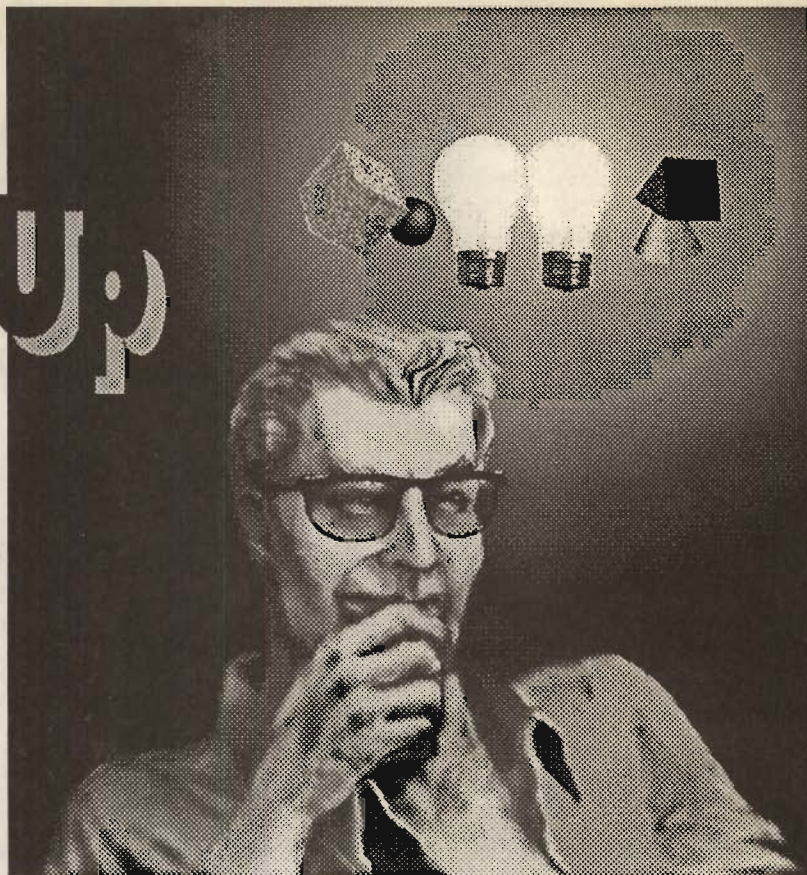
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Lighten Up

Techniques for LightWave 3D Users



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A Texture Tutorial (Texture included!...kind of).

A couple months ago, I wrote a bit about using Textures to add realism to your LightWave scenes. Many people have written to me asking for some hints on actually USING textures, so we're going to do that in this tutorial. Let's jump right in, shall we?

We're going to start off by converting a Framestore into a LightWave-usable RGB picture. From the Toaster's main control screen, click on the ToasterPaint slice to load it into memory. It is recognized by the little paintbrush on its button. This will bring you into the ToasterPaint area of the Toaster.

You'll see the ToasterPaint controls at the bottom of the screen. Hold down the right mouse button and the top of the control panel will change into a menu bar. Move under Picture and release the

mouse button on Load Frame (not Load RGB!). Select the file named "FS.001.VTlogo" and click the "Load Frame" button to load the image. The screen will slowly fill with a portion of the infamous Toaster logo. This will take a moment to happen, but you can watch the picture load by simply moving the pointer to the edges of the screen. Note, however, that this does seem to slow down the loading! When the busy pointer has vanished, click the right mouse button to bring the controls back up.

If you wish, click on the "Render" button (marked with a small clipboard) to view the full image on your Program monitor. Use the menus again to select "Save RGB." This time, navigate the requestor into your Toaster/3D/Images drawer. You may find this complicated, so take your time. When you are in that directory, click the Save RGB button to

save the new version as "VTLogo" in your Images directory. Once the save is completed, choose Quit from the same menu to exit ToasterPaint. That's it! That is all you have to do to convert a Framestore, such as one you might grab with the FreezeFrame, into a texture map for LightWave!

Now, on to the fun part! Enter LightWave and go to the "Images" area and click on "Load Image." Specify the VTLogo image that you have just converted and load it. Again, this may take a moment. Be patient! When it is finished loading, you will see the picture's information displayed in the center of the screen. In this case, the Resolution is 736x480 (Full Overscan), the Depth is 24 (Full Color), and Memory Usage is 1035K (just over one meg!) As you can tell, using maps can take a lot of memory. You can create your own maps in a pro-

gram such as DeluxePaint. The fewer colors you use, the smaller the file size. I have made black-and-white maps for bump mapping that only took about 4 K!

It's time to get an object to wrap our texture on. Go to the Objects area of Lightwave and load the Canvas object from your Tutorials directory. This is a nice, flat surface to begin the first phase of our mapping lesson. If you haven't seen this object before, go ahead and click Render for a look at the raw object. As you can see, it is simply a big square. We're going to add a little life to this boring surface!

Go to the Surfaces area of Lightwave, and you should have the description for the "Canvas" surface displayed. Since the first thing we want to do is simply draw the picture on the surface, click on the Surface Color button and then the Texture button. We don't need to set the color of this surface, because it will be covered with the "color" of the picture.

You'll now be shown the Texture Map area of LightWave. Notice that the first Texture Type here is called Planar Image Map. This setting is used for

placing the image on a flat surface. It will also wrap on non-flat surfaces, but works best on flat

The Texture Image says "(none)" at the moment. Click the arrows directly to the right of this field until it reads "VTLogo." If you don't specify the image to use, LightWave can become very confused. Next, click on the button marked Z Axis. Imagine this mode like a slide projector. You want to point the projector in the direction of the surface, which in this case is the Z Axis. We'll leave all the other settings the way they are for the moment. Click on the Use Texture button to exit this screen.

Go ahead and Render the scene now. Depending on the accelerator (or lack of one) in your machine, this may take a decent amount of time. It will render in low resolution but, if you wish, you could render it in hi-res or even antialias. Note, however, that each step up in the render mode multiplies the render time by 4. You'll also get a better picture, so it's up to you...

Anyway, it's done about now, right? OK...See how we got a number of copies

of the image, instead of just one? That means that we don't have the image properly scaled on the surface. You'll also notice that there are black bars between each image. This is what I was talking about a couple of months ago when I mentioned The Zipper. It happens with every Framestore you convert, but the 2.0 version of the Toaster software gets rid of that.

Alright, rather than guessing at the accurate texture size, let's do it the easy way. Enter Modeler (you'll find the button in the Scene area, in case you can't recall.) Go to the Disk options and Load the Canvas object from your Tutorials directory, just as you did in LightWave. When it is loaded, you will see the object appear in the center of each of the three views. Obviously, this object is not just a flat surface, but a flattened box.

Place your crosshairs on the left-most edge of the object in the Back view window. Check the coordinate window in the lower left corner of the screen and you will see that the line is at -1 meter on the X axis. By placing the crosshairs on the other side of the object, we find that it

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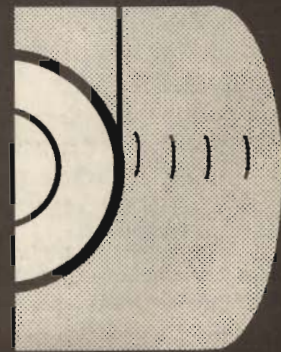
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is at +1 meter on the X axis. This tells us that our surface is 2 meters on the X axis. Now we need to measure the Y axis. Do this exactly the same way as you did the X, this time checking the top and bottom to release the memory it is taking up. It is a good idea to get into the habit of unloading Modeler WHENEVER possible, but keep in mind that anything "in progress" in Modeler will be lost unless you saved it!

Return to the Texture Map options by clicking "Surfaces", then "Surface Color", and finally "Texture." That was fun, huh? Click the button marked "Texture Size" to enter your new information. Remember, you want to set the X Axis to 2 and the Y axis to 1.5. This is all entered in meters, even though it doesn't tell you that anywhere. You can leave the Z set at 1, since it has no relevance while you are projecting on the Z axis. In case you didn't know, you don't have to delete things that are currently in most boxes. Notice where the flashing cursor appears and type in your new information, then

hit RETURN. This leaves a space between the new information and the old. LightWave doesn't pay attention to the things after the space! At any rate, when you are done setting the size, click OK to accept the numbers. Now click "Use Texture" and render the scene again.

This time, we only have one copy of the image, and it is nicely centered on our object (if not, go back and retry the preceding steps again). Let's try changing some other settings in the Texture Map windows and see what happens. Go back to the Texture Map options just as in the last paragraph, and change the Texture Axis to Y. Again, click Use Texture and Render the scene.

What happened? What's with all those vertical streaks down the surface of our object? This happened because we cast the image along the Y axis, so the picture is coming from above the object. You are actually seeing the SIDE of the image! This could be useful for a number of things, but generally it is undesirable.

Let's go fix that and try something else. Go back to the Texture Map settings and change the Axis back to Z. Now, click Texture Center and set the X to .5. Render the picture again.

Notice how the image "scooted over" to the right this time. The amount of shift is relative to the Texture size, so it can get REALLY strange trying to achieve the desired effect, but that's how you do it. Try setting the other numbers in Texture Center to different amounts to see what you can accomplish. When you are done experimenting with that, reset the numbers to 0, 0, and 0, and we'll continue.

The World Coordinates button gives yet another twist to the mapping abilities. With this item off, if you move your object, the image will stay in the same placement, as if the picture were glued to it. With World Coordinates on, a moving object would appear as if it were a window moving across a giant field of duplicate images. Try rendering both ways, moving the object rather than the camera,

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to see how this works.

You can achieve a subtle blending effect by using the Falloff options. This allows you to specify the distance before the image is completely replaced by the given surface color. Since we are using a very small surface, try setting these high to see what they do. Set the X falloff to 80. This is all in percentages of visibility, as stated above the fields, so we are telling LightWave that this image fades 80% every 1 unit from the center of the object, in this case along the X axis. Did you follow that? Render the image now and see what I mean. The image fades to gray at the left and right edges, right? Try setting the Y falloff to 80, as well, and render again. Notice the hazy effect this gives to the scene. Imagine having a "dream sequence" of imagery appear on a surface throughout the course of an animation! Of course, you could change the gray at the edges to any color that you set when you enter the Surface Color slider window.

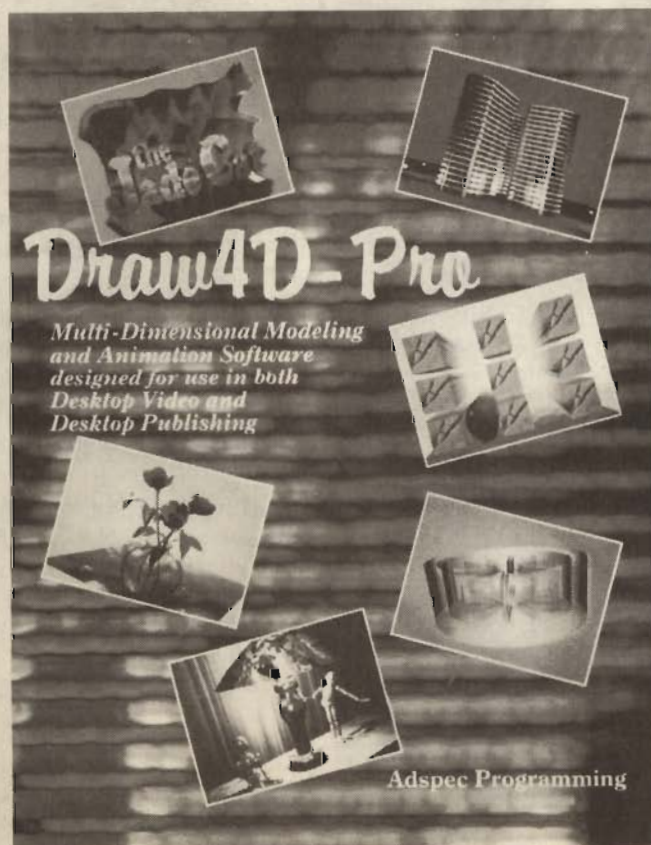
The Velocity settings allow you to have the image moving upon a surface during an animation. Since there is no real easy way to illustrate this, short of recording an entire animation, I'll leave you to experiment with that one. Note, however, that the smaller the amount moved per frame, the smoother the resulting animation will appear!

The above information applies to Planar Image Maps in more than just the Surface Color area! Go back into the Surface Color Texture area and click on "Free Texture." This tells Lightwave that you aren't texture mapping the surface. Now, click "Diffuse." Notice that it too has a Texture button. Enter this and set up the projection just as you did before. Choose the VTLogo, the Z axis, and set the Texture Size to X=2 and Y=1.5. Use Texture, then render the scene. It's in black-and-white now, right? Actually it isn't. LightWave is using the darkness levels from the picture to decide how this surface handles light. The darker the area

in the picture, the less "bright" it is. Makes sense if you think about it....

Go back into the Diffuse Texture and choose Free Texture. Again, this tells LightWave that we aren't using a texture for this setting. Now, set up the Texture using the button which appears after clicking Specular. Use exactly the same settings as the last experiment. Render this one when you are finished. It's just a solid color, right? Wrong! If you rotate the object so that the light is very hot on it, you'll notice that the darker areas of the picture are not as shiny as the lighter parts. This is another one of those features that you just have to experiment with to truly understand. Try rotating the object to a Heading of 45, then set the Diffusion to around 25. This should give you a decent idea of what gets accomplished, provided you haven't moved the light or camera around.

After you've done that, set the Diffusion back to 100, Free the Specular Texture, and rotate the Canvas back to all



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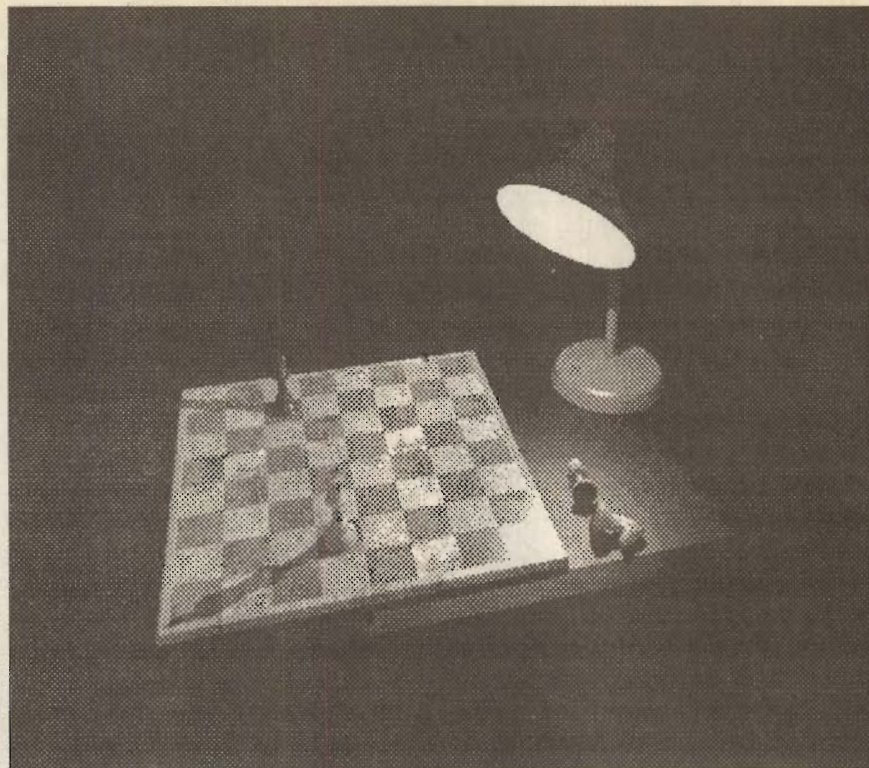
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zeros to continue to the next example. This time, we'll set the image as a Reflection Map. Click Reflection Map and then Texture. Set this up the same way we have all the others, with the Axis being Z, the Image being VTLogo, and the Texture Size being X=2, Y=1.5. This is where things get a little different... You see, what you have specified are the areas which will reflect another image. The darker the image area, the less reflective it will be. Now you have to set the image that will be reflected on this surface. If you have plenty of memory, you could load in another image to use as the Reflected Image, but we'll use the VTLogo and you'll at least get the idea. Specify the VTLogo in the field labeled "Reflected Image." The higher the diffusion setting you are using, the more "washed out" the reflection will appear. Rotate the object between renders, and notice the difference in what piece of the image is reflected. I haven't used this option much, but it seems like it could be very interesting.

The next option is one that I really enjoy... using an image to specify Transparency! As usual, clear the previous Texture settings and make sure to reset the diffusion to 100. Set up the information for Transparency Texture just as with the other modes. When you render



it this time, you'll notice that it is in black-and-white. But really, it isn't! The black areas are fully transparent, while the white areas are the color you set in the Surface Color area! If you have enough memory left, try loading up an object like the Ball, which is also in your Tutorial directory, and place it behind the Canvas. Render the scene again and you'll see the red ball showing through the transparent areas! Try changing the Surface Color for the Canvas to something different, such as blue. Render the image again. If you don't have a great amount of memory, just make a graduated background behind the scene, and render again. You'll see how various parts are "clearer" than others.

Alright, now comes the BIG one! Reset all of your information and set the Texture Map you'll find within the Bump Map area! Use the same settings so that you can really see what's being accomplished. This is one that DEFINITELY benefits from the antialias mode, so if you have the time, render it that way. Notice that when this setting is rendered, it appears as if the surface is etched with the image. Like all of the others, this is specified by the darkness of the various

components of the image. The darker the color, the deeper engraved the surface becomes! Note that moving your camera view in close to the surface at an odd angle tends to enhance the "bumpy" appearance.

So, now we've explored everything there is to do with Texture Mapping, right? Wrong again! You've only JUST begun! You see, you can use different combinations of each of these possibilities TOGETHER! Try using the same image, at the same size, on both Bump Map, AND Surface Color. If you move the camera VERY close to it at an unusual angle, you can give the impression of embossed leather. Combining various texture maps and testing them in different orientations, you'll probably see things that will give you all sorts of ideas! Try making your own maps in a program such as DeluxePaint (everybody has DeluxePaint, right???). The possibilities, JUST with the 1.0 version of LightWave, could take YEARS to explore!

When you get tired of playing with your new flat image map experience, try some of the other maps! You see, Planar is primarily to wrap on flat surfaces. By

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See page 64!!!

clicking the arrows to the right of the Texture Map field in each instance, we can specify whether the image is to be wrapped as if it were on a cylinder or sphere. I'll explore these to a larger extent in a later installment, but just experiment with them for now! Keep in mind, however, that image mapping increases rendering time substantially. The results make it worthwhile, though!

The illustration which accompanies this article was created using a texture called "Liquid Marble" from a set I recently received from Robert Young (P.O. Box 167, Whittier, CA 90608). These textures were written up once before in this magazine, but most of the mailing information was wrong. At any rate, he offers a large number of textures for use with LightWave that look wonderful! The best things about these textures are the price and the ability to buy as many, or as FEW, of the textures as you like! That's right, each 24-bit image which sells for \$5.00 (plus postage + handling!), can be bought individually!

This texture, as well as a nice catalog of Robert's other textures, can be obtained via a few public domain sources, but if you aren't able to get it that way, you can order it from me. By special arrangement with Robert, I can send you the texture for \$5.00 (my cost of buying quality Fuji disks, duplication, and shipping)! Please send a check for \$7.50 if you wish to also receive the catalog (2 disks + the Liquid Marble texture) as well. For further information on Robert's textures, contact him at the address provided at the end of this column.

