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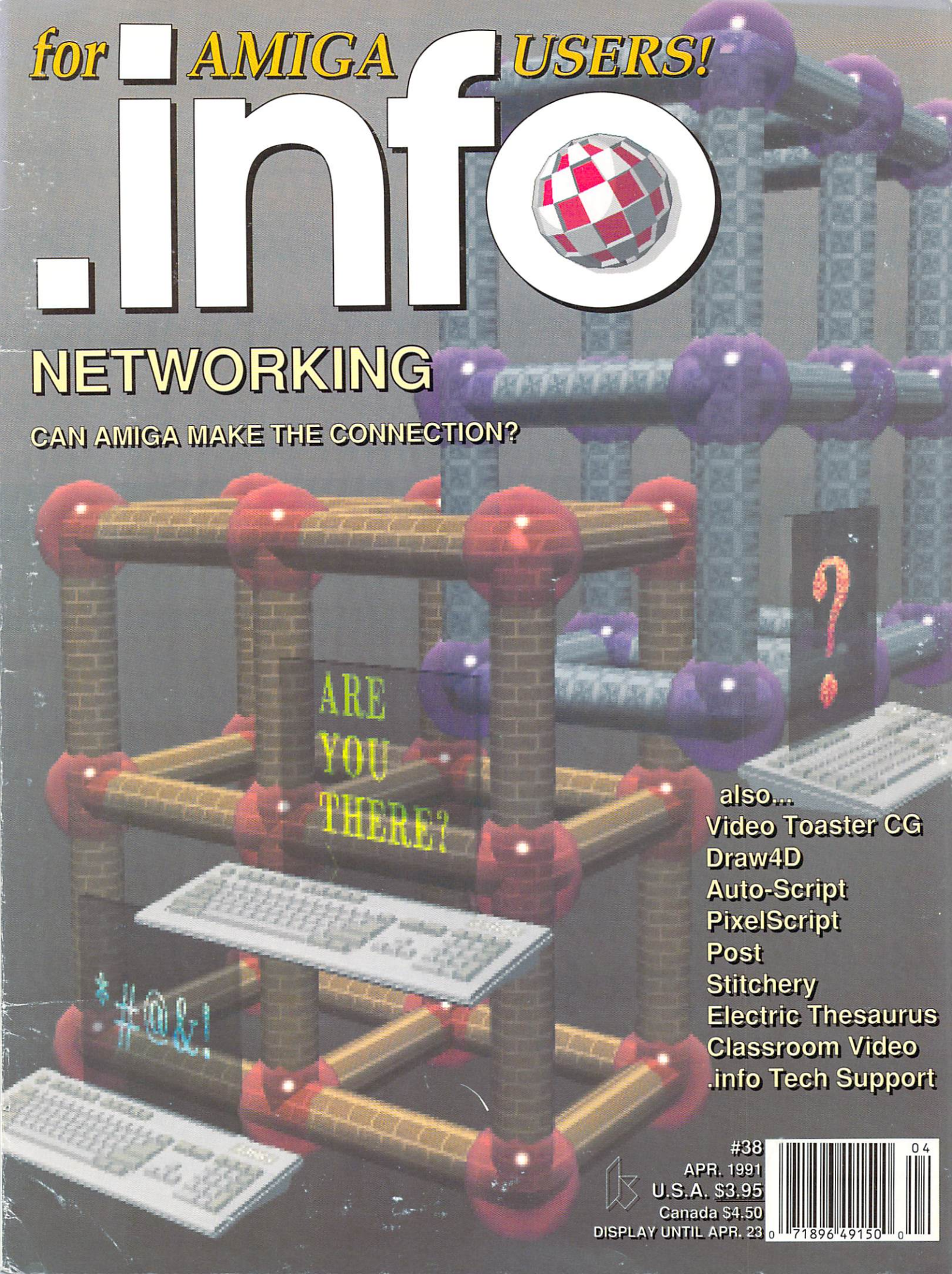