This month I also received some interesting items from a company called Slide City. They produce both a set of 3-D objects, and a set of textures. While they were created for programs such as Sculpt 3D and Imagine, they work fine with LightWave. The TV Objects set contains, as you might expect, 3D objects for use in your animations. I have a couple of problems with these objects, however. While they are interesting, I can't quite figure out what they should be used for. Certain items, such as the gears, I could see in television use, but what are all the rest of them? My first reaction was

that these were experiments performed using one of the other modelers' warping tools. While they do have a certain "HBO-ness" to them, I can't see them being very useful. Sorry, but that's my opinion.

The other product I received from Slide City was called TV Graphics. To the best of my knowledge, this one has been around a long time. It is composed of images created using DeluxePaint, or a similar program. There are some VERY nice images in this set, even for use as backgrounds! The majority of them have a "broadcast" appearance, and lend themselves nicely to surface mapping.

Well, that's about it for this month! Have fun experimenting with the new things you learned here. At least, I hope you've learned something here. See, the problem is this: I don't know what level YOU are at! Send me a card or letter telling me about yourself. What do you want to know more about in regards to LightWave or the Modeler? In my tutorials, where do you become confused? I can't improve these tutorials unless YOU tell me what is wrong with them!

As usual, if you have any questions, comments, suggestions, or if you want to order the "Liquid Marble" texture mentioned above, please write to me at:

David Hopkins
Mach Universe Productions
2421 E. Ball Road, #B100
Anaheim, CA 92086
Or, on the GENie Network at:
D.Hopkins9

Be sure to include your phone number and complete address so that I can reply. Oh, I almost forgot...NewTek asked me to pass along a piece of information relating to use of the Toaster 1.0 software with Workbench 2.0. According to them, the software WILL work, as long as it isn't installed on a 2.0 disk. Don't ask me why, but I guess if you have it on a partition of your harddrive formatted with 1.3, it will work. Strange. Of course, the 2.0 Toaster release fixes that problem, too.

So, off I go. See you next month with the first 2.0 tutorial, and may your surface be well-mapped!

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From the

BREAD BOX

© 1992 by Lee & Kathy Stranahan

Well, we're back from our month and a half visit to Oz—otherwise known as Topeka, Kansas. Lee wrote most of the new tutorials that will appear in Toaster System 2.0's manual. The new manual looks great, by the way - NewTek's art department genius Mark Porter and former AVID columnist James Hebert (who's now head of Tech Support for NewTek) have done an outstanding job.

The announced ship date for 2.0 was pushed back a little bit, and not for the first time in the history of software. Why the delay? One word—FEATURES.

Alcatraz kicks into high gear when a deadline is drawing near, and the boys upstairs started programming almost as fast as NewTek's corporate jet. Want a few examples?

Positionable effects: You can now create your own pushes, pulls and wipes. You can also use the Positionables to create over-the-shoulder effects.

Other new effects include new sports wipes, such as a quarterback throwing a pass and a weightlifter. There's also a great looking page peel.

Great Fonts for the CG: There are a dozen or so new fonts, and most of them

come in four or five different sizes. The new fonts have a great, clean 'broadcast' look. One other big change—you can now go backwards through the font list. This means no more "Oops, I missed it—gotta go back through the list."

Raytracing: This is, of course, the big one for LightWave 3D users. LightWave now has raytraced reflections and refractions.

New Objects: There are some awesome new objects included with System 2.0, including a super realistic Porsche and a great new 3D font created by LightWave expert Larry Mitchell. Larry has created a font based on Zapf Chancery, and it's beveled on both sides—this cursive typeface obviously took a lot of work.

The folks in 'Traz have been working hard, but all work and no play makes 'Traz a dull place. The much awaited NewTek X-Mas Extravaganza II was held December 14, 1991, at NewTek's video studio. Among the decorations was the set of a nuclear power plant after a radiation leak—courtesy of NUTopia's Ron Thornton. Ron did the spaceship sequences on the Toaster 2.0 demo tape (which should be playing at a dealer near

you) and he also has worked on films like Spaceballs and the Addams Family.

The evening's entertainment was initiated by innovative synthesized music, from Tangerine Dream. Todd Rundgren was also on hand to debut NUTopia's incredible new demo reel, Your Friend The Brain, which drew much laughter and applause. AmigaWorld's Doug Barney, and of course AVID's own Jim Plant were on hand as well. For the guests' amusement, NewTek moved several video games from their offices, and in a side room, there were Toaster stations and a Silicon Graphics Indigo.

As guests departed, they were given keychains and t-shirts with the logo used on Thornton's set—the words Video Toaster encasing a skeleton head. (By the way, the design was originally intended to be a 'heavy metal' Toaster T-shirt for Garth on Wayne's World, the Movie).

Northern California Toaster Group

A Bay Area Toaster user's group was recently held at HT Electronics in Sunnyvale, California, and was hosted by Bob Anderson, Southern California Toaster expert. (Bob is currently hosting

LA's UpperCrust meetings. Upper Crust was the first Video Toaster users group formed). The highlight of the meeting was guest speaker Allen Hastings, author of LightWave 3D. Allen debuted the Toaster's new ray tracing capabilities, to an amazed audience. The meeting was a great success. Bob says he'd like to help get a group organized, so, for more information on Bay Area Toaster users group meetings, contact Upper Crust at 818-505-1464.

Image World—Miami

The Miami Image World show had a rather small turnout, but those who attended got a sneak peak at Toaster 2.0. Florida folks were blown away by how many features had been added, and there were Toasters at a number of other locations on the show floor.

DPS was showing new software for the Personal TBC II, which lets you move to the proc amp control section by clicking on a button on the Toaster Switcher. They were also showing the prototype of an under-\$1000 waveform monitor/vector scope card for the Amiga/Toaster system. It looked pretty impressive and the price is right.

Florida natives, RGB Computers & Video, exhibited at the show. Company president Bob Gilbert always seems to know where the best restaurants are, and his booth was serving little cups of strong Cuban coffee. They were also serving up some great edit controllers.

RGB has designed another edit controller that is compatible with the Video Toaster—the AmiLink/CI. If you own a Panasonic 1960, listen up. The CI was created to work with a variety of inexpensive, off-the-shelf consumer/industrial VCRs and camcorders. There are no separate control boxes; all edit control is performed with keyboard and mouse.

The CI's features include insert or assemble editing, auto assembly from a list, park and perform or open-ended editing, edit point trimming, edit list management with conversion to other list formats, 999-event edit decision list management, multiple list saves to disk, and Inter-format VCR control, to name a few. It also boasts the capability to A/B-

Roll and time-code edit, and to preload CG pages for automatic assembly. It requires 1 meg of RAM and is compatible with any Panasonic 5-pin (Control-M) or Sony (Control-L) VCR or camcorder. RGB can be contacted at 407-844-3348, or at 4152 Blue Heron Blvd. West, Suite 118, Riviera Beach, FL, 33404.

Other Stuff

Attention Toaster graphic artists—Bread Box is hosting a still frame contest. Just create a great looking frame using the Toaster's graphic tools, and enter it (on disk) in our contest. The winner will receive the BCD 2000-A animation controller, (courtesy of the fine folks at BCD) plus their name and still frame prominently displayed in an issue of Bread Box. Frames will be judged on originality, artistic merit, and technical skill. The contest ends soon, so send your frame to BREAD BOX CONTEST at our address below, and stay tuned to this column for more details.

By now, most people know that hitting Ctrl Ctrl Alt Alt from the Switcher will bring you back to the Workbench screen. Here's another hidden keyboard shortcut from the Switcher—holding down the Ctrl, Alt, and F10 keys you're out of there, so make sure to save your work.

We'd love to answer any Toaster questions you have, so send 'em in to us, care of AVID.

One final personal note—we're expecting a baby in August. (It seems to be contagious around AVID). It's our first and we're very excited about it. Contrary to whatever you may hear, though, we won't be naming the baby Toaster Stranahan.

Probably not, anyway. Stay tuned...

Lee and Kathy Stranahan edit and publish Bread Box—the Video Toaster Desktop Video Newsmagazine. Lee also gives seminars on the Video Toaster, and will be producing instructional videotapes on Toaster System 2.0 in the near future. Kathy wants a baby with a normal name. If you'd like to see a free copy of Bread Box, call 818-505-1464, or write to 859 No Hollywood Way, #225, Burbank, CA, 91505.

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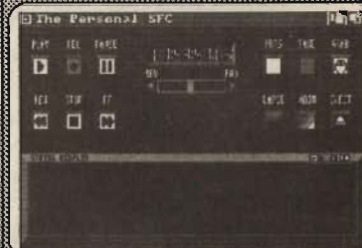
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MAKE YOUR MARK

A "video signature" is that part of a video that shows your company name and logo, and behind which there may be a specific background. Usually, a video signature is a well designed single frame, but there is no reason that it cannot be animated in its own right. For Amiga video producers and Amiga studio designers, a video signature should be produced itself with the Amiga. After all, how better to advertise the system that you work with then to use it to create your own unique video signature?

The name of my company is "Eyeful Tower Communications", and for over eight years I have used a sphere sitting on a triangle or pyramid as my logo. When my Amiga work began over five years ago, I began to see that there were ways to add interest to this static logo by animating it. I have tried to accomplish this with several Amiga programs, with varying amounts of success, but believe I now have a solution that works best for me. It is the process of design that led to my current example that I would like to share with you in this article.

I have been waiting for a long time for the Amiga to be able to address the right hardware and software that would give me the professional look I need, while allowing me to create graphics and animations more intuitively. It has just been within this last year that I have felt satisfied that my wishes have come to pass. The software I have personally been waiting for is called Draw-4D Professional from Adspec Programming. The hardware is the DCTV unit from Digital Creations. Draw-4D Pro addresses the DCTV unit directly, in that it saves ANIM5 animations that are written in the DCTV format. Since the Amiga "sees"

Creating Your Video Signature

© 1992 by Dr. R. Shamms Mortier

DCTV frames as standard hires 8 or 16 color screens, they can be played back on any standard Amiga player program (like DPaint or Elan Performer). The DCTV format also stores to disk without over burdening my storage devices, as it is stored as an IFF animation. I can also touch up single DCTV frames with DCTV paint, making the animations obey my exact desires. DCTV paint also allows me to develop 24-bit backgrounds that Draw-4D Pro can load in back of my animations, the whole combination then being saved out as an ANIM5 viewable result. With this hardware/software combo, I have discovered an economical way to produce professional video work.

My Project

The accompanying picture shows how a single frame from the finished animation looks when superimposed over a DCTV background. I actually created several backgrounds for use with this animation. All center on the theme of my Vermont location, which is rural in nature. The one you see here is a shot taken of the woods in Autumn with a Canon Xapshot camera, digitized with the DCTV unit, and then addressed with text. Another one I am using substitutes the white siding of my house as an image. I have

developed four different graphics, but have always placed the animated logo in the same position. This gives me variability and consistency at the same time, and keeps me and my clients from getting bored. All of the images were sharpened up a bit with ASDG's Art Department Professional, and touched up a bit with DCTV Paint 1.1.

The Animation

Those of you familiar with my writing will no doubt be aware of my high praises for Draw-4D Professional. In terms of doing a project like this, it proves itself again by being intuitive in the design of 3-D objects and by addressing the DCTV format. You may design your own video signature with other Amiga software, but for ease of use and quick professional results, I like the Draw-4D Pro/DCTV combination. In my animation of these fairly simple 3-D primitives, a tetrahedroid pyramid and a sphere, I took advantage of the animators main helper...the element of surprise. I wanted to give the viewer the shock of seeing a 3-D world set against the 2-D plane of the background picture. To emphasize this, I set my 3-D objects to have maximum reflective properties and maximum hardness, so that the lights that I placed would cause high specular reflections on their surfaces. At first, my plan was to texture map them both, but because my background was already busy enough, I decided to render them as strong primary colors instead. Each was set spinning on the same Z axis, but in different directions, adding to the visual interest and combating the boredom experienced in watching a looping animation. After previewing this action for a few moments, I decided that the motion was still rather expected and ho-hum. I then decided to play with Draw-4D's "deform" mode. "Deforms" are a way that Draw-4D Pro deals with changing the shape and/or size of an object over time, and many deforms can be targeted to a single 3-D object

during its movement. The visual results are always interesting, and often intriguing. I designed the spinning sphere so that about half way through its movement it slowly evolved into a obloid, and then back to a sphere. As for the pyramid, I also used a deform on it, changing its dimensions as it spun. When I was satisfied with the movements, I saved the whole 3-D animated composition to disk. This is very important because Draw-4D Pro objects can be set against any background that's loaded, and a whole family of animations can be rendered using the same 3-D images. Object screens can also be resized and repositioned for new animations, giving you maximum use from a single 3-D object file. I then did a HAM test animation with one of my backgrounds included, and sat back to critique the results.

This brings up a point. Amiga animators are used to taking their work from start to finish without allowing any interference from an objective eye. This happens because we are so used to working away in our little sanctuaries, which are outfitted with every device possible that allows us to create art from the initial idea to a broadcast quality reality. That's all well and good, but sometimes we lose sight of what we have created. There are

two main ways to address this. The first is to call in another pair of eyes, and to watch that person's reaction to the work. The second is to take a long break...maybe a couple of days...during which time we make a pact with ourselves not to view the end product. Returning from this sabbatical can give us just the type of pseudo-objectivity that's needed. If you work in a studio with others, you need not wait too long for objective (and sometimes painful) comments, especially if there is a Art Director in the neighborhood. As my studio has few interested visitors, I followed my usual pattern of behavior: I demonstrated the results to my wife and children and waited for either frowns or raised eyebrows.

Trying to be attentive to visual cues, I perceived eyebrows that raised about half-mast. They were interested, but not for too long. "Hmmm", I thought, "how can I add a little more magic to this animation?". Dwelling on this thought as I prepared for sleep caused me to dream of pull-down menus and electronic artwork. In the morning, while preparing to struggle free from the chains of drowsiness, I had a sudden idea..."why not break the animated loop?". The best way to do this with Draw-4D Pro is to have an animation fade in and/or out of the back-

ground. By simply setting a "fade" toggle in the software and inputting the percentages of fade time, I was able to watch as the animation appeared and disappeared into the colorful background. I called back my live-in critics and watched as eyebrow curves became more radical. Now I knew I had something!

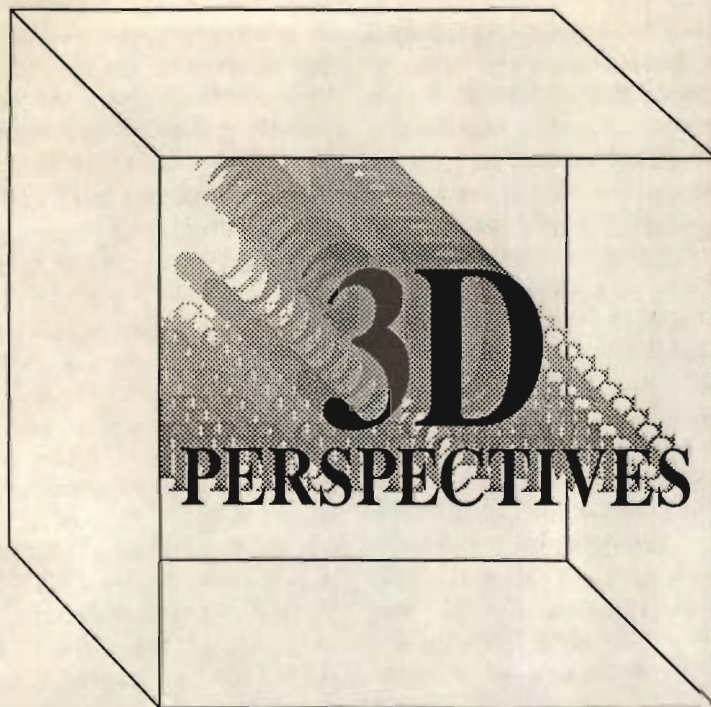
More about the background

I've already told you about both the background photos and the lettering, but not about the little patch of color upon which my animation rests. I placed this patch in the same place no matter which background picture was used. It serves two main purposes. It contrasts the animation from the rest of the 2-D scene, and it also adds its own visual interest. It was created in DCTV Paint in the following manner. New to version 1.1 of DCTV Paint is the ability to create spiral fills. You can set the colors, direction of spiral, and number of "twists" that the spiral fill makes, and can generate them in any shape...including rectangular and circular. I used a rectangular filled area, and used the spiral fill in a unique manner. Instead of making it a real spiral, I clicked on the center of the rectangle for all of the parameters. As you can see from the accompanying picture, this creates a rayed effect from the center of the rectangle. You can only really appreciate this in color, as it has the appearance of a laser disk held up to the light, shining with all of the spectral glory you can imagine. It is this part of the background that supports my animated spinning deforming logo.

If you have a DCTV unit and EA's DPaint software, I can send you one of these finished animations on a disk that you can view. AVID subscribers should remit \$10.00, and non-AVID readers should send \$20.00 (Eyeful Tower Communications / 15 Rockydale / Bristol, Vermont 05443).

If you are motivated to create your own animated Video Signature from this article and any Amiga software/hardware (or if you've already done so), contact me. I'd love to see your creation and to report on it to other interested AVID readers. Till then...ENJOY.





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Welcome to 3D Perspectives, an ongoing AVID column covering Amiga 3-D graphics and related topics as they relate to video production. This column will bring you up-to-date news and reviews about all aspects of Amiga 3-D graphics. If you'd like to see your product covered here, or have any questions or comments please write to me at:

David Duberman
915A Stambaugh Street
Redwood City, CA 94063

A bit of personal history is probably in order here. Like many, I've been fascinated by Amiga 3D graphics since the first Juggler demo. Soon thereafter I started playing with Sculpt 3D and the original Silver and became thoroughly hooked. For its time, Silver was a great product, but sorely in need of a coherent reference manual. In 1988 I called Mike Halvorson, Silver's designer and president of Impulse, Inc. and offered to write a manual for the program, to which he promptly agreed. I ended up writing and

typesetting the user manual for Turbo Silver 3.0. Since then I've gone on to write a book called The Imagine Companion about Mike's newest product, and to help bring a new Amiga ray tracer, RayDance, to market. I've been writing for AVID since its inception, mostly on 3-D topics and graphics software reviews, and am happy to be the host for what will be, with your participation, a fascinating roundtable discussion on Amiga 3-D graphics.

RayDance

Which brings me to the first topic of this month's column. I work in an Amiga retail store. Shortly after the Video Toaster came out, a customer came in with a 24-bit picture on disk and asked to see it displayed on the Toaster's frame buffer. It was an interesting rendered landscape with rolling hills, a river with reflected sun, and a realistic fractal tree in the foreground. It turned out that the customer, named Charlie Comstock, had written the rendering software himself. He asked me if I'd like to help him develop the program and manual so that he

could sell it and I agreed. A few weeks ago this dream achieved fruition in the form of a 3-D programming language for the Amiga called RayDance.

I must state here that while I did contribute to a small degree to the program design and manual and will receive a tiny portion of the profits, Charlie did the lion's share of work on both and deserves 99.99% of the credit. RayDance has no graphic front end for object design or layout, but it does a terrific job of rendering, and if you're willing to deal with editing text scripts and thinking mathematically, you can create animations that would be difficult or impossible with other 3-D programs. It's one of the fastest ray tracing programs yet for the Amiga—the default mode is with shadows on, and this is almost as fast as most other programs with shadows off.

The program boasts an impressive array of features. Not only can you easily create infinite varieties of fractal trees and landscapes, but you can make and animate 3-D Mandelbrot fractals. You can also import objects in the VideoScape/Modeler 3D format, and lathe or extrude outlines, which can also be imported. A special feature is the Replica statement which lets you make multiple copies of complex objects without the normal cost in memory—we're talking potentially millions of virtual polygons in a few megabytes of memory, but the price you pay is in rendering time. The program has a powerful morph statement to allow animating objects' shapes and attributes, including bump maps.

Objects can be applied with colors and surfaces; the latter can be a solid color, a bitmap, or a user-defined built-in color gradient, while a surface can be unsmoothed, a sophisticated multi-variable Phong model, or a bump map defined by an imported bitmap. The program uses IFF bitmaps in any standard Amiga mode including 24-bit and generates 24-bit IFF images. One unique capability lets you apply bitmaps to objects as they're lathe'd or extruded so that a true "wrapping" effect is achieved where the image actually follows the object's contours rather than being projected "through" it.

If you've ever programmed a computer in BASIC or C, you'll be right at home with RayDance's programming language. There are variables, expressions, built-in functions such as Sine and Log, loop constructs such as IF-THEN-ELSE, and procedures. Use the text editor of your choice for script creation. RayDance's push-button user interface lets you specify the script file, rendered image file name and size, paths for textures and objects, and other factors such as shadows and haze. Click on the Render button to create a HAM or wireframe preview image as well as the final image file in 24 bits. An accelerated Amiga is highly recommended.

RayDance includes an extensive 194-page 8 1/2 x 11-inch spiral-bound manual with large print, plenty of illustrations, a table of contents and index, and over 50 pages of well-commented example scripts. The low purchase price (about \$75 street) includes BBS support from the author. Particularly, if you need to use the Amiga for a scientific or engi-

neering simulation in 3-D, you'd do well to consider this program. It's currently in national distribution so ask your local Amiga retailer to order it from his distributor, or contact Radiance Software at the address and phone number at the end of this article.

3-D Broadcast Fonts for LightWave

Broadcast Fonts from Unili Graphics are now available in LightWave 3-D format. There are nine well-crafted 3-D fonts each containing all capital and lower-case letters, numerals, and a healthy selection of punctuation characters. The three sets are Helsinki, Microbes and Future Shock; Paladium, Clarity, and Park Place; and Brushstroke, Casual, and Copper. You can get each set separately or all together in the Master Pack.

Sans serif fonts are Microbes, Helsinki, and Future Shock, which are thin, italic thin, and thick respectively, plus Casual, a cartoony text. The serif fonts are Paladium, Clarity, and Copper. Brushstroke is a cartoony script, while

Park Place is an elegant one.

To save disk space the fonts come in the compressed .LZH format. Included is a program to decompress the files, which results in three directories for each font's capital and lower-case letters as well as punctuation. The latter includes numbers plus commonly used symbols such as copyright, reserved, the pound or number sign, asterisk, and more.

Although the fonts originally appeared in Imagine format, the LightWave versions are not mere conversions. Where possible, characters are created with multi-sided polygons rather than triangles for reduced rendering time and more efficient use of memory. While Phong smoothing is applied to the sides, the fronts and backs are unsmoothed for the squared-off look you expect. Moreover, as discussed in the user manual, special effort went into constructing the fonts so that no smoothing inconsistencies would occur. The discussion in the manual gives you information for using these techniques in your own objects.

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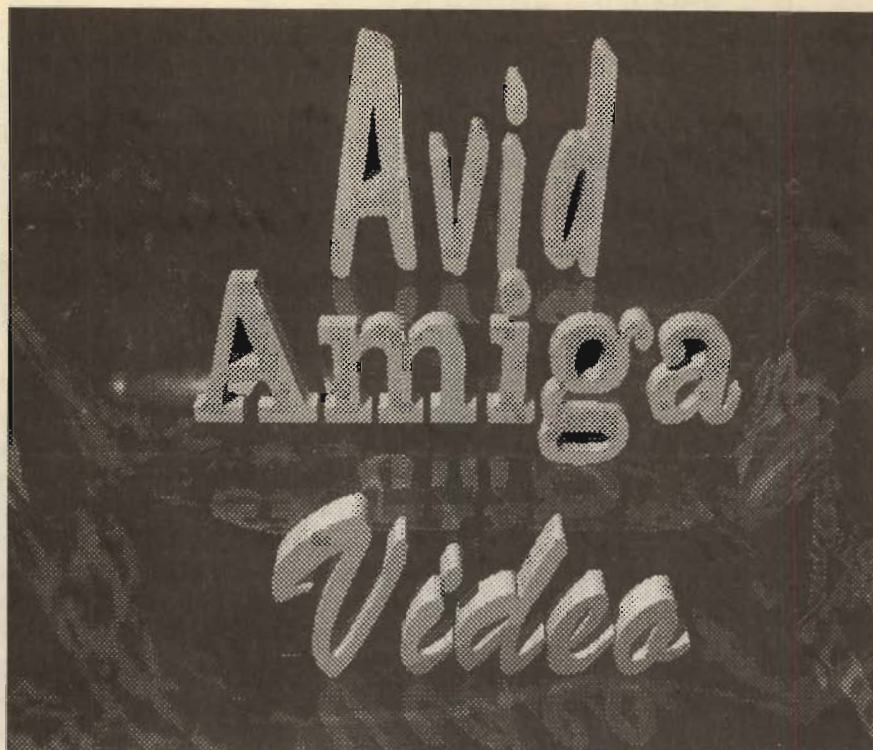
Compatibility: Lightwave 3D Object Format or Imagine TDDD Object Format. Each character has been carefully handcrafted to properly support Phong Shading for the highest quality appearance from any angle. Each font includes CAPS, small case, numbers and the symbols !#\$%&*()''"?@£/. (Lightwave 3D versions are true polygon-based and have named polygon ranges for easy attribute setting of front/back and sides.)

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Broadcast Fonts 3D for Lightwave from Unili Graphics

Extruding Text with Pixel 3D

As you can see from the illustration, the fonts look great when rendered. For comparison, I tried rendering some text objects that I created with Pixel 3D 2.0, creating the original image in Deluxe Paint by typing on a high-res screen with a large font. I discovered a problem with words containing both curved and straight diagonal sections. If in Pixel 3D you set smoothing to a high enough value to avoid stair-steps on the diagonals, the curves tend to look blocky, and if you set it low enough to create smooth curves, the diagonals tend to zig-zag. One solution is to use little smoothing, then remove the extra vertices on the diagonals with Modeler.

Virtual Lionel

If you like trains and 3-D computer graphics, be sure to add the LightWave 3D Train Set from Electronic Images to your shopping list. Also available from the company is a Science Fiction spaceship set, and due out soon is a set of fine automobile models. If you send E.I. a videotape containing an animation you've made with their objects, they'll give you half off your next purchase—a great policy, in my opinion. The train models

are patterned after cars built by American Flyer, Amtrak, Central Pacific, and Illinois Central. Engines and cabooses are included for all four. There are also open and closed boxcars, passenger cars, oil and wine tankers, cars for cattle and ore, and of course a seesaw car. In addition there are a number of parts for building a complete model railroad, including a straight track section, various crossing lights and signs, and a mailbox and phonebooth. If you want scenery, stations and curved track sections you're on your own, though.

All objects come set up with the proper surfaces and attributes for their various parts, though you're at liberty to change them, of course. While adequately realistic, the models are not as detailed as the real-world variety, because to do so would tax the resources of a system attempting to render a complete set. On the other hand, two engines and the seesaw come in parts for hierarchical motion. The American Flyer steam engine has separate main drive wheels and rods, and the Central Pacific Diesel Engine has separate main drive wheels, wheel connecting rods, and connecting rod drivers. Add a puff of smoke, a hearty "Who-

who", and you're in railroad heaven! Who needs Railroad Tycoon games when you can build your dream train layout in your digital basement?

The manual is great, with brief instructions on the use of the objects, large wireframe illustrations of all parts with an index, and a bibliography. Especially useful is the Object Surface Attribute chart developed by E.I. which they've included and encourage users to copy and distribute to other LightWave users. Each 8 1/2 x 11-inch page includes a space for an object name and eleven different surface types. For each surface you can specify a color/texture, percentages for diffuse, specular, and refraction map, values for glossiness, edge opacity, and the rest. Until Allen Hastings builds a printout capability into LightWave, manual entry into this valuable chart is the best way to get an overall view of your objects' various surface types.

Public Domain

I suspect there are more than a few of us who use LightWave 3D to create animations and DCTV to display them. The way this is normally done is to render all the LightWave 24-bit images to separate disk files, then use IfftToDctv to convert them to DCTV format, then a program such as Deluxe Paint or Makeanim to compile the DCTV frames (which look like hi-res to the Amiga) into an animation. This process is not only labor-intensive but can consume vast quantities of disk space, especially for the 24-bit images output by LightWave. It's the ideal problem for computerized automation, for which an enterprising chap named Daniel J. McCoy came up with an ingenious solution called DCTV Automated Animation Maker, or DAAM for short, which he's released as shareware. It used to be called Automated DCTV Animation Maker but the name was changed because Coleco holds the copyright for the name Adam.

Though not a commercial product, DAAM is a great example of Amiga software in several ways. It was created using Innovatronics' CanDo, and thus is an example of how that program can be used to create a useful elegant-looking program without requiring extensive

programming knowledge. Also, DAAM coordinates the activities of three other programs—IffToDctv, MakeAnim, and optionally an image-viewing program—while processing the output of a fourth, the rendering program. Thus it takes full advantage of the Amiga's multitasking operating system to save you lots of time and effort.

DAAM's program settings include presets for images output by LightWave, Imagine, VistaPro, and Animation Journeyman, but you can set the program to recognize output from other programs that use a similar numbering system for consecutive animation image frames. There is also a complete range of preset sizes for output DCTV images. Options let you delete or move original and DCTV frames after processing, and set paths for the various files used by the program. When you click on the Do It button, the program waits for output from the renderer, then processes the images as you've designated as each is rendered and saved to disk.

If you're short on disk space you should opt to have original frames deleted, in which case you'll only require enough storage for one or two original frames plus all of the DCTV frames. Animation compilation isn't performed until all frames are rendered and converted. However, conversion to DCTV frames is ongoing, and both rendering and conversion can use the CPU and disk drive simultaneously, causing slowdown even on the fastest of systems. If you've got plenty of disk storage, you may wish to render all frames to disk first, then run DAAM afterward. One great ability is the option to reprocess converted DCTV frames, for example to reduce the number of bitplanes or change the size.

For those of you who have difficulty obtaining public domain software, I've created a disk containing DAAM 1.0 and the support files Makeanim and an image viewing program (if you have DCTV then you have IffToDctv), plus an interface program for Makeanim called Createanim and some public domain 3D objects, which I'm making available to readers of this column for \$5. Send a check or money order to the address above.

Please note: you must be familiar with AmigaDOS and have mastered the Shell or an alternative utility such as DiskMaster in order to install these programs.

ImageMaster Update

Here's a follow-up item to close out this month's column. The programming elves at Black Belt Systems have been keeping busy. I've just received the latest update of Imagemaster, their awesomely versatile image processing program, which fixes a number of bugs and adds a number of new features. Among the most notable of the latter is the unique dual fill feature. You can specify two gradient ranges for a side-by-side or above-below two-way blending. For example, if you choose red to blue as your first range and green to orange as your second with a horizontal dual fill, filling a rectangle, you'll get red blending into blue across the top half and green blending into orange across the bottom, while the left side blends from red to green vertically and the right side from blue to orange. Dual fill options are horizontal or vertical, with or without warping.

Another new fill option is the Poly Range fill, which places a smooth user-defined gradient around the perimeter of any shape. Other programs let you do this with a few colors, but only Imagemaster lets you use any number of colors up to 256. Of course, using that many colors in a large shape might put the computer to sleep for a while...

Another major new feature is the User Transform function available from the F/X Panel. Selecting this button brings up a whole new requester which shows you a brightness curve for the picture area you define, and lets you adjust it using a large line graph you can draw in. There are several graph presets for standard image processing functions and you can load and save graphs. Many unusual and useful effects can be obtained by experimenting with different graphs. Black Belt is to be congratulated for adding even greater usefulness to a program already loaded with functionality.

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Sure, I said it. I also immediately regretted saying it.

For one thing, the UPS guy thought I was lying; and I never lie, although I've been caught in a stretcher or two.

Second of all, the joke fell as flat as my feet when I hit draft age.

But the UPS guy started it. I was at Burlingame's Computer Spectrum, a San Francisco Bay Area Amiga dealership, when he showed up with a handcart bearing ten or twelve large packages.

"Look's like I brought you a lot of goodies today," he said. "Everything but the kitchen sink."

"Well," I said, and I paused. . . "I think that's probably in there, too."

The UPS guy looked at me and chuckled a polite, obligatory chuckle as Robert signed for the packages and I tore into one of them. I found the box I was looking for, shook off the styrofoam peanuts, and held the box up for UPS inspection.

"Look" I said cleverly. "The Kitchen Sync."

Let it not be said that UPS doesn't have a sense of humor. LET IT BE SHOUTED! This UPS guy looked at me with a disdainfully superior smirk, and then he said:

"Yeah, but I meant 'sink' sink, not 'sync' sink."

I became lightheaded and time slowed. Reality seemed just beyond the reach of an outstretched arm, and I got the visual impression of watches melting over the handtruck. The face of the UPS guy



distorted as if I were viewing him through a fisheye lens.

At first I confused this excursion into surreality with an existential identity crisis; then I thought it might be an acid flashback from the '60's. Later I found out it was just gas.

I regained my composure and said, in my most dignified, cool manner: "Pardon, then. My mistake." I picked up the single box and walked to the back of the shop.

The box contained three boxes. One contained the Kitchen Sync main board, which looks like it's made of blue anodized aluminum (but better not be). The second box contained a small remote-control unit which is about 1" x 3" by 6". The third box contained the connector box. This connector box, which is slightly larger than the remote control unit, has six BNC connectors on it - Channel A IN and OUT, Channel B IN and OUT, Genlock IN, ADV Sync OUT. This box also bears four Y/C connectors - Channel A IN and OUT, and Channel B, IN and OUT. Don't be fooled, though. The two Y/C connectors labeled OUT do not function without an optional Y/C output module which is not yet shipping. This

module, which will cost in the neighborhood of \$100-\$200, will fit directly onto the main Kitchen Sync board, so no more hardware will be hung off the two boxes already outside the computer.

The main board slipped into the first AT slot on the shop's Amiga 2000, and the connector and remote control boxes bore cables which plugged into the main board.

Very simple, five-minute installation.

Despite its punny name designed to raise visions of Blenders and Toasters, Digital Creation's dual time base corrector is designed to work in any computer that contains an AT-type expansion slot. All controls are built-in and accessible via the remote control. Menus are displayed on a two-line LED display and accessed by five buttons below the display. There is no software to install on a hard disk, so there is no need to multi-task with whatever other video peripherals your Amiga might be running. Nor will there be any problem switching the Kitchen Sync to a DOS machine.

The main menu accessed via the remote control contains five main menu items and a hidden item. These are: 1) Processing Amp, 2) Freeze Menu, 3) Special Fun!, 4) Program Store, and 5) Genlock Menu. The hidden menu is Special Fun2. The Processing Amp menu allows control over hue, saturation, gain, luma peaking, horizontal chroma delay and vertical chroma advance. The Freeze Menu allows you to select the channel you wish a frame to be frozen from, and also the display mode (field #1, field #2 or full frame). Special Fun! controls

picture centering, signal type (NTSC, PAL, composite, Y/C), output signal type, vertical lock and AFC circuitry gain. Program Store is just that, allowing you to store up to three Kitchen Sync programs for multiple studio set-ups. And the Genlock Menu controls chroma phase, horizontal adjust, vertical adjust, and allows you to tell the Kitchen Sync to compensate automatically should the genlocked signal start to jitter, or tell it you will control it manually.

The hidden menu, Special Fun2, which is accessed by pressing two of the buttons (SHIFT+RIGHT) simultaneously, allows selection of luminance delay, horizontal loop calibration, a vertical time constant setting, and calibration gain - all of these, of course, for any channel. All six main menu items contain a MAIN MENU button which allows you access to the MAIN MENU without the necessity of pressing the ENTER button and thereby confirming your choices.

The Kitchen Sync's two TBCs are infinite-window, meaning that they adjust the sync on a full frame of video at a

time, instead of line-by-line. This assures compatibility with NewTek's Video Toaster, which, if it is to be used with anything but live video input, requires an infinite window time base corrector or two (or three, or four, depending upon how many inputs you wish to use).

The Kitchen Sync is more than competitive at a list price of \$950 per channel (\$1,895 total). The Kitchen Sync's two time base correctors are timed spot-on at the factory, removing the typical necessity of timing two TBCs to each other. All you have to do is keep the video output cables the same length. This will be easier to do with longer cables than with shorter ones, since one inch is less than one percent of a ten-foot length; while one inch is about three percent of a three-foot length. John Weber of Progressive Image Technology, the manufacturers of the hardware, assured me that a one-inch difference in a ten-foot cable would be insignificant. A one-inch difference in cable length in three-foot cables, however, would be another story.

The Kitchen Sync is capable of cap-

turing both an interlaced frame of video (1/30th of a second) and an individual field of video. Actually, the field freeze is a display mode rather than a capture mode. The full frame of video is always captured, and the user can specify which field to display. The field information is doubled and then output as an NTSC interlaced frame of video. This display, even though it is interlaced, contains only half the detail information available in the full frame. A user has twenty seconds or so after capture to check the full frame to see if it is useable. Why wouldn't it be useable? If the subject of the video moves rapidly, there will be a significant difference in data between the two fields. For example, it is quite easy to turn your head through 30° of arc in one-sixtieth of a second. The resulting interlace jitter as one field and then another scans can be intolerable. However, if the full frame contains a minimum of motion and therefore does not suffer badly from interlace jitter, the full frame may be selected for display.

Installation of a Kitchen Sync has



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certain advantages over the use of two separate time base corrector cards.

The Kitchen Sync uses only one Amiga (or any other computer) AT expansion slot. You can put four channels of time-based video through two computer slots if you install two Kitchen Syncs. I've heard of Amiga power supply problems when a Toaster and up to four time base correctors have been installed. The two time base correctors on a Kitchen Sync card, however, require only 7.5 watts of power, minimizing the possibility of overloading the Amiga power supply.

Any open channel of a Kitchen Sync functions as a true RS-170A blackburst generator, so you don't need to run your lens-capped camcorder to stripe tapes with black, or to run your genlock when you are creating graphics. If you run three time-base corrected inputs into the Toaster, and run the Toaster Program Out through the remaining fourth Kitchen Sync channel, your Toaster Program output will be time-base corrected.

PAL to NTSC transcoding is standard on the Kitchen Sync; so your studio can offer this service to clients without the necessity of additional equipment.

The most exciting aspect of the Kitchen Sync, however, is its S-Video inputs when utilized with New Tek's Toaster. "Now wait a minute," you're probably thinking, "The Toaster is for composite video only!" You're right, of course; but there's composite video, and there's composite video.

The S-Video input capability of the Kitchen Sync frees Toaster users from the tyranny of the Toaster's composite-only input. The Toaster's 5Mhz output assures that it can pass up to 400 lines of horizontal luminance resolution. But that's only if the video input exceeds 400 lines. Remember GIGO? You ain't ever gonna get out of a Toaster a higher resolution signal than you put in! If you're putting 220 lines of VHS or S-VHS composite into the Toaster, or perhaps the 260 lines of standard 3/4", you'll get no more than that, in fact somewhat less, out of the Toaster.