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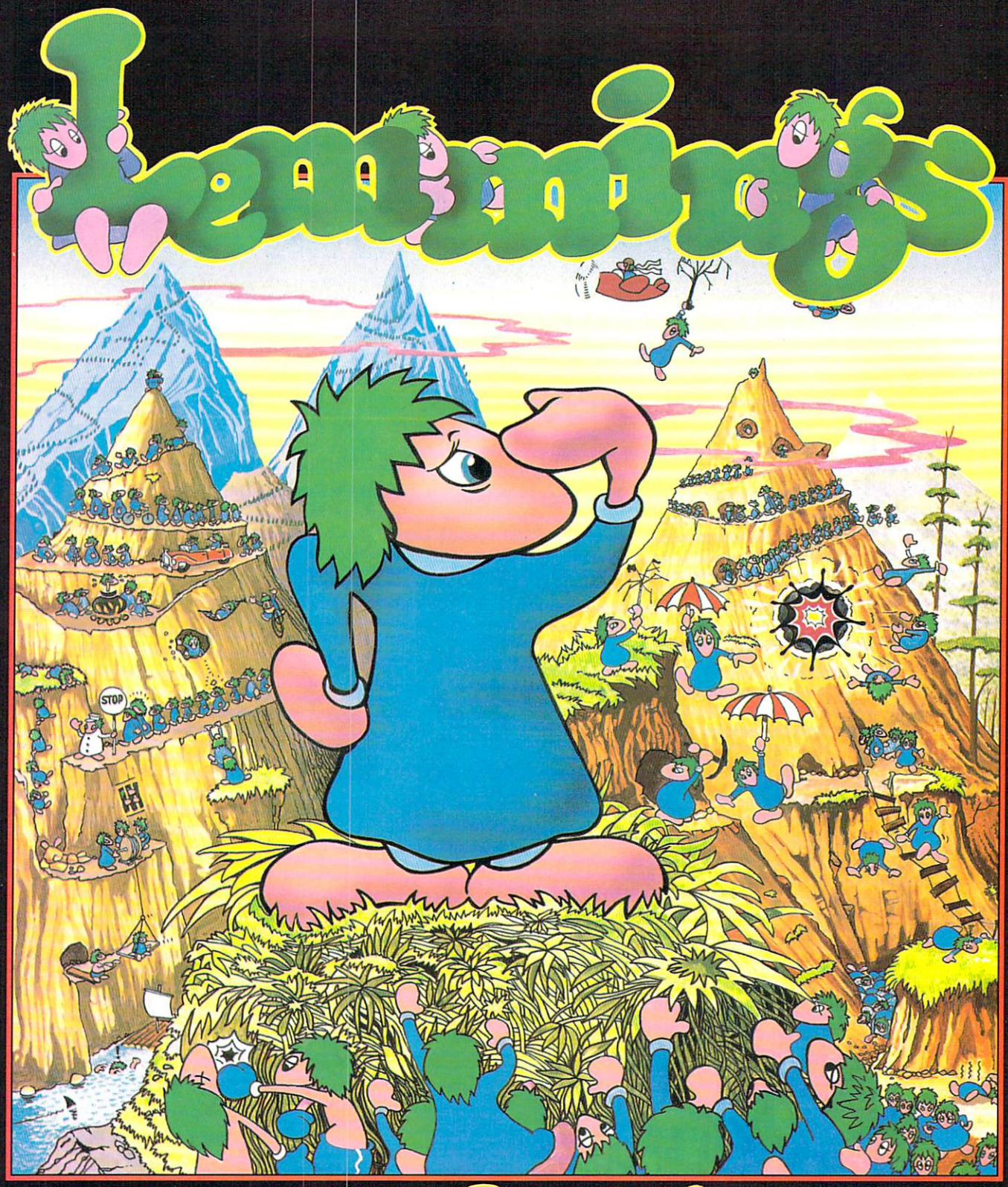

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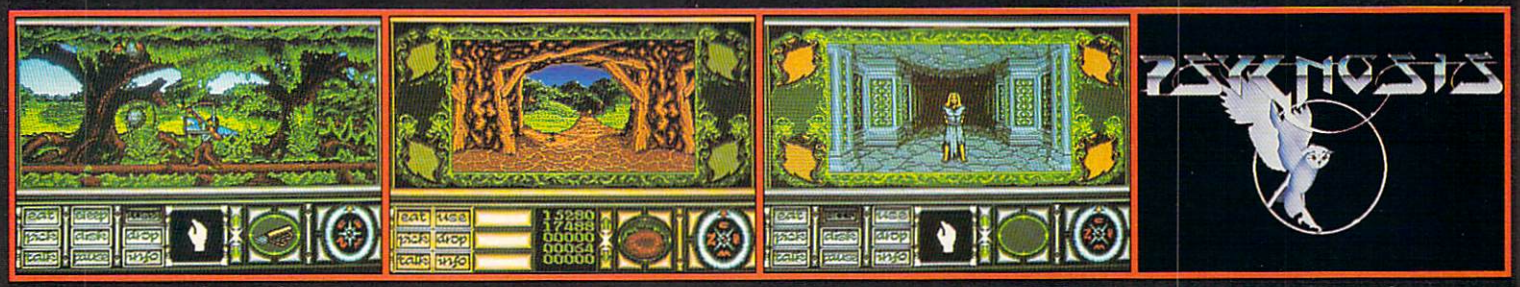