The Kitchen Sync, however, 'transcodes' Y/C video. It's proc amp processes the chroma and luminance sig-

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nals separately, keeping them completely separate until they are combined in the composite output. The composite output from the Y/C input is rated at -6db 4.6 MHz. This means that ALL Kitchen Syncs operate at this level at a minimum. If you read my September article (AVID, Sept 1991, p. 28) on Broadcast Titrer's 35ns pixel display mode, you'll perhaps recall that the maximum theoretical resolution of a video device is dependant upon its upper luminance bandwidth - in the Kitchen Sync's case, 4.6 MHz. Remember how to calculate maximum lines of luminance resolution from this? Invert the number ($1/4,600,000$ secs per cycle = 0.00000021739 seconds per cycle). That's the time-length of one cycle of the signal. Divide this number by two to find the time it takes to display half a cycle (one pixel), because that's the minimum change in signal we can see (0.00000021739 secs per cycle / 2 pixels = 0.000000108695 seconds per pixel, or approximately 108 nanoseconds per pixel). Recall that 53,300 nanoseconds is the time it takes the electron beam to scan horizontally once across the video screen; so to find the number of ultimate lines of resolution, divide 53,300 ns/line by the length of time it takes to display a single pixel ($53,300$ ns per line / 108 ns per pixel = 493.5 lines of ultimate resolution - in this matter I equate a line of resolution with a pixel). Multiply that by $3/4$ (because video tekkies are wierd and insist on bringing the aspect ratio of a video monitor into this) and you get ($493.5 \times .75$) = 370 lines of resolution possible from the Kitchen Sync's composite 4.6MHz output signal when Y/C video is input into the corresponding channel.

If you put a clean Hi-8 or S-VHS videotape signal into the Y/C inputs on the Kitchen Sync and then send the composite output through the Toaster, you might get on the order of 350-360 lines of resolution from your Toaster. A damn sight better than most people have been getting.

I hope to check this last point out in the near future, and maybe AVID can arrange to scope out the Kitchen Sync and a couple of competing products. Anyone have a vectorscope and waveform

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style

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For an artist, style is at once an enigma and a necessary aspect of the doing of any artistic creation, including electronic and video art. It is an enigma because the more you go in search of it, the farther away it recedes into the unreachable distance. It is invited into one's life and art slowly and subtly, by paying attention to the necessary expressions at hand, and allowing "style" to flow from a long discipline of "action" rather than "thought". It is necessary to the artist because it is "style" that sets one person's artistic approach apart from another's attempts, and it must not be simply copied from anyone else. Now this doesn't mean that you shouldn't attempt to duplicate a work that attracts you...on the contrary. This may well be an important step in following a personal voice that is too soft to be heard clearly in the beginning. We "like" certain styles that others possess very strongly in the beginning of our own personal artistic searches, so that studying the masters has always been a doorway to personal expression. After rigorous attempts to train hand and eye, the artist has to risk everything and stretch beyond the bounds that a specific teacher either permits or validates. Without risk in any medium, there is no artistic fulfillment for either the artist or the audience. One of the purposes of art is to present visual information in a way that stops the viewers in their tracks, and to stir them into action, reflection, and/or dreaming the vision on.

Artistic Training

There is no way to create lasting art on canvas or microcomputer without some period of study and reflection. Just pasting down a series of clip-art pieces seldom produces anything lasting (I say "seldom" instead of "never" because the great collage artists of this century were

able to take ordinary "things" and accentuate them in extraordinary fashion. One example would be the late Andy Warhol's work, which was also connected some years ago to the Amiga-as-paintbrush). Some people go to art school for their training and never approach art again after they are "educated". Some never come within a hundred miles of an "art school", but are neck deep in their artwork all of their lives. There is no hard and fast rule, except that everyone who finally becomes an "artist" works very hard to constantly refine their vision. I believe that we have a "seventh sense" which allows us to recognize when this is honestly accomplished, and to appreciate it.

The artist's work is soaked in personal experience. If you listen as most twelve year old children sing the blues, though their technique may be flawless, there's something audibly missing from the perceived depths of the music, a lack of experience behind the words. To have technique without the motivation that only experience brings, is to have a product without an accompanying process. One-dimensional art may shine with technique, but have no deeper perceived "value" or meaning. The "medium" is not all that there is to the message. Purchasing a set of fine oil paints or an Amiga is no guarantee that you'll be able to delve into your artistic depths without some rather serious and dedicated study over a dedicated period of time. This does not mean that you shouldn't seek out a joyous encounter with the visual and animated possibilities... just the opposite. By starting out with an attitude of having fun and engaging in visual exploration, you take the very first steps required for any artistic search. Even the established "artist" must work very hard to retain that degree of openness that is exhibited by the novice.

To lose that is to lose the possibility of being astounded and surprised far beyond your plans and structures. As a superlative artistic medium, the Amiga actually promotes this constantly fresh approach, because it gives everyone (professional and novice alike) infinite visual options at an affordable price, and the Amiga artist constantly witnesses visual surprises.

One last word about artistic "training" in this new electronic realm. Aside from allowing you to experiment with the artistic genre known as "computer art", the Amiga also gives you the tools to emulate other mediums, such as watercolor effects, airbrushing, pen & ink like line art, photographic manipulation, pseudo 3D sculpting, weaving, videography, animation, and more. This means that those of you coming to the Amiga as established artists in another medium, need not start from ground zero. Some of you may want to take the years of training and experience that you have had in your medium and try and duplicate that same "feel" or "look" on the Amiga. This at least gives you a jumping off place, if not a way of approaching a new medium, and really gets you down to the nitty-gritty of using electronic painting tools. Others, of course, feeling that they have "played-out" the medium that was their previous expressive tool, will want to approach the Amiga in the opposite fashion, leaving all previous thoughts and approaches behind.

See The World As Only You Can

The promise of microcomputer art is that it can, with the myriad of options and visual alterations possible, give us the tools to relate the visual substance of our dreams, and the power to relate them to each other in a prophetically stimulating

and symbolically inspiring fashion.

Art is play, and "style" is born out of that play. You cannot see the world in one "way", and neglect that same "way" in the doing of your art. Impressionism was born out of the eyes of those who "saw" the play of light as paramount over form. Cubism started when various individuals noticed that our appreciation for the visual world encompassed more than the flat surfaces that paintings usually dealt with, and that life had hidden and implicated dimensions born of experience and touch that could be witnessed all at one glance. Surrealism was engendered by people who noticed that by placing different recognizable elements in proximity in a painting, the objects started to "speak" to each other, and that we then looked at that "speech" we interpreted it as "meaningful conversation". Marcel DuChamp found universes of artistic style in the interaction of common everyday forms, much as the Zen colorist is able to develop a recognizable style from the subtle twist of a noticed branch. Photorealism (which takes on new perspectives and importance in Amiga computer art) is a way of seeing the world like nobody really sees it, a world that is so clear and sharp that it produces a paradoxical dreamlike impact. PhotoRealism is different from crass "representationalism" where the artist pretends the eye is only a camera, with no personal questions about the symbolic impact of all form. The representationalist has little lasting power to communicate the visual dream, because elements of the dream do not make "sense" except in a symbolic way. Your artistic mission then (should you decide to accept it) is to engage in visual play whenever you sit down at the Amiga digital canvas. Play in the ways that only your unique visions and dreams demand, and the basis of your personal visual "style" will grow from that.

Pens and Brushes

One paint brush is not like another, and one drawing program for your Amiga cannot be arbitrarily traded for another without a noticed change in the "style" of your work. If your emerging "style" demands thin strokes, then (obviously) you

will need to work in a specific resolution and with specific tools that can produce those strokes. Conversely, if you are more comfortable with painting in broad strokes with four colors (and "comfort" is a good indicator that you are on the right stylistic path for you), then why purchase a HAM paint program or a 24-bit device? If you are just beginning, learn one painting/drawing program (one that you are excited about) very thoroughly. Leave the rest of them go for a time. This will allow you to get a "feel" for the system and the methods without being overwhelmed by too much stuff at your elbow. A good paint program is like young love, the relationship suffers when there are too many others involved. If, however, you are a moderately experienced Amiga artist, and you are well aware of the way that you enjoy working and the "feel" that your imagery must have, then stretch out to other wares. Read the reviews of all Amiga tools very carefully, and get feedback from friends concerning the strong/weak points of specific products before you invest in them. You will probably find that a specific paint or drawing program (or a Utility program) offers one little way of manipulating an image that is just right for your emerging "style". When you discover that tool, it's like finding a lost child after a long absence. There is also an unauthenticated third choice. If you are an Amiga obsessive (like some folks I know rather well), you'll procure absolutely every visual package sold for the system. Some will sit for months in dusty corners of your workroom, before announcing themselves at the right moment in your search.

Your favorite Amiga software tools may vary from one work to another. As far as doing electronic paintings is concerned, I usually begin with DeluxePaint, and incorporate the 2-D results into DigiPaint, SpectraColor, DCTV Paint, or another paint program. If the finished work has to contain 3-Delements, I might use Draw-4D Pro, Imagine, Real-3D Pro, PageRender 3D, or Caligari. These are some of the packages that I find very central to my continually evolving Amiga painting "style".

There is another element of personal

"style" that it's possible to explore and expand upon with the Amiga... that has the potential of blending the traditional painterly methods with electronic media. The extra hardware needed is called a "digitizer", a device that allows you to capture your traditional original artwork. Depending upon your desires and needs to experiment, there are several flavors of digitizers that you may want to seek out. A digitizer (and in some cases a "frame grabber", a device that allows you to capture single frames of video) may be needed. These images are open to the full range of color and form manipulation that specific paint programs and Amiga screen resolutions will allow. This means that you can still work in pen & ink, watercolor, or many other mediums, and then digitize your work for incorporation onto the electronic canvas!

Style is based very heavily upon your experience in the world, which has both differences and similarities with the experiences of all other people. Those parts of your experience that demand expression become translated into the kinds of subject matter that becomes a recognizable part of your style the more work you do. Subject matter can be based upon your dreamworld just as righteously as it can be related to your daytime appreciation of "common events" (in fact, sometimes art makes no distinction between the two). The subject matter may predominate in your painting, or be a small icon, symbol, or mark that appears in a small corner in a range of your works. It can be a galloping horse, a yellow square, a spaceship, a mirrored cube, a certain cloudy sky...any of these can tell others about your visual world and also evoke and influence the dreams of the onlooker. In this way, "style" is both the comfortable visual idiosyncracies that you demonstrate over time and is also the level of involvement your work initiates in the audience.

"Style" is everything that both sets you apart from others just like you, and at the same time is the basis of your being able to communicate with others in a similar and somewhat shared symbolic language. It is both that which sets you apart from others, and draws draws ev-



everyone together in acts of instant visual communication. You can usually tell that you are developing a style when you notice that those whom you contact either appreciate the hell out of you, or dislike your work intensely. Style represents choice and risk. Not everyone will stand with you in your choices, and not everyone will want to purchase your artwork (until you're dead, when the promotion people will "discover" you, and offer your work to wealthy investors at an inflated profit).

Visual artists, including Amiga video artists, are image philosophers, and the hint of their beliefs (usually too complex and abstract for words alone) can be literally felt from visual engagement with their work. If an artist has to "explain" a painting, in traditional or electronic media, then either the wrong audience is asking the question or the visual experiment is less than fully communicative. Satchmo Armstrong is reported to have said, in response to the question "What is Jazz?" "...If you don't know, you shouldn't ask!". If you can't get a discernible "hit" from a piece of visual art, then no amount of verbalization will suffice to lead you to its soul...or yours. Not all art "works", whether it be commercial or not. The point is not the electronic or traditional painting as "product", but the process that the artist is going through in an attempt to learn to "see" deeper and wider, and to share that exciting journey with all who witness the event.

"Style" is only developed from a dedicated and ongoing work regimen. You have to have a time set aside everyday for immersion in the process, and you must try at all costs to be present in your work room at that time. That old tale that an artist waits until the muse speaks before doing any work is complete nonsense. Like Hemingway said, "...a writer (artist) writes (paints) everyday, and doesn't wait for that "special voice". More than likely, you will only keep and/or show to others about ten percent of what you create, but the rest is not a waste of time. It is the dues paid in the development of "style". Here's wishing that you achieve the development of your own style on the Amiga, and that you are able to share it with the rest of us. Enjoy!

Avid Feature!

Creating Custom Wipes with your Video Toaster



© 1991 by Gary Jolivet

When I give training on the Video Toaster I always stress the fact that this is a tool: the Video Toaster is the brush and oils of video production. The better the understanding of the Video Toaster, the more creative the production process will be. I proved this to myself again just last week, while preparing for the World of Commodore show in Toronto.

Commodore Canada invited me to demonstrate the Video Toaster in their booth. It was three days before the show when I decided to put a five minute demo tape together describing each product that I would be demonstrating. There was the Video Toaster, the Personal TBC, AmiLink/CI and a few AG1960's from Panasonic.

At about this time, a customer who had just purchased two Personal TBCII's called up complaining that there was no way in the world that he could get matching video signals from the TBCs. With the threat of a check being cancelled I went to work solving the problem.

Without a vector scope or waveform monitor, the customer wanted to use a wipe pattern to split the screen between bars recorded on VTR A with color bars recorded on VTR B. With the split screen, adjustments could be made to the proc amps to match the signals. The problem that arose was that there didn't seem to be a way to exit the Toaster and keep a wipe half way. The Toaster would always finish the wipe pattern before exiting to workbench.

A week earlier I had figured out the Art Card crouton, better known as the key hole effect. Yes it took me almost a year before I realized the potential of this little critter. As a part of my demonstration I would show customers how they could fill fonts with video. Experimenting with the Art Card I found a solution that solved the problem of matching two video signals.

Let me first explain how the Art Card works. The Art Card allows the use of three separate bus inputs. What ever is selected on the preview bus is used as a

matt pattern. When the black scissors are selected, the input on the overlay bus fills the white part of the matt. When you select Ctrl + Ctrl + Alt + Alt to exit to the work bench all bus selections remain.

What I did to solve the customers TBC dilemma was to create a matt pattern in Toaster paint that simply split the screen in two horizontally. The top half of the matt was black and the bottom half was made white. You load the matt into DV1, select black scissors and the Art Card from bank D, select DV1 to be the matt on the preview bus, select VTR A (input 1) on the program bus, VTR B (input 2) will be selected on the overlay bus. Finally you Ctrl + Ctrl + Alt + Alt to the workbench and adjust your TBC software.

What I had figured out was a lot more than how to adjust two TBCs. The secret of creating Video Toaster wipe patterns had been figured out. What if the black and white mat I created were on animation instead of a single frame? Off I went to ChromaFX.

In ChromaFX I selected the black and white effect, pulled the T bar down all the way and started to experiment. With little difficulty I recorded five minutes of video that consisted of a black and white silhouette of my face. Half the screen was the black silhouette and the other half was white. I was well on my way to creating my first organic wipe pattern.

The next step was to see how the Art Card would treat this wipe. I loaded the Video Toaster Logo into DV1, selected black scissors and the Art Card from bank D. On the preview bus I selected VTR A (input 1), this was the five minute silhouette I had created. DV1 was selected on the program bus and VTR B (input 2) was selected on the overlay bus. I had a Video Toaster demo tape running in VTR B. Awesome!!! is how I initially described it. The black silhouette was filled with the Video Toaster logo and the white part was the demo video, with no shadow, as clean as can be.

It does not stop there. I knew I was onto something hot. My next experiment was to take the composite output of the Amiga and run it into one of the inputs of

the Video Toaster. The signal just didn't cut it, so as a last attempt I ran the composite output of the Amiga into a TBC then back into the Video Toaster. Voila!!! I could now use the Amiga computer as my wipe generator. All those Amiga software programs that have been ignored for the last year just found a new purpose in life.

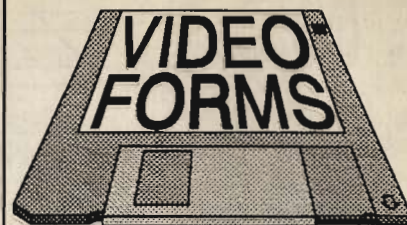
I set up the Art Card as described above using input 4 (the Amiga) as my mat pattern. The next step is to jump back to the work bench with the Video Toaster still running (Ctrl + Ctrl + Alt + Alt). Once you are in the workbench, everything you create will be treated as a wipe pattern by the Video Toaster. Deluxe Paint III is great for creating 2-D animation.

Say you wanted to create a wipe pattern like falling sheep. Creating a black and white animation in Deluxe Paint III will create that wipe. Start the animation with a solid black screen; that will show all of what is selected on the program bus. Start filling the screen with white sheep; that will show whatever was selected on the overlay. When you play it back it will be as clean as any of the existing wipe patterns.

If you use Broadcast Titler II or Pro Video Post software as your mat generator, the door opens for some very interesting effects. Broadcast Titler II combined with the Video Toaster now has fonts that can be any of sixteen million colors. You can now have Pro Video Post fonts that are filled with a second video source.

The more you have an understanding of the tools you are working with, the more creative the production process will be. I am sure there are many more secrets to be discovered about the Video Toaster from NewTek, and I look forward in the future to be able to call up a bulletin board and download organic, inorganic, wedding, sports, music, etc. wipe patterns for the Video Toaster.

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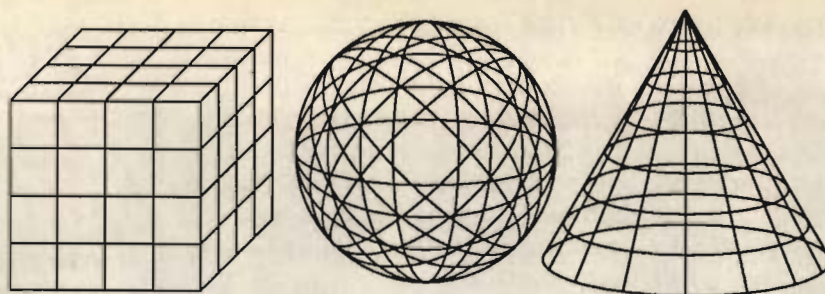
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OBJECT • LESSONS

3D Modeling Concepts

Part 2

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Last month's article introduced many basic techniques for modeling 3-D objects. The combination of careful planning with a one-step-at-a-time breakdown of your object can help you produce most objects you need in your 3-D programs. Unfortunately, modeling becomes a challenge when you have to make large, detailed objects that cannot be broken down into simpler parts. A boat hull is a single seamless piece, and a car body can't be made of glued together panels without looking like it's made of cardboard. This article will try to present some ideas and techniques for solving this difficult problem.

The first step in modeling a complex object is the same as it was for the simple objects; think about the shape you want to represent and understand how it is made. Take a couple of minutes studying the object. A firm image of the shape in your mind is essential to determine the best way to build it. This isn't a course in Zen meditation, but you can't just leap into measuring and modeling without a plan of attack.

Complex objects that can't be broken down into parts tend to be organic and liquid shapes, or smooth shells or hulls of vehicles. In either case, the main distin-

guishing feature of the object is a smooth continuous surface, since any abrupt changes or sharp features can just be modeled by splitting the object into parts along the discontinuity.

Since these shapes are smooth, a lot of the standard tools we use to create objects aren't as useful. Primitive shapes glued together are discontinuous, and flat extrusions aren't detailed enough. The best tools for dealing with smooth shapes are the ones that deal with manipulating many points simultaneously. Most 3-D modelers allow dragging many points at once. Imagine 2.0 will allow you to pick a group of points, and move, scale, or rotate them interactively. Imagine also has a "magnetism" mode that allows you to move surfaces like they were made of rubber or clay. LightWave 2.0 has some terrific modes for twisting, moving, and scaling points, and its ability to bend an object or part of an object is unique.

Unfortunately, these multiple point manipulation commands are very difficult to control exactly. They are terrific for editing your model to fix small errors or sharp edges, but if you have a blueprint or you are holding a model, it is very tough to control these manipulation commands enough to make an accurate representa-

tion of your object. This is not to say it is impossible, just very difficult. When you are trying to copy a model, accuracy is obviously very important, so modes that aren't precisely controllable are tougher to use for model digitizing. This doesn't mean these modes aren't useful, they just don't help as much. Louis Markoya, a well known Amiga artist, is very adept at using Imagine's magnetism modes for making beautiful objects (like some terrific avian shapes), but not from blueprints!

Skinning

There is one other common modeling ability that allows for making complex one-piece objects. This is the ability to "skin" a succession of outlines to form in effect a "tube", with an arbitrary cross section along the tube. Many modelers have this ability, including both Imagine and LightWave.

"Skinning" is a very powerful modeling technique. An object, no matter how complex, can always be modeled as a series of sliced cross sections as long as the object is smooth and continuous. Since smooth and continuous objects are exactly the type of object we are having trouble with, this makes this method of modeling very appropriate.

For example, I once had to make a boat hull for an ocean scene. The hull has a streamlined shape that has to be cast in one piece, so the standard modeling methods (quick extrusions and joining of primitives) just couldn't represent it. However, the hull was ideally suited for modeling by cross sections, since the shape of the hull changes smoothly over its length. Figure 1 shows the hull's outline (a side view) as well as several of the cross sections of the object. With enough of these cross sections (I used a total of 13) I was able to characterize the hull very accurately.

Both Imagine and LightWave allow you to make these "skinned" objects fairly easily. LightWave 2.0 features a very sophisticated skinning algorithm that allows you to define a set of cross sections with an arbitrary number of points defining each one. LightWave will figure out how to make a skin from one cross section to the next. (This is difficult since the outlines have different numbers of points defining them, and LightWave has to make a decision which parts of one outline correspond to the next.)

Imagine's skinning method is somewhat more limited in this respect. It requires each

cross section to have the same number of points in order to make the computer's job of matching the corresponding cross sections easier. However, unlike LightWave, Imagine allows interactive definition, editing, and adjustment of these cross sections. The control that you have over each cross section is phenomenal, since you can define and add new cross sections in the middle of an object, make interpolated cross sections that aren't "key" cross sections, and use different modes to keep the object symmetrical over different axes. Individual cross sections can even be stretched, warped, and tilted. Imagine's cross section definition actually takes place in its own separate subprogram (The Forms editor) which is built specifically for this method of object definition. This editor does its job very well, though it is not easy to learn to use at first. The editor's interactive control over cross sections more than offsets the limitation having to use an equal number of points in each cross section.

Even if a modeler doesn't have a built-in skinning command for making objects from cross sections, you can still perform

the task manually. Just make a series of outlines, then after you've positioned them the way you want, use the defined points to build the "skin" manually by adding faces. It might be boring and repetitive, but it is easy enough to do.

Model Measurement

Understanding how to use the tools of your modeler requires practice, but it really isn't difficult to skin a series of outlines. The difficult part is actually determining what those outlines should look like! Dragging points into a shape is easy once you know what that shape is supposed to be, but when you have a real-life model, how do you measure these cross sections in the first place?

There are many techniques for this. (Many of them will involve tools that look very strange sitting next to a computer, like hacksaws!). The goal is to take a physical object and determine its cross sections accurately. A ruler

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or a set of calipers will be of little use, since you want to locate the absolute locations of edges and points on the cross section and not just the lengths of the edges. You need an absolute reference in two coordinates simultaneously. Ideally, being able to trace the cross section outline on graph paper would allow you to accurately see the shape of the cross section and enter it into your modeler. Our goal is to eventually get the cross section shapes onto graph paper, since the model will quickly follow.

Transcribing cross sections onto paper is still very difficult! There is almost never a way to directly place your object on the paper to just trace the cross section outlines, so we have to use indirect methods. Perhaps the most elegant method involves a tool called a "contour gauge" found at most hardware stores. This tool measures odd profiles of corners and moldings so floor tiling can be cut in the exact opposite shape to snug up closely to the wall. The gauge consists of a large

number of stiff metal wires aligned side by side in a row, held in place by the friction from two plates that sandwich the wires between them. The wires are relatively free to move in and out, so you can press the gauge against a shape and the wires move in the appropriate amount. You just press the gauge against your object, then place the gauge on your graph paper and copy the shape.

This seems like the ideal tool for cross section measurement, and it works quite well for many shapes. Unfortunately when you have a sharp contour, the wires bend out and around the edge instead of being pressed in. Also, the relatively coarse size of the wires makes very accurate measurements difficult. This tool looks like the ideal solution for cross section measurement, but in practice it is best for large surfaces without sharp features.

Mike Halvorson, president of Impulse, told me once that he had good luck modeling cars by cross section. He went

to a hobby store and bought a clear plastic "shell" of a car. These shells are often used as the base for large radio-controlled cars. Mike used thin, opaque tape along cross sections of the shell and eyeballed the now-visible cross section shapes. Though it isn't necessarily very accurate, this struck me as a particularly elegant way of getting the feel for the model's cross sections since the clear body makes seeing the shape defined by the tape easy.

Casting

One possible way of measuring your object's cross sections might be to just take a hacksaw and slice your object into slices thin enough that they can be placed onto graph paper. Medical laboratories often build models this way, with a razor blade taking off sheets of tissue that are digitized with a camera, then assembled in a computer. In our case, this might very well be a practical solution, but unfortunately it tends to destroy your model as you

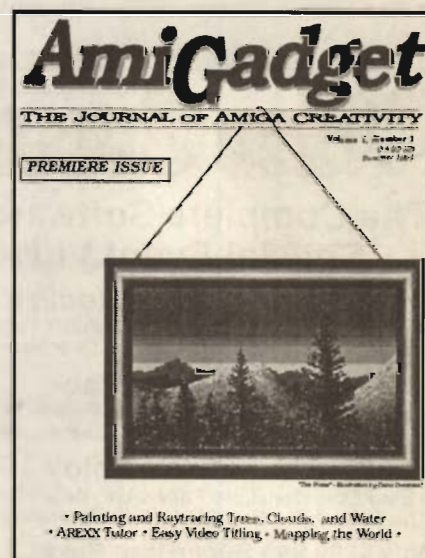
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measure it. Even if you don't want to keep your model, there is a significant danger that if you make a mistake you'll never be able to start over. Also, many models aren't sturdy enough to be able to slice accurately; a thin piece of plastic would rather break than be sawed through.

It is much better to measure the cross sections indirectly which still leaves your model intact. The best solution I've found for measuring cross sections is by making a cast of the model- a mold. Artists are used to taking casts of objects to copy them in plaster or other materials. If we can make a PHYSICAL copy of our model without damaging it, we are free to mutilate the COPY with a hacksaw. An additional benefit is that we can make our copy out of a sturdy material that is still easy to cut through.

After a lot of experimentation I've come up with a very reliable, cheap, and easy way to copy objects. Artists generally use a "molding compound" or "casting media" which is a paste that can be

brushed directly onto an object. Alternatively, an object can be immersed in a bowl of the goop. This compound changes from a paste to a flexible, springy surface in about half an hour. Very surprisingly, the compound does not seem to stick to anything: plastic parts pop right out, metal is even easier. A large glob that accidentally fell onto carpeting (!) actually came off easily, leaving the imprint of the shag! Additionally, the compound is water soluble, non-toxic, and cheap. I found a product called "Instamold" at a local artist supply store that came in a powder form (mix with water to use) that cost about \$6 for enough compound to make a gallon.

The casts that this material makes could be sliced and measured directly, but it is a little too pliable to hold its shape when cut and measured, and after about 6 hours it does become hard, but it shrinks and cracks. It is really more suitable to use as a mold for a SECOND casting material. Artists use plaster of paris quite

often, but plaster is a little too hard and messy to be slicing into the cross sections that we need. I found a second material that worked beautifully: styrofoam. You can buy pressure cans of a "non-toxic foaming insulation compound" at your hardware store for about \$5, which works great. The foam comes out of the can in a mushy mess that expands as it cures (in about 2 hours) taking the shape of the mold. When it's dry, you can take the styrofoam model and start hacking away. The styrofoam cuts well and leaves sharp boundary lines that are easy to trace on graph paper.

Another way of casting your model is to use the styrofoam directly on your object just like the casting media. The styrofoam could be sliced after it sets, and you could measure the cross section shapes from the interior "hole" your object left. Unfortunately the styrofoam sticks to everything (including skin!) so you have to protect your model from the styrofoam first. I painted the plastic hull

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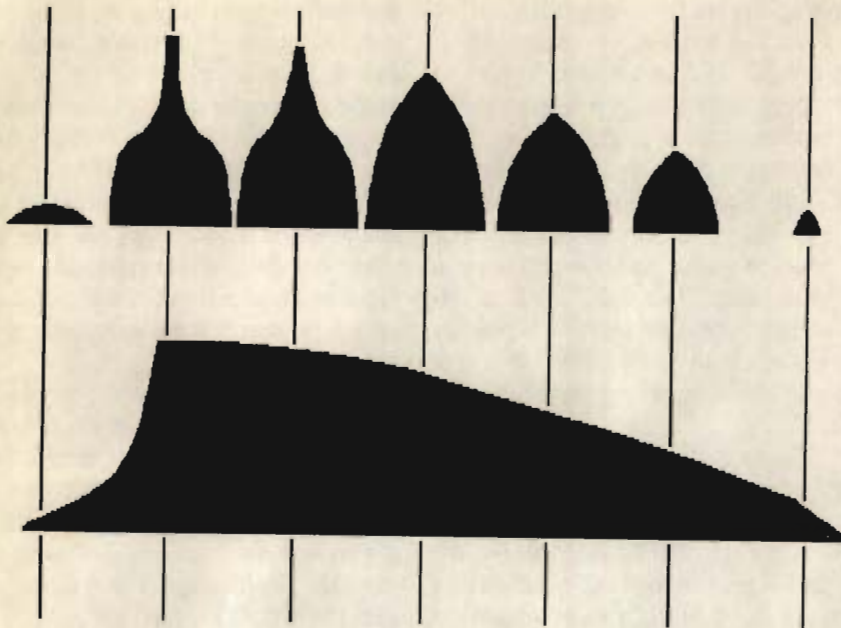


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with a thin layer of liquid latex (also found at an artist's supply store.) Liquid latex is fun stuff, it is basically liquid rubber which dries rapidly. You can even dip your hands into it and make custom rubber gloves... It peels off without any fuss from plastic, but I wouldn't try it on carpeting.

I built a long, rectangular box out of thin cardboard that the boat hull completely fit in, similar to a shoebox. I placed the hull inside, then filled the remainder of the the box with styrofoam. When the foam had hardened, I popped the model out (the thin latex layer stayed behind), and was left with a rectangular solid "anti-hull." I placed it into a mitre box (a tool for holding materials when being cut) and used a hacksaw to lop off wedges about two centimeters wide. Make sure to label the wedges before you start cutting to identify each cross section! It is also easier if you mark the cardboard with equally-spaced parallel lines to identify where to cut.

This second method actually is more convenient, since it is a one-step process. Additionally, since the "anti-model" was in a nice rectangular box, I was able to identify the orientation and position of

each cross section, since the rectangular outside of the mold stays constant for each slice. This absolute reference is valuable for positioning the cross sections relative to each other.

Touch-up

Usually there is some extra work to be done after the skinning. The boat hull was smooth and was ready to use, but what about a car body? I modeled a Volkswagen Golf body, and successfully used cross sections to make a wonderfully detailed version. Unfortunately, it still needed a lot of work to finish it since the windshield and windows were cast as an integral part of the body. There are a couple of techniques for finishing off these small details.

Very often, you want to split part of the smooth shape off as a new object. With the Volkswagen, I wanted to remove the windows from the body, but still keep them to form the glass with. There are a couple of techniques for splitting objects like this. The most straightforward method just involves deleting the points and faces you don't need in the body (like the windshield), then loading a copy of the original shape, and deleting the points that you don't need in the wind-

shield. With two passes of deleting, you get the two separate objects. You can "cut out" parts of your object this way pretty quickly and easily.

If you know you are going to be cutting out sections of your model, you might want to add extra cross-section slices in that region so that you have smaller faces there. That will allow you to better select the exact region you want to cut out.

Imagine and Real3D both have a very powerful function that make "cutting" objects easy. In either modeler, you can build a "cookie cutter" that will cut arbitrary shapes out of your objects. (In Imagine, this is "slice", in Real3-D it is the boolean object operations). This is ideal for pulling things like windshields off of your model, especially since the region where you are cutting doesn't have to have a high number of faces: the program will add them as necessary.

Conclusions

Modeling is a complex task, but you can make accurate models fairly quickly. There are a lot of tools for complex object definition, but skinning is particularly suited for copying real-life objects. Luckily, it doesn't take a lot of work to build models if you have a reference to work from. The best way to learn is to start practicing!

Next month I'll conclude this series on object design by talking about object appearances (attributes) and using brushmaps and textures. Defining polygons is only half the work in making objects!

You can get in touch with me by writing Steven Worley, 405 El Camino Real Suite 121, Menlo Park CA 94025, or by sending electronic email to the address "worley@cup.portal.com".

Other Modeling Alternatives

by Steven Worley

Skinning is by no means the final answer to object creation, it is just a very flexible tool for accurately modeling many of the complex objects that are difficult to build with simple extrusion and primitives. There are other alternatives for object creation, though many are beyond the scope of most animators.

One of my fallbacks in modeling requires some programming skill. TTDDD is a very useful program for specialized object creation of many types of models. TTDDD is a shareware program written by Glenn Lewis, which allows you to write programs to define 3-D objects in Imagine's object format, called TDDD. If you can program (in any language, including BASIC or AREXX) or you have a mathematics background, you can use TTDDD to produce some truly unique and complex objects since you have complete low-level control over the object's definition. TTDDD comes with several example programs (one makes a linked chain, another is a utility in itself that makes rounded-edged shapes) and also has a program to generate 3-D objects from outline fonts. (Perfect for flying logos!) I've used TTDDD to generate animated ocean waves, make models shake and wiggle and melt like Jello, convert foreign 3-D formats to Imagine's, and even make a splashing waterfall. Though TTDDD is built for Imagine's object format, conversion programs like Interchange or Pixel3D can change the model to LightWave or other formats. I highly recommend TTDDD for programmers who use any 3-D renderer, and at \$10, it's a steal.

Some programs will directly output 3-D objects for you; most notably Vista Professional by Virtual Reality Labs will make 3-D landscapes and save them in Turbo Silver/Imagine format. These landscapes take a lot of RAM to render, but they are great as background objects. Besides, as Brad Schenck once said, "If

you aren't always running out of RAM, you aren't trying hard enough."

Perhaps the "last resort" in modeling is just a sneaky trick. Use a 2-D picture of your object and map it onto a flat plane. If your scene is a still, this might work beautifully, and even an animation might not show the fact that your object is really flat. You could even take a succession of frames of your object in different positions and use the set of maps to show your object in different orientations in time. If you want to be really fancy, you could try taking two views of your object, and using Deluxe Paint IV's "brush morphing" to make the succession of frames. Make sure that the flat object has no specular highlights, and try to keep shadows off of it, since both effects will quickly reveal your object is really flat. This option is not a substitute for real object creation, but in a pinch you can often get by.

If you like to dream about truly painless object design, perhaps the most accurate method of model digitization is a direct 3-D scanner. These very high end devices can actually physically scan an object with laser light to determine the surface shape and color. Cyberware is known for their 3-D scanners that were used to make the human models in the Abyss and Terminator II. A 3-D model that one of these devices made from my head was easily of video quality, bordering on photographic. They deal mostly with high end graphics systems, but you have an extra \$50,000 lying around you might want to give them a call. Maybe in a few years...

Virtual Reality Laboratories
2341 Ganador Court
San Luis Obispo, CA 93401
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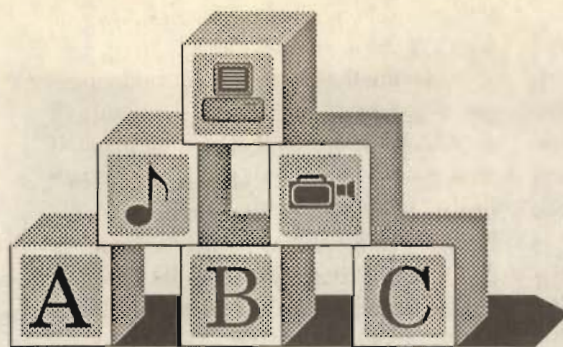
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In the last several months, and particularly since the publication of my audio-for-video articles in the last two issues of AVID, I've spoken to a large number of independent video producers. Most of them either own Amiga 2000's or 2500's, or plan on buying one in the near future. Many of them play music as a hobby, and some produce music for their own videos (as well as those for hire.) Very few, it seems, fully understand or utilize the tremendous audio production power they possess in the Amiga.

Most video producers select music for their video projects from the available volumes of "buy-out" music libraries. Music is chosen for its ability to reinforce the message and the mood of the graphic images. And, by now, you have no doubt noticed the great amount of similarity in many of those music collections. Any attempts on the part of producers to attain distinction are severely stifled by the sameness of those music selections. Nothing can be more distracting than the recognition of a piece of music from another video program, whether that be in the context of a commercial, titling sequence, or in a documentary or industrial video. (For example, here in Arkansas, a large funeral home uses a particular piece of music in all of their television advertising. It is not at all an unpleasant musical theme, but a couple of days ago, a spot about child care was shown on a local news program which used the same musical theme. It is virtually impossible to shake the ominous feeling of the funeral message...)

With the addition of just a few inexpensive peripherals and software packages, and a little practice, Amiga-assisted video producers can be well on the way to producing royalty-free original music.



The ABC's of Amiga Sound & Music for Video

Original music and sounds can add a distinctive signature to nearly any video project. The first step toward using these powerful tools in the composition and production of original music is to understand the terminology and basic concepts involved in the creation and production of electronic sound. (After all, nearly every bit of the music we hear is electronically reproduced. Regardless of whether the original source of the sounds are acoustic or synthesized, they are most likely being reproduced by a loudspeaker and some sort of amplification system.)

Paula and the Four Voice Limit

We'll start with a brief description of the Amiga's own sound capabilities. The Amiga's Paula chip has the ability to produce up to four sounds simultaneously through the stereo audio outputs located on the back of the machine. These outputs may be plugged into a stereo system, mixing board, or a video or audio recorder. If you haven't done so already, I suggest you try plugging your Amiga into a stereo; you may be amazed at the sound quality of this audio/video dynamo.

Initial attempts at creating music on the Amiga have been made incredibly easy to accomplish by working with the Amiga's internal sounds. Algorithmic

composition programs such as M, Music Mouse, and SuperJam! allow even the uninitiated Amiga user to compose some truly useful and amazing electronic music. Algorithmic composition is a process of utilizing the computer to make a certain amount of compositional "decisions" on the musical content of a piece of music. Composing music with M involves giving the Amiga a set of note and rhythmic values from which to

choose. Values for accent, duration of notes, note order and density are set by the computer from a set of variables determined by the user. Music Mouse uses the Amiga's mouse and keyboard to control the internal sounds, or via a MIDI interface to control external sound modules. Scales (or modes) and patterns are preset within the program; the mouse and keyboard are used to vary volume, order, tempo, grouping and direction of the melody, as well as certain other attributes of the sounds. It is not necessary to acquire an external keyboard or MIDI interface in order to use these programs with the Amiga's own four-voice synthesizer, but these devices do greatly expand the creative potential and ease of use in working with most popular music software.