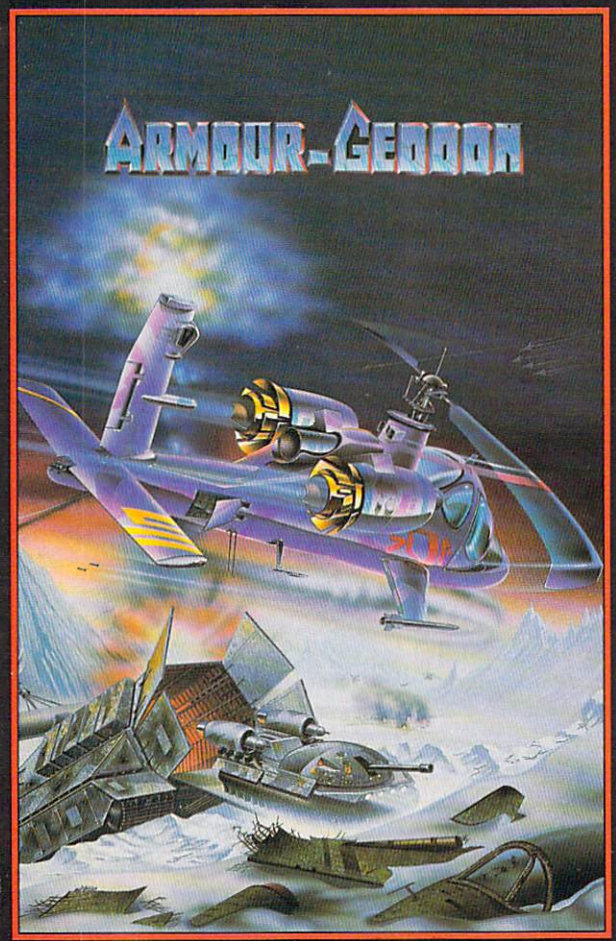

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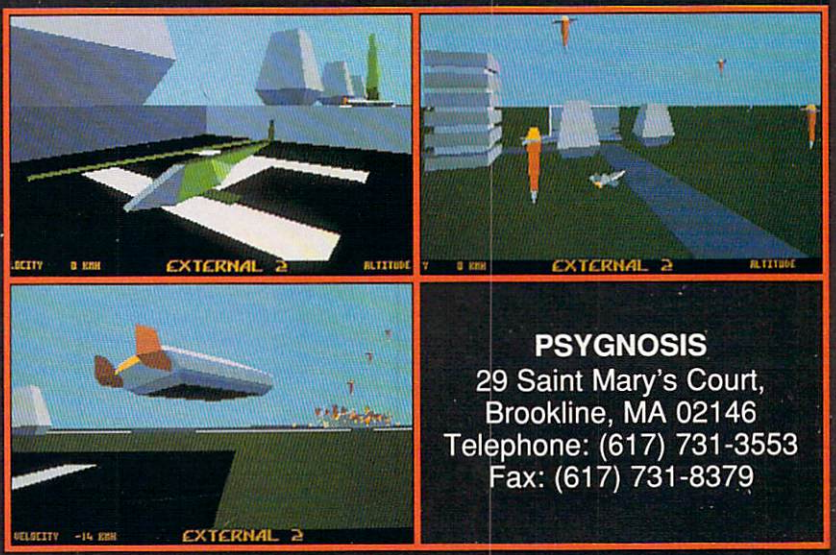