With the majority of those programs which use the Amiga's internal synthesis, depending on the amount of RAM available in the computer, up to sixteen sounds may be loaded and may be accessed by the program, although only four sounds may be sounded simultaneously. (Reportedly, Blue Ribbon SoundWorks' new program SuperJam! will allow the Amiga's Paula chip to produce additional sounds by combining multiple waveforms, thus exceeding the four voice limit.)

Understanding Sampling

Sampling is a digital recording process in which analog sound waves from sources as diverse as CD players, audio or video tape, or a microphone, are converted to digital information. The process of sampling involves recording the volume level of an analog sound wave at discrete time intervals or steps. The faster the sampling rate, the closer together these steps will be, and therefore, upon reversion to an analog sound wave by the Amiga's sound circuitry, the more closely this resulting digital information duplicates the original sound. The Amiga's sounds are 8-bit resolution while CDs and DAT recorders are 16-bits. The greater resolution of these 16-bit devices does provide better sound quality. 16-bit sound cards are available for the Amiga, but for most applications, the Amiga's 8-bit sounds are quite acceptable.

By adding a sound sampler such as Perfect Sound 3, or the new Digital Sound Studio, any sound source may be sampled and stored for use with those programs which access the Amiga's sounds. The use of such a sampler is an ideal method of incorporating diverse sounds into your original musical compositions. Most Amiga music programs use the IFF-8SVX sound format, though some, such as Aegis' Sonix require slightly different variations on this file format. (For example, Sonix requires that the sounds be sampled at 10,000 cycles per second, while the 8SVX standard requires that sounds be sampled at 8363 cycles per second. Many sound editing programs such as Audition 4 or Synthia Professional allow sounds to be converted, or re-sampled to a different rate). Once sampled, these sounds can be edited graphically, special effects such as echo or chorus may be added, and the resulting sounds can be imported and utilized in other music composition and performance programs.

De-Mystifying MIDI

MIDI is an acronym for Musical Instrument Digital Interface. It is a sophisticated language developed for the transfer of musical data and control information between electronic musical instruments and computers. The language

consists of eight-bit binary words which represent such information as note number (pitch,) velocity (volume,) note on and note off (duration,) pitch bend and other system exclusive custom messages. This universally accepted standard of communication has been implemented by manufacturers of computers, software, and musical equipment from the United States, Japan, Canada, and many other nations around the world.

Musical instruments incorporating the MIDI standard first began appearing on the market in the early 1980's. Today, there exist wind controllers, guitar and violin interfaces, drum pads, and a plethora of other instruments and controllers, many of which have no parallel among conventional musical instruments. MIDI is also used for the transfer of samples between instruments and computers, and in the transfer and storage of other sound parameters. It is also used for the control of numerous other devices such as special effects processors, stage lighting systems, and other types of sound equipment. MIDI also supports the use of time code for precise synchronization with video. Many programs including Dr. T's KCS 3.5 and Bars and Pipes Professional allow the direct control of timing through the use of MIDI Time Code.

The real major advantage in utilizing MIDI with the Amiga is in connecting external sound modules which produce a much higher sound quality than that of the computer's own internal sounds. While these synthesizers which support the MIDI standard were originally quite expensive, as with other types of electronic equipment, the price and availability of these newer MIDI instruments has changed considerably. Now, synthesizers which use the MIDI standard are available at virtually all electronics, discount and department stores at prices starting in the \$100 range.

MIDI messages are sent in a serial stream of data, i.e. one byte at a time. MIDI messages travel at a rate of just under 32,000 baud (bits per second). The MIDI standard accommodates sixteen channels of information. This setup is analogous to multiple television chan-

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nels which exist in the air. A device is set to receive on a specific channel, all other messages on other channels are ignored. Certain devices may be set to receive in Omni mode, in which case, all messages will be "read" by the device. In the Poly mode a device can be set to receive information on multiple MIDI channels. Such an instrument is said to be multi-timbral.

These instruments which are multi-timbral are capable of producing more than one distinct sound simultaneously. A single multi-timbral instrument may actually emulate several synthesizers. When controlled by a computer with the appropriate composition or performance software, each voice may be addressed by a separate MIDI channel. And, indeed, the Amiga's own sound capacity fits this description.

Sequencing Secrets

Sequencing is the process of recording MIDI data into the computer's RAM. Most sequencer programs, including Bars and Pipes (and Bars and Pipes Professional) and Dr. T's MIDI Recording Studio and Keyboard Controlled Sequencer use a familiar multi-track tape recorder format. (See the December 1991 issue of AVID for a detailed review of Dr. T's KCS 3.5). However, unlike a real tape recorder, the sounds being played are NOT recorded; instead, the MIDI data representing pitch, note value, velocity, etc. is recorded into the computer. There are numerous advantages to this system of recording, including the ability to selectively edit individual notes. The tempo of a piece can be quickened or slowed to fit time constraints without affecting the pitch. With this flexible multi-track system, it is extremely easy to try different voicings and arrangements for the same piece of music without the need for entirely re-recording any of the tracks, as is the case in conventional multi-track tape recording. MIDI data can be cut, copied, and pasted, in very much the same fashion as in graphics and word processing programs. Many different forms of editing are available, including event list, graphic editing, and standard musical notation. All three types of editing are offered either directly, as is the case in Bars and Pipes Professional, or through the use of additional programs such as

TIGER (The Interactive Graphic Editor) and Quickscore, which are both included with Dr. T's Keyboard Controlled Sequencer (Version 3.5).

The Amiga, with its multi-tasking environment, is the ideal platform as the center of a MIDI-based music system. Since multiple programs may be run simultaneously, it is possible to run a sequencer program while using a voice editing program, so sounds can be modified in the context of a particular piece of music. An algorithmic composition program such as Music Mouse can be started, the MIDI output can be routed out of the computer, through whatever external sound devices are being used, and back into the MIDI input on the computer. The resulting MIDI data stream can then be recorded by a sequencer program which is also running on the Amiga. (Most musical instruments which support the MIDI standard have three MIDI ports, MIDI In, for accepting MIDI input, MIDI Out, for sending MIDI data from the instrument, and, a MIDI Thru port, which simply mirrors the data received at the MIDI In without altering or adding to the data. Therefore, it is possible to "daisy-chain" numerous MIDI devices).

Bars and Pipes, and Bars and Pipes Professional use a rather unique and flexible approach to music composition. Tracks are referred to as "pipelines" for the recording of sequences. MIDI messages are received at the Amiga's input and are transferred into the MIDI pipeline where a wide variety of "tools" can be applied to the data stream. These tools include adjustable echo, automated harmonies and chords, arpeggiation, transposition, and a multitude of other musical variations. These changes and variations are automatically kept within the key and rhythmic structures which are specified within the song. In addition to the quantization (or auto-correction of rhythmic errors) which is used in all music sequencing software, Bars and Pipes will also constrain notes within a user specified key. In using Bars and Pipes, even individuals with little or no musical experience can produce some very interesting and complex music. (Next month, I'll do an in-depth review of Bars and Pipes Professional explaining the features and

operations of this powerful program here in AVID).

Although this article has just barely touched upon the potential power of the Amiga in the production of music for video applications, I hope it has been useful to you in the understanding of the basic principles of electronic music composition. Working demo versions of many of the programs mentioned in this article (including Bars and Pipes, Bars and Pipes Professional, Synthia Professional, and M) are available. If you'll send me a self-addressed envelope with the appropriate postage, and four blank 3.5 inch disks, I'll be glad to supply you with copies of those demo programs.

Editor's Note: Jaxon Crow is available for questions, comments, or consultation at: Neon Tetra Productions, P.O. Box 876, Hot Springs National Park, AR 71902, (501) 321-1198. Please call or write for a free catalog of audio and video tapes.

Audition 4 is from Sunrize Industries, 2939 S. Winchester Blvd., Suite 204, Campbell, CA, 95008.

KCS 3.5, Music Mouse, M, and MIDI Recording Studio are distributed by Dr. T's Music Software, 100 Crescent Rd., Needham, MA 02194.

Synthia Professional is by The Other Guys Software, 55 North Main, Suite 301, Logan, UT, 84321.

Bars and Pipes, SuperJam! and Bars and Pipes Professional are products of The Blue Ribbon Soundworks, Ltd., 1293 Briardale Lane NE, Atlanta, GA 30306.

Digital Sound Studio is a Product of Great Valley Products, 600 Clark Ave., King of Prussia, PA 19406

Sonix is a product of OXXI/Aegis, 1339 E. 28th St., Long Beach, CA 90806

CSA's 40/4 MAGNUM ACCELERATOR



© 1992 by Matt Drabick

Recently a number of different 68040-based accelerators have become available for the Amiga. With the release of these boards, rendering times for 3-D graphics and animations will be significantly reduced, allowing for greater productivity and the chance for the Amiga to carve out an even larger share of the video graphics market.

The 40/4 Magnum from CSA uses a Motorola 68040 CPU running at 25 MHz. CSA rates the Magnum at 20 MIPS (Million Instructions Per Second) with a built-in math co-processor rated at 3.5 MFLOPS (Millions of Floating Point Operations Per Second). By comparison, an Amiga 3000 with the 68030 CPU is rated at 5.6 MIPS and 1 MFLOP. The result is at least a 200 to 300 percent improvement in rendering times for ray-tracing, 3-D modeling and animation applications.

The 40/4 Magnum has one megabyte of burstable (zero wait state) 32-bit Static RAM, a fast SCSI hard drive controller, a high-speed parallel port and two (RS232 and RS422) high-speed serial ports all running within the 20 MIPS environment of the 68040 CPU. The Magnum only works with an Amiga 2000 or 2500 and requires version 2.0 of the operating system. You cannot run the board with earlier versions (such as 1.3, etc.). Currently 4, 8, 12 or 16 megabytes of memory can be added to the board using 4-megabyte 32-bit SIMM modules. With the expected release of 16-megabyte 32-bit SIMM modules in the near future, a full 64 megabytes of DRAM can be added to the 40/4 Magnum. As good as that sounds, up to 128 megabytes of 32-bit Dynamic RAM can be added using a special 32-bit expansion bus built into the board.

As part of this review I had the op-

portunity to work very briefly (two days) with the 40/4 Magnum. Because of the limited time and the fact that the board wouldn't work with any of the hard drives that I had available, I used DKBTrace, DPaint IV, Digi-View 4.0, and Art Department Professional to compare a Magnum-equipped 2000 against my Amiga 3000 with a 25 MHz CPU. Fortunately I was able to obtain a copy of Dhrystone Turbo, version 1.1 by Mike Konnola of Finland. Dhrystone provides a comparison between the operating speeds of various computer platforms. Originally created for the PC and UNIX market, the version that I used not only compared the Magnum to the Amiga 500 and 3000 but to 386-SX and 386-DX CPUs as well.

I ran the Dhrystone program five times, starting with 50,000 loops and finishing with one million loops. The results are truly impressive. Compared to my 3000, the 40/4 Magnum measured 3.94 times as fast. Against an Amiga 2000 with a 2620 accelerator card the Magnum averaged 7.94 times as fast. And finally, relative to a stock Amiga 500 the Magnum ran 24.34 times as fast. Saving the best for last, compared to a 386-SX rated at 16 MHz, the Magnum measured 9.73 times as fast. Compared to a 386-DX rated at 25 MHz, the Magnum clocked out at 5.79 times as fast.

The true measure of performance, of course, was to run my Amiga 3000 and the Magnum-equipped 2000 side by side running the same program and performing the same task. Using the ray-tracer DKBTrace, I rendered a large red wooden ball over and over as a HAM image. On my 3000 it took over three and a half minutes. With the Magnum, the same image was rendered in one minute and forty-two seconds, less than half the time.

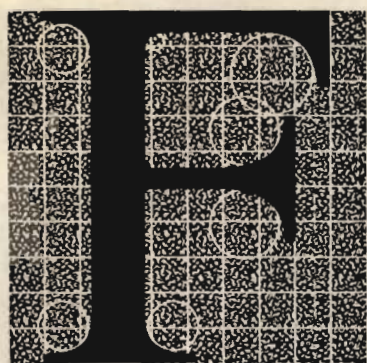
Not as fast as I had expected, but still very respectable.

Using DPaint IV, I generated a series of sixty frame brush animations using the same motion path and the same brush. The brush always started from an off-screen position and landed in the center of the screen after rotating 360 degrees in both the Y and Z axes. Using a high-resolution screen with maximum overscreen, my initial results showed only a very modest difference in rendering times, 3 minutes and 38 seconds for the 3000 and 3 minutes and 30 seconds for the Magnum. But when I reproduced the same animation again using full anti-aliasing, the Magnum proved its worth rendering the animation in 20 minutes while the 3000 rendered the same animation in 50 minutes. Every time that I rendered an animation with full anti-aliasing, the Magnum was able to perform the task in about a third of the time that my Amiga 3000 required.

The tests that I ran with Art Department Professional and Digi-View 4.0 provided the same results. Whenever a task required some serious number crunching the Magnum was significantly faster, converting or modifying images in about a third of the time. These results apply to all applications such as ray-tracing, 24-bit modeling and animations that require a great number of calculations to produce the desired results. Owners of the Video Toaster should note that the CSA 40/4 Magnum was clearly designed to make the Toaster competitive with base single-CPU RISC workstations. CSA claims that the Magnum operates at nearly 70% of the speed of those more expensive platforms. With dramatically reduced rendering times for 3-D graphics and animations, the Toaster/Magnum combination should prove to be unbeatable. Special thanks to David Randall of SBS in Durham, NC for the loan of the Amiga 2000 with 2.0 installed used for this review.

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CLOANTO PERSONAL FONT MAKER

© 1992 by Joe Rothman

There is no shortage of multimedia presentation software for the Amiga. Many different fonts and typestyles are available to go along with these programs. Until now, however, you had to settle for what was out there. If you wanted a unique font to use in your productions, your options for creating it were limited. You could painstakingly draw each character with your paint program and save it as a brush, or save a screen or two of characters for later use. Your only other alternative was to wrestle with a hard to use, severely limited, or bug ridden font editor until you lost your sanity. Relief has finally arrived in the form of an excellent font editing package from Italy.

Cloanto Personal Fonts Maker is a three disk set containing the PFM program, several companion programs, fifteen custom Amiga fonts, several character sets, and many macros. The PFM program will run on any Amiga with at least 512K of RAM, but 1 Meg is recommended to access all of its features. The manual is a handsome, well written, 320 page, two ring binder with an eleven page table of contents. The 28 page introduction is a veritable Amiga system primer, covering all aspects of Amiga operation.

The installation script allows you to decide exactly how much of the supplied data gets written to your hard drive. After hard disk installation, a single system assignment must be made to tell PFM where to find its files. PFM may be run by

clicking on its icon or from the Amiga shell.

The PFM program comes up showing an empty font grid near the left side of your screen. To the left of the grid are a very powerful set of gadgets that allow you to edit fonts with ease. Up to two fonts can be loaded at once. Characters may be copied from one font to the other without the use of the keyboard. The ASCII character number, size, spacing, kerning, and the default character for that position are displayed on the screen at all times.

Moving from character to character may be accomplished either sequentially or randomly under mouse control. Elements of the grid are filled in with a click of the left mouse button, and cleared with a click of the right mouse button. Characters can be cleared, turned off, copied, pasted, flipped, zoomed, or repositioned. There is even an undo function.

A brush function is included which allows you to copy any part of a character into the brush buffer and paste it back anywhere you like. The brush function is in addition to the function that will copy the entire character and pass it back in another character position or in another font. The brush function operates in much the same way as the one found in DPaint, sharing many of DPaint's brush options. You can load and save brushes, perform flips, rotations, reverse, resize, and move the brush's handle.

There are two ways to paste a brush

onto a character position. Just pasting a brush down replaces anything under the brush with the brushes light and dark areas. Clicking the 'OR' gadget first allows the brush to be pasted down without disturbing the existing dark areas. The 'OR' brush mode can be useful for adding the same curl to many different characters. Another option allows you to italicize the brush.

PFM will load and save fonts in two formats. It supports the Amiga bitmapped format and a format which is only compatible with a Cloanto word processor called Personal Write. You can load, save, delete, free, define, and edit character sets or fonts. Font data may be printed to a file or downloaded directly to your printer. There is even a built in printer test that will send specific characters or entire font sets to your printer for testing.

Perhaps the best feature of the many included in PFM is the dynamic view screen. The dynamic view screen can be toggled on or off at the click of a mouse button. It appears near the bottom of the PFM screen and may be dragged up a bit for use or pulled down to get it out of the way. Characters may be typed on the dynamic view screen to see their relationship to each other. Once they are on the screen, all changes to any character already typed there will be automatically updated on the dynamic view screen. This makes adjusting character spacing, size, baseline, and kerning a breeze.

PFM has its own macro system built

in. Macros may be loaded, saved, recorded in real time, examined, executed with or without user control, or step executed for debugging purposes. There are over sixty macro commands available. Macros can be used for such otherwise tedious tasks as italicizing an entire character set.

The PFM preferences menu allows total customization of your operating environment. Preferences can be loaded or saved. Font descriptions, language, italic factor, audio tones and screen colors can all be changed. There are screen coordinate, grid, WorkBench, and icon toggles. Fonts can be joined, or stretched, and the file requester's attributes can be adjusted.

The attributes menu contains sixteen different selections that can be toggled on or off. They are used when the font is resaved, to notify AmigaDos, or the companion word processor, of certain font attributes such as bold, italic, underline, etc.

As if this seemingly endless list of features isn't enough, Cloanto has included another incredibly useful program with this package. It's called Printer Driver Modifier. PDM alone can be worth the cost of this package to some people. It is the one and only non-programmer's solution to the everpresent printer driver incompatibility problem. Let's say your printer has the capability of printing in NLQ, but your printer driver doesn't send the right codes to the printer, so that feature has never worked. PDM allows you to look up the correct codes in your printer manual, and modify your printer driver so it will henceforth work properly.

If you need custom fonts for your video productions, I highly recommend PFM. This package not only does a lot, but it does its job flawlessly. Even after extensive use, and abuse, on several 1.3 and 2.0 Amiga systems, I was unable to make it crash.

Cloanto's Personal Fonts Maker is distributed in North America by Centaur Software in Redondo Beach, CA. Centaur can be reached by phone at 213-542-2226. The list price for this package is only \$99.95.

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One of the most unique and useful operations offered by Imagine is the Boolean function. Don't let the name scare you! This is simply a way to use one object as a tool for cutting its shape out of another object. The concept is simple, but its usefulness isn't always that obvious. Putting it to work for you is relatively straightforward. In this article I'll relate (1) some uses I've found for it; (2) making it happen; and (3) possible problems, with suggested solutions.

Uses

One of my primary uses of the function doesn't have anything to do with cutting holes at all! It just makes use of a by-product of the hole-cutting operation: and this is the fact that Imagine will automatically put faces on your cutter object. (Remember that an object is invisible to Imagine until its surface is covered with triangular faces.) For example, I often need a few letters in a new font, and I find it easiest just to draw an outline of the character directly in the Detail Editor. But instead of laboriously going through many repetitions of the AddFace function to get the character faced, I simply do one Boolean operation, which automatically applies faces for me.