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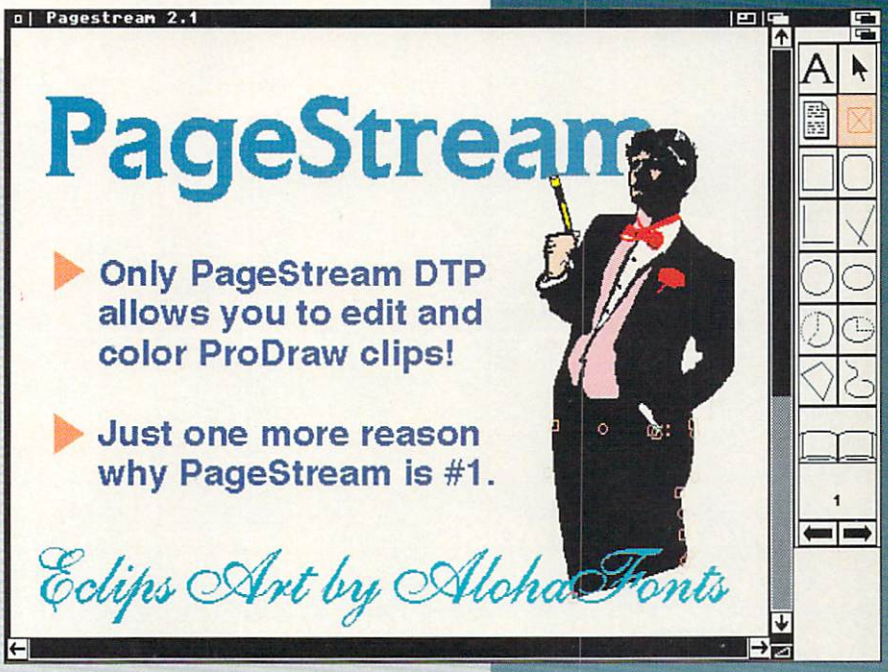

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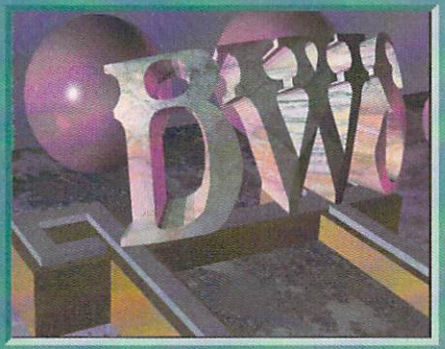

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ABOUT .info

.info strives to be a clear voice for Amiga users and a showcase for the talented people and exceptional products of the Amiga computer community. Everything in this magazine (except for some of the ads) is digitally created, edited, and color separated as complete pages on Amigas running off-the-shelf software and peripherals, and output directly to film.

The 1st magazine produced entirely with personal computers.