Of course, I also use the function for

its intended purpose of cutting holes out of things. I've successfully (and simultaneously) cut holes in several planes, all at various angles, in one operation. It also can be used to cut a groove or depression

into a solid object, to get a chiseled-in-stone effect. But I think one of the more interesting possibilities is to use the resulting elements in an exploded view animation. I'll explore several of these

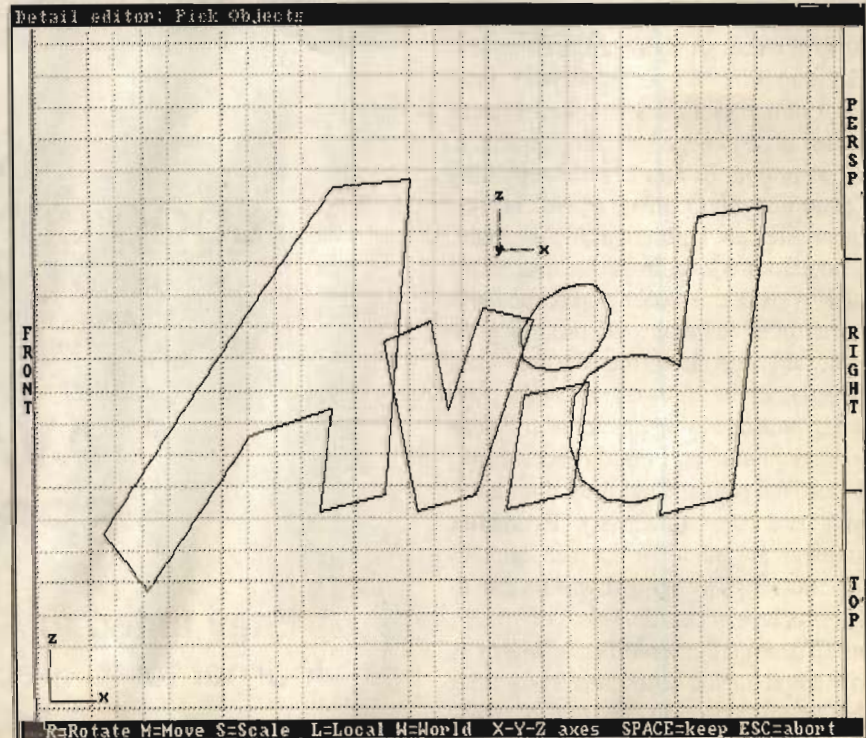


Figure #1

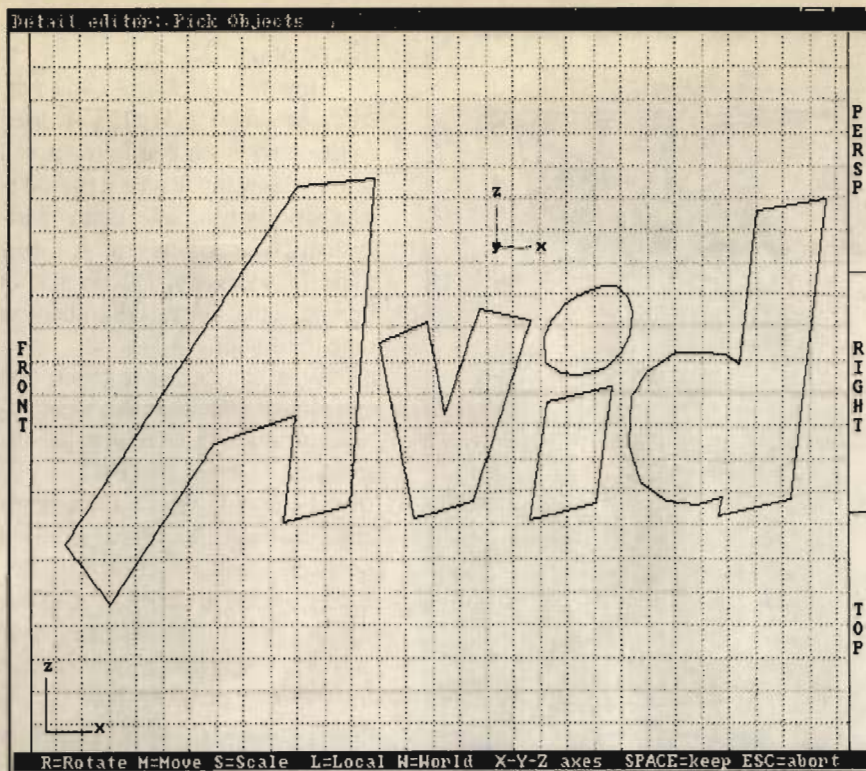


Figure #2

uses in more detail a little later.

Preparations

There are two basic steps in preparation for the actual operation. (In the following descriptions, I'll use an example of cutting a stylized AVID out of a flat plane).

(1) Prepare a cookie-cutter object. This is the object used to cut the hole(s), and it really does work (and look) just like a cookie-cutter. In our example, start by drawing an outline of the stylized AVID name (Fig.1). In the Detail editor, add an Axis to the screen (using the Add option in the Functions menu). Pick it, then Add Lines (from the Mode menu) until you get the approximate shape you want. Then use Drag Points (also from the Mode menu) to fine-tune the object into its final shape.

Note that I wanted most of the letters to overlap each other slightly. This causes problems, however, for the Slice function (which performs the Boolean operation). To avoid these problems, I temporarily moved each letter laterally to get rid of the overlap (Fig. 2). To move the letters, select Drag Points from the Mode menu and Lasso from the Pick Method option of the Mode menu. Now lasso all

the points making up a particular letter: while holding down the shift key, also hold down the left mouse button and draw a line around all the points in the letter. When you have

connected the end of the lasso-line back to its starting point, release the Shift key, but keep the mouse key depressed. The lassoed points will turn yellow, and will follow your mouse movements. When the points are moved to their new position, release the mouse button to fix them in place. We'll move them back together after the operation is complete. We're through with the Lasso method of picking points, so select Click from the Pick Method option of the Mode menu to return to single-click picking. Also select the Pick Objects from the Mode menu.

Now use Extrude (from the Mold option of the Object menu) on the Picked outline to create the cookie-cutter. (In our example, the length of the extrusion is irrelevant, so just use the defaults in the function). The result is the AVID name with faces on its extruded sides, but the front and back are still open and faceless.

(2) Prepare the plane from which the hole will be cut. For our example, use the primitive plane, accepting the defaults. Size the plane so that it's

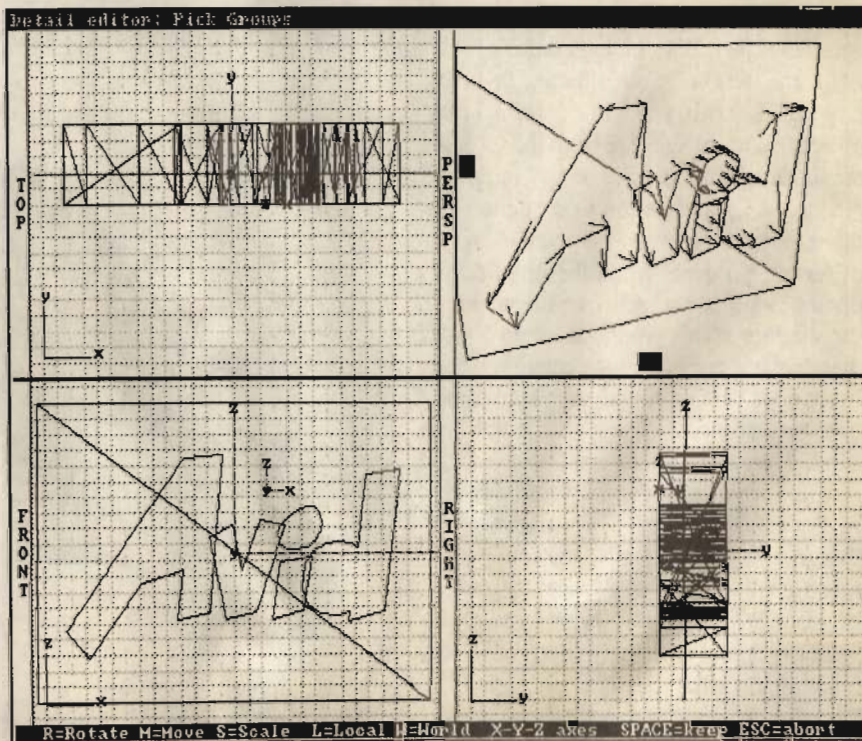


Figure #3

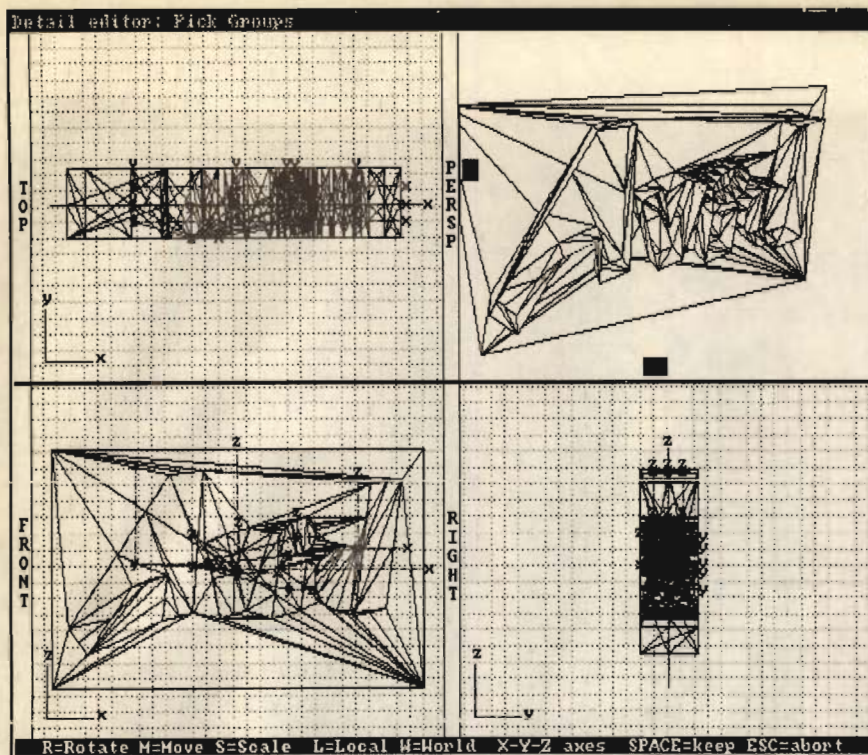


Figure #4

larger than the cookie-cutter AVID name, and position it so that it slices through the middle of the names' extruded sides (Fig. 3).

Operation

When the above preparations are complete, pick both objects (select Pick All from the Pick/Select menu; or hold down the left shift key while picking both objects), and select Slice from the Object menu, then sit back and wait. Imagine displays a Cancel button in the center of the screen, but there are no positive signs of further progress when the function is operating properly. Also, some patience is called for at this point; I have no doubt that this is a very complex operation for Imagine to deal with, so it may take some time to complete. (Even with a 50Mhz FPU, I can expect to wait five to 10 seconds when a moderately complex set of objects is involved. I'm not sure what this translates into for an unaccelerated machine, but could it be minutes instead of seconds? I strongly suggest you try it with *very* simple shapes at first, just to get a handle on what to expect).

I've learned to expect one of three possible outcomes from this operation:

(1) The function hangs; it gives all the appearance of operating normally at

first, but the operation never completes, and never gives an error message or other indication that something's wrong. Generally it won't acknowledge a click on the Cancel button in the center of the screen,

so you may have to re-boot to get out of this situation.

How will you know if you've gotten stuck in limbo? Well, I've used this function so much that I now have a fair sense of how much time it should take to successfully complete, on my particular system. After giving it more time than I think is necessary, I'll try the Cancel button. If that works, OK, otherwise, it's time to re-boot.

What can cause it to go into limbo? I can almost guarantee this result if I use objects that are too complex in their structure. I know this isn't very definitive; I can only say that I've learned to keep my objects as simple as possible to avoid the problem. For instance, I recently needed to cut the date 1676 out of a plane, and I found that attempting to do this in a single operation caused limbo. So I simply positioned the "1" on the plane, and cut it out, etc. It took four separate operations, but it worked fine.

(2) The second possibility is an Error report at the top of the screen, indicating that problems have halted the operation. But don't give up yet! I've often made slight alterations, then tried again with good results. Here are some things to do



Figure #5

(it's all trial and error at this point):

- Slightly rotate one of the objects on the world Y axis;

- Slightly re-position the objects with respect to each other, in the world X, Z plane;

- Increase (or reduce!) the number of triangles in the faced objects.

There's no guarantee that any of these will work in your particular situation (nor are they all appropriate, depending on your needs), but they all seem to have worked for me at one time or another. Don't be surprised if it takes a half-dozen tries (or more) to finally get successful results. On the other hand, I've also encountered numerous situations where I *never* got a successful conclusion, even after many attempts. (In that case, the only alternative is to reduce the objects to even simpler components, and try again).

(3) Successful completion: The Cancel button is cleared from the screen, and Imagine re-draws the relevant objects as a Grouped set. The results also look like a convoluted mess at this point, with lines going every which way! (Fig. 4). We'll try to make some sense out of it in the next section.

Wrap-Up



Figure #7

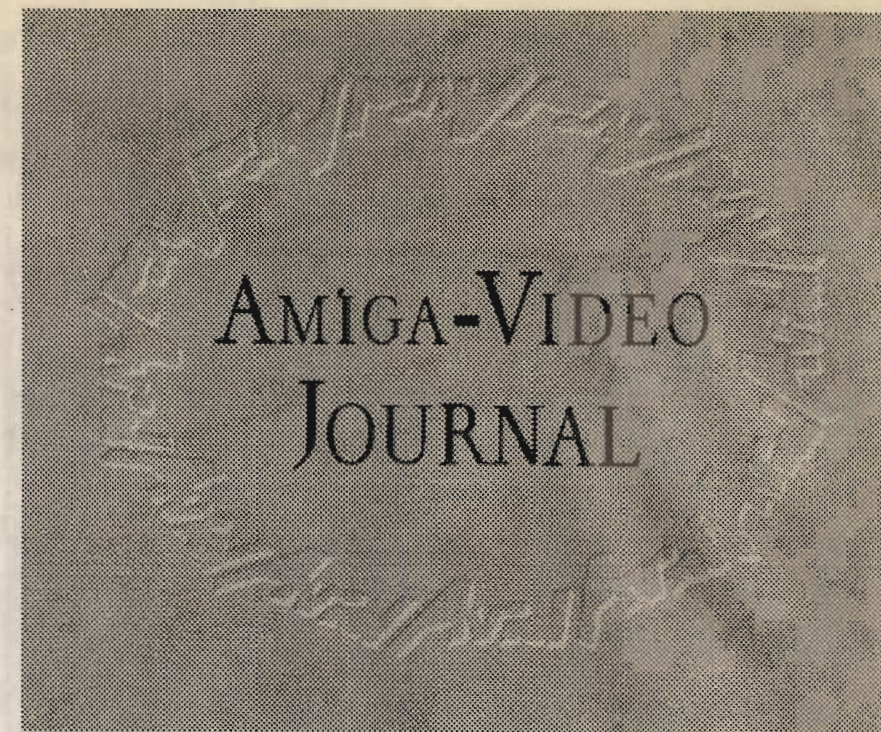


Figure #6

Now it's just a matter of extracting the data we want to keep, out of all the data generated by the function. But let's first look at what all that data is. It's not obvious at first, but the Slice function has generated a new set of

faces in every instance where an edge of the cookie-cutter object intersected the plane of the second object. It also has made each of these new face-sets into an independent object, each with its own axis. As a result, we now have the ultimate flexibility of roaming around among all these new objects, keeping what we need and throwing away the rest. If our goal was to have a plane with a cookie-cutter-shaped hole in it, then that's available. But if we wanted to keep the cookie-cutter shape itself, now that it has been fully faced for us, we can do that, too. You're free to keep as much, or as little, as you need, and combine the results in any way you want. Here's the steps to go through to make your choices:

(1) What you have on the screen now is a Grouped set of objects that are not yet Picked. In Pick Group mode, Pick the Group (click on the parent object in the Group, or select Pick All from the Pick/Select menu) so that it's blue.

(2) Ungroup this group (select Ungroup from the Object menu).

(3) Make sure you have all four views of the object on the screen for this operation, since you'll be referring to the front and top views continually to keep your bearings. Use the right-Amiga, N key combination to cycle through all the objects in the Picked set (each time you hit right-

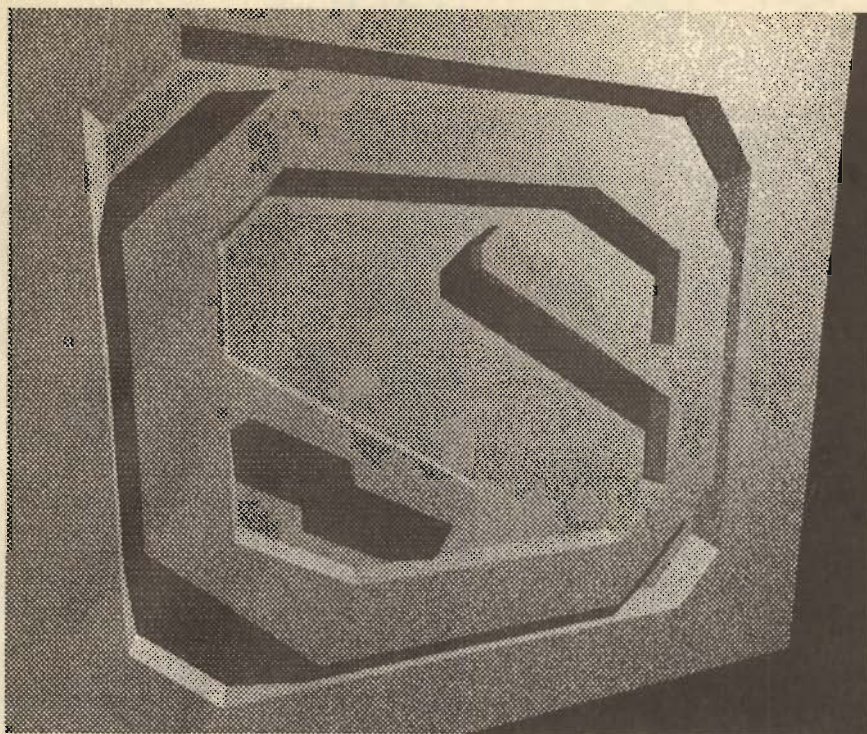


Figure #8

Amiga, N, the next sequential object in the set will be Selected, turning it pink). For each object, you must decide whether you want to keep it or throw it away. If you want to keep that object, then select UnPick Select from the Pick/Select menu, causing that object to initially turn orange. On the other hand, if you want to throw that object away, simply use right-Amiga, N to go to the next object in the set. Do this for all objects in the set. When you're satisfied with your selections, all the objects you want to keep will be colored orange or white, and all the blue objects are headed for the dumpster. Select Delete from the Functions menu and all the blue objects will be destroyed.

All the remaining objects on the screen are faced pieces of the AVID name. We're ready to take the letters in the AVID name and move them back together into their original overlapped positions. It's very easy to do this now, since each letter is still a separate object. Just pick each letter, select "m" (move) and drag it back into position. When that's done, let's simplify things by joining all these pieces together, making them into a single object: Pick the first letter in

the name; then select Pick All: from the Pick/Select menu; then select Join from the Functions menu. Imagine will eliminate all the axes except the first, and irrevocably combine all the Picked parts into a single object. Save this object (Fig.