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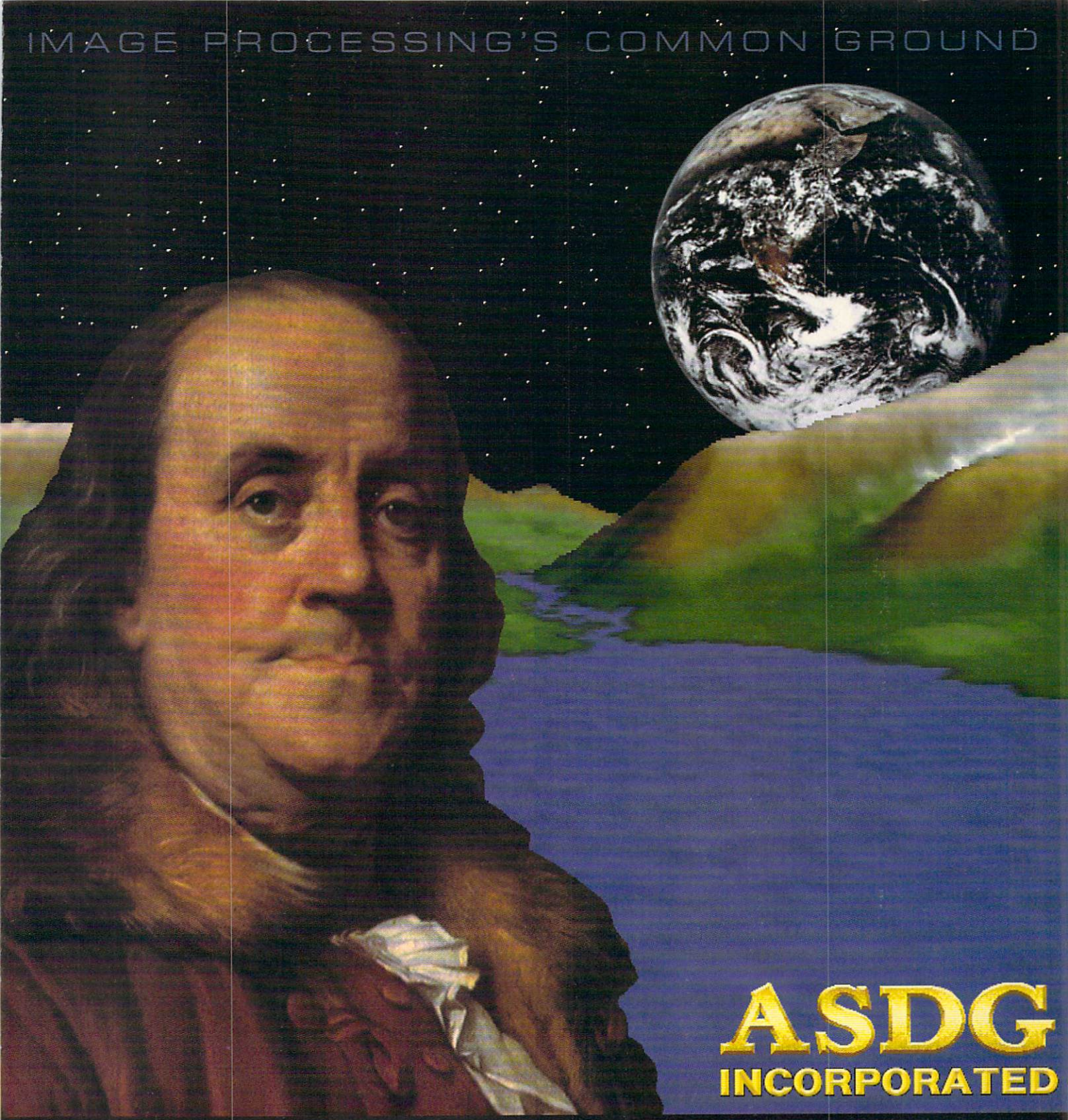

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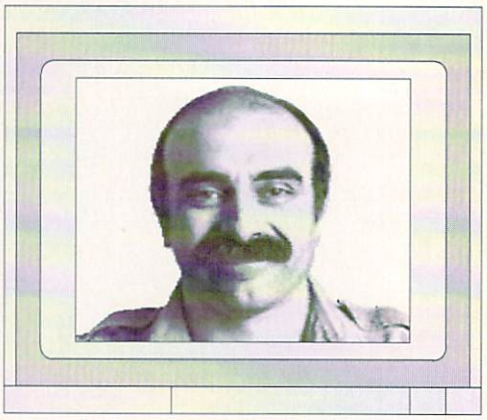

A FEW RANDOM THOUGHTS

With war advancing in the Middle East as this is written, I can't think of any computer-related questions that don't pale into insignificance in comparison. Our greatest concern is for our troops in the Middle East and for the citizens and environment of that area. We all hope and pray that the conflict will be resolved quickly, with a minimum of destruction and loss of life on both sides.

It is a source of constant amazement to me that, whenever a devastating natural disaster occurs or a war erupts, life just seems to go on. People still buy groceries, watch TV, and go to work. And we still turn on our Amigas in the morning and sift through the mail to see what's new. These are the same activities we engage in every day, but they seem somewhat surreal with something as important as the Gulf War going on a half a world away. And yet, here we are.

With that said, what follows are a few disjunct observations about the state of computing in general, and Amiga computing in specific.

LOWER PRICES

The Rumor Mill says that Amiga price reductions are in the works, reductions which may drop the street price of an A500 to about $399, and lower the price of an Amiga 2000 to under $1000. Even without advertising, this should get lots of Amigas into the hands of the people. 16-bit computing power will be available to a whole class of people who couldn't even dream of it before. I don't think anyone will be satisfied with 8-bit technology from this point on.

THE HOME OFFICE

A personal computer is half of what you need to set up a home office. The other half could easily be implemented as a "home office machine" that incorporated a plain paper copier, laser printer, fax