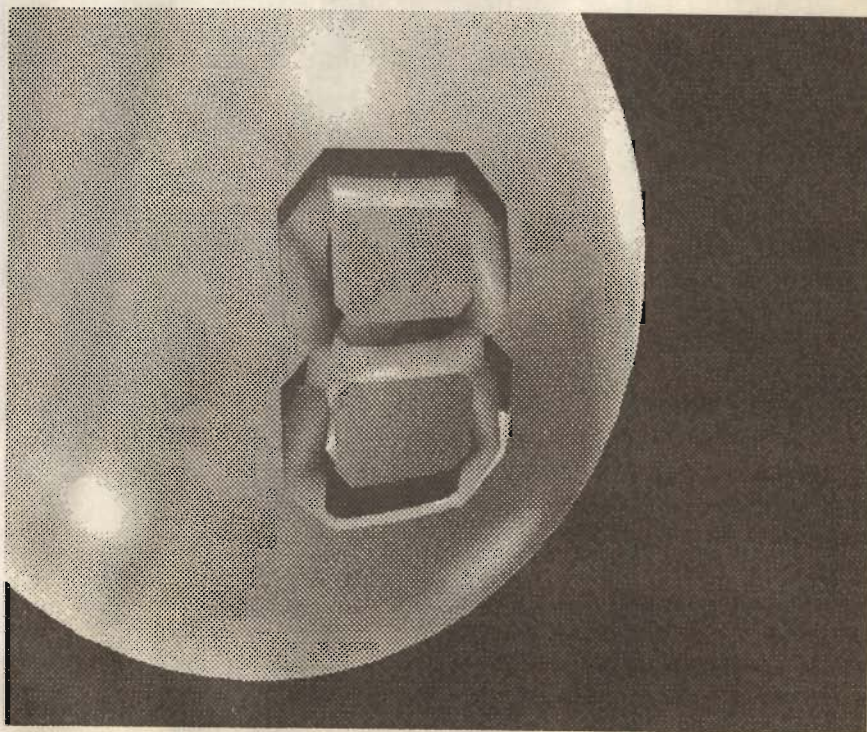


Figure #9

5).

What to do with the new stylized AVID? For a still-frame graphic, I explored the idea of taking advantage of the natural contours of the new AVID graphic to form it into an oval chain design. I then used Art Department Pro to give this chain an embossed look, and used it as a subtle decorative frame for visual contrast with the more formal AMIGA-VIDEO JOURNAL font. See what you think (Fig. 6). Another idea makes the new AVID graphic a much more prominent 3-D foreground element against an embossed AMIGA-VIDEO JOURNAL background (Fig. 7). Of course, an animation of the new graphic also would open up many interesting possibilities.

Variations

(1) You can use your cookie-cutter object to cut a groove or depression in a plane, making it look like it was chiseled in stone. To do this, take any faced object created via the previous process, and extrude it to length (accepting the defaults in the Extrude function). Create a stone slab: (take the primitive plane, and size it appropriately). Now position the cookie-cutter object so that it's extruded end goes into the plane to the depth of the depression you want to make. Activate

the Slice function as before; then Pick and save the pieces you want (using the same process as previously described). The right lighting and attributes can make it very convincing (Fig. 8).

(2) Your cookie-cutter should cut a hole in almost anything, not just a flat plane. Try carving something into one of the Primitives, for instance (Fig. 9).

(3) You can create an exploded view effect by taking advantage of the fact that Imagine creates new object-faces whenever the cookie-cutter intersects the second object. To create the effect, go through the Slice operation as before, and Ungroup the grouped objects and isolate the pieces you want to keep; however, *do not* join them together. Instead, save each of the new objects, in its original position, under its own unique name. Then load all of the objects in the Stage Editor and create the exploded view by simply pulling the objects apart, as needed (Fig. 10).

You can create a very nice animated effect by initially showing all the parts in their exploded view, then show them coming together into their original positions to re-form the basic group. Using this method, you're guaranteed that all the pieces will fit together perfectly as they're re-assembled during the animation! To do this, load all the objects into

frame #1 of the Stage Editor. Now go to the last frame of the animation and sequentially Pick each of the objects, then select Position Bar under the Object Menu. (This tells Imagine where you want all the objects to be positioned at the end of the animation). Now go back to frame #1 and start pulling the objects apart, placing them in the exploded position you want them to be in at the beginning of the animation. After you place each object in its starting position, again select the Position Bar under the Object Menu. (This tells Imagine where you want all the objects to be positioned at the beginning of the animation). That's all there is to it! Imagine will automatically generate all the in-between frames for you. Get a quick check of the results by doing a wire-frame animation via the Anim menu in the Stage Editor. It should show all the objects moving smoothly from their exploded view into their fully-assembled positions, over the length of the animation.

This certainly is not an exhaustive review of all the Boolean Operation possibilities. Hopefully, it will spark your own exploration toward discovering new variations. Write to AVID, and let us know about your unique applications.

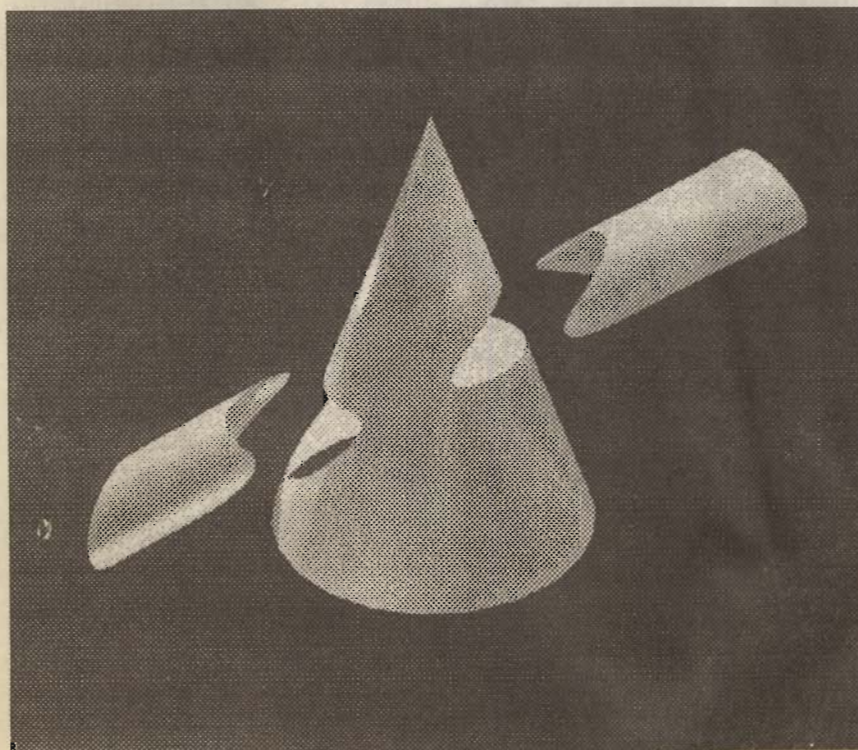


Figure #10



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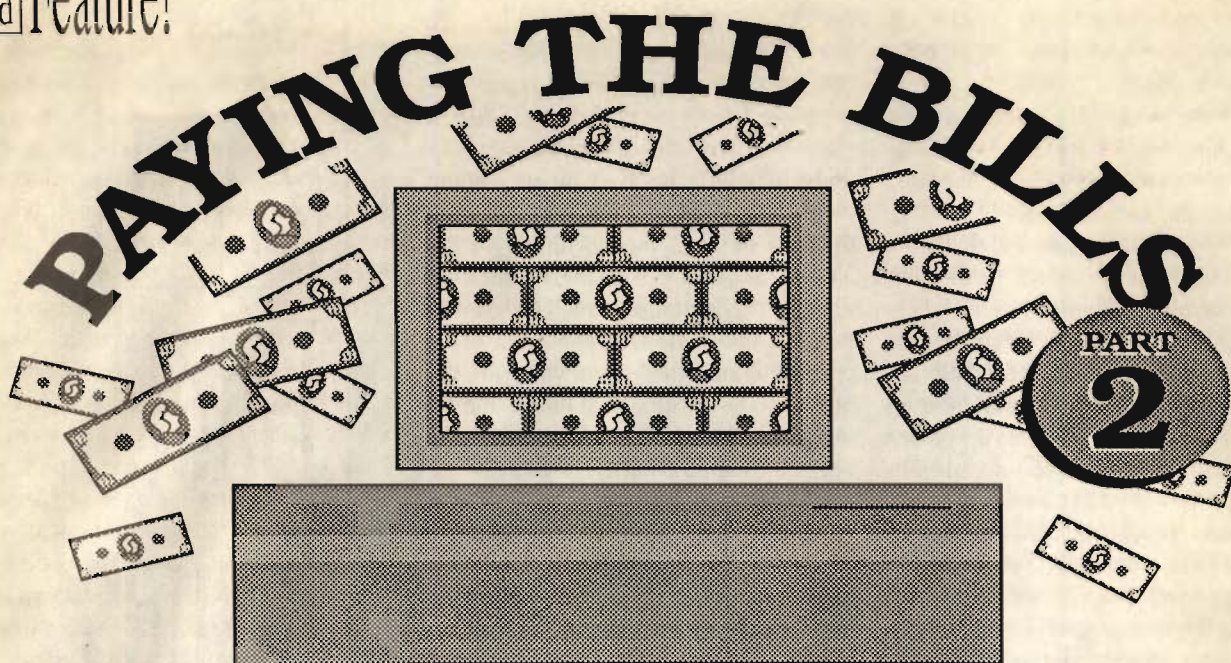
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Making Money with Your Amiga!

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If you have a couple of hours of extra time on your hands in any given week, you can turn extra time into extra money, and I'm not trying to get you to stuff envelopes! Your Amiga's powerful graphics capabilities can be used in several ways to make quick bucks with very little more than a basic Amiga system, a VCR and a printer. If you have all those things or can borrow what you don't have, then read on.

There are any number of new entrepreneurial ideas that I have come across since I began using my Amiga (An original A1000-when it was the "only" Amiga) to supplement my income, such as: T-Shirt/Hat/Coffee Cup imprinting/Decals using a "Mini-Mall" service cart at small shopping centers, pet supply stores, swap meets, or just about any specialty-convention type of gathering (car shows/animal shows, science fiction conventions etc.), and creating information "Kiosks" and interactive booth displays. But for the sake of this article (being that

it appears in an Amiga-Video Publication) I am going to concentrate on "Video" specific ideas that I have used with some success in the past.

Own a Video Titling Business!

Yes Virginia, according to Ed McMahon "you may already have one" (not necessarily "won" however). I'm going to assume that you already have a paint package (I don't know anyone with an Amiga without one). I am also going to assume that there is a local video store nearby. (If not, write to me and we'll get someone to put one up!) The next step is for you to make up some title footage on video tape. If you don't have a Genlock and you are using an Amiga 1000, the video from the composite output should be good enough. If you are going to use a 500, or 2000, or a 3000 then you will need a Genlock. Genlock devices "time" the Amiga's graphics to incoming video, and also allow the encoding of RGB signals to composite output for recording images from Amiga models other than

the A1000. Genlocks can be had new for as little as \$150, with better quality units at higher prices. You might want to check with one of your Amiga buddies for a back issue of AMIGA WORLD called "SPECIAL ISSUE REFERENCE GUIDE". In that issue you will find an article from Bill Larned titled "AVAILABLE ON VIDEOTAPE"; in it you will find a useful chart on foreground and background color selections given in their respective RGB values. Having this information handy will save you a great deal of time setting up color palettes that look best when using Amiga graphics with video. It's also a good idea to use a regular TV hooked up to the output of your VCR when composing titles, so that you can see what looks best for size and color of text as well as any backgrounds you may decide to use. Once you have "taken over" that extra bedroom, garage, or kitchen table with your Amiga and associated video gadgets, it's time to get down to the first order of "business",

making a demo tape that will be displayed at the video store and also be used to give or lend to prospective customers. Construct it in a fashion as to be seen in a continuous "loop", in other words, recorded "end-to-end" on the tape several times. This can be accomplished with much greater ease if you create anim files or use a page flipping program. I know that your first impulse is to make a master tape and then record it several times over and over again, but trust me, the final results (a fourth generation copy) will not look good enough to justify people spending their money on your product. (And besides, the process of creating anims isn't as much hassle as it might appear at first, and you will find them very useful in other project ideas). Another obvious advantage to having the majority of your graphics and transitions saved as anims is the ability to transport them to someone else's Amiga who might have access to a higher quality video recorder such as 3/4" or SHVS system.

Since the tape will be seen as a "barge in" type experience (not always viewed from the beginning), I recommend that you take some extra effort in making lots of transitions and keeping them on the short side (occurring about every six seconds or so); and the total "cycle time" (the time before you loop restarts) at less than 2 minutes (just about the maximum period of time most people can really appreciate when they are not watching themselves or someone they know). Now let's select the most popular type of title that is likely to be of interest to your marketplace. If your neighborhood has plenty of children, it's likely that some of the parents have shot videotape of just about every conceivable activity a small child is likely to be involved in. I would start out with birthday titles, since it's likely to be one of your biggest sellers, then children's sports activities like baseball or soccer, weddings and graduations followed by family holiday gatherings, and last but not most certainly the least would be family vacations. Now put a few seconds of likely footage or a couple of stills following each title, (with a genlock you can superimpose the title over the footage). It's a good idea to put your own

title with your phone number in between title sequences on this demo tape which will have your phone number. After you have made your master title tape and you are happy with it, MAKE A BACKUP! You will be making copies from this tape for video rental and retail outlets, local videographers and even your local Amiga dealer, so keep your master tape in a safe place and NEVER lend it to anyone. After you have decided that this particular tape is "the one" you want to use, have it professionally duplicated; the cost is surprisingly low in small quantities these days, and be sure to ask if the copies will be made with the aid of a time base corrector, the resulting quality will be worth the extra expense. I wouldn't buy any more than a few copies to start with, because you will almost certainly want to update it soon. Now I realize that there are camcorders on the market that can create titles but compared to what you can turn out on your Amiga, these camera generated titles are no competition. Bear in mind that you should use some imagination in creating something both eye catching, but at the same time appropriate to the subject matter.

Marketing Your Service

You will need to make up a flyer that can be mailed or handed out as well as posted at the video store. It will tell the world about your title business. Something flashy and bold for the headline such as: **PROFESSIONAL TITLES WITH YOUR VIDEO FOR \$25!** If you have a good graphic representation of a TV screen to frame the headline, and use a good looking headline font, you will more easily communicate the general idea of your service to the casual glance. Also, take a few moments to carefully phrase how you arrived at that amount somewhere near the bottom of the page with an asterisk noted on both the top headline and the explanation line. An example might be **"*based on 5 title lines on one screen, tape stock not included"**. The other obvious information would be your phone number as well as the times you can be reached. If you are not going to answer the phone with a business name all the time, then you might want to call your business "VIDEO TITLES BY (your

name)" so that people know who to ask for when they call. I do not recommend that you use the words "Computer Generated" in your flyer. People tend to think that computer titles will look mechanical and unfriendly. Also mention the types of special occasions that might apply to your service such as birthdays, weddings, sports activities, graduations, holiday parties, school plays etc. Don't try to explain in great detail how your service works in your flyer, just the basic information will do. Any special circumstances or limitations can be explained on the phone, just remember the magic words when referring to prices in advertising "starting at" before a special price protects you from having to provide services at a fixed rate. Also, be aware that your local city or county may require a business license before any such activity can be legally pursued. Take some time to stop by or call your local city clerk's office and be sure to check if your services may save you from having to charge and then be responsible for sales tax. The primary rule of thumb is that in most areas of the country "services" are not taxable but "materials" usually are, so when you provide dubs of your titling work, it may be best to charge them as a "Dubbing Fee" as opposed to "Copies". Also be aware that although your Amiga and video gear are now part of a business activity, they will not be fully tax deductible unless they are used exclusively for business. If you plan to itemize your expenses, it's a good idea to check with a tax advisor before you get too far along in your business, the advisor can tell you what records are required to satisfy the I.R.S. for itemized deductions.

You may find that people will sometimes assume that you also shoot video. Unless you are set up to pursue videography as a nearly full time activity, I recommend that you refer them to a local videographer; you will find them listed in local newspaper classified sections or in your telephone directory under Photography Services, Video Recording, even sometimes under Weddings. Establish a good relationship with these video people as you may find them to be some of your best customers, and some will even give you a finder's fee for a good

referral.

If you cannot edit the title onto someone's tape WITH their footage (this requires 2 VCRs) you may want to try to market your service a bit differently. You may want to get the customer to use your service BEFORE their event takes place, allowing you to put the beginning titles on a blank tape, let them shoot their footage from the point just after your title (make the title sequence long enough for them to actually record over a portion of it) then have them return the tape to you to put closing titles or beginning titles for their next event. This method is a real pain because sometimes they may record over your titles (so make the title sequence more than long enough to accommodate that eventuality), and 2 different VCRs will sometimes not be aligned to each other causing a "glitch" at the edit point when the tape is played back on one of the different machines. Sometimes this effect can be avoided by using a recorder with flying erase heads. It is always advisable to obtain another VCR

and edit your titles and their footage together. It takes more of your time, so you should charge more accordingly.

If You Have. . .

If you have purchased Deluxe Video, TV Text DPaint III or IV, Pro-Video CG1, Gold or Pro, Broadcast Titler I or II., then you would be considered as having more than just a casual interest in video production with your Amiga, and you probably have more than one VCR and a decent genlock. The special effects available from these packages will likely find their way into your demo tape, which will do most of your selling for you. Obvious applications would be a genlocked overlay of wedding bells and the bride and groom cutting the cake, or flickering birthday candles animated over a child's birthday party, or flashing a kid's name and playing position on a sporting event. Don't be too surprised if the ordinary person faints dead away when they find they can afford such custom effects, which can be marketed under the heading "Custom Title Animation." Use

your imagination, the more of these effects you put together on your tape, the more people will be willing to watch. I have found that using the packages PRO VIDEOCG! and BROADCAST TITLER as an ongoing screen generator for a local video store's upcoming new video titles and membership specials to be extremely profitable. Every third screen I insert an advertisement for my titling business and gift certificates for title services that are available to the members from the video store (which I sell to the video store at a 20% discount so that they can sell them to their members at a 10% discount). There are many other ways to make video and the Amiga terrific business partners, and I hope to cover them in greater detail in future articles.

Frank Kelly owns and operates Spot Ad Productions, an Audio/Video Production facility in San Jose, CA.

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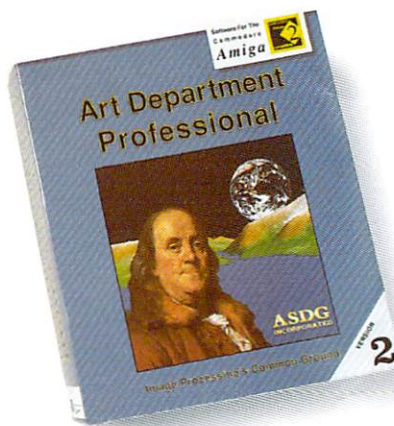
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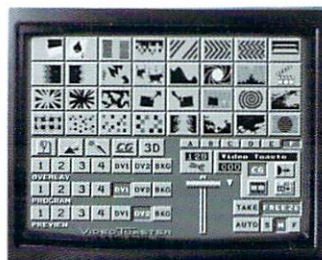


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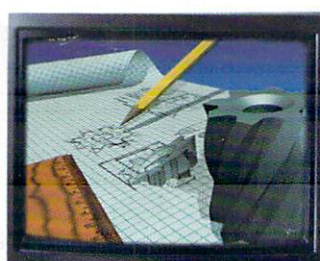
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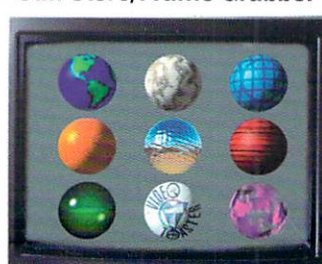
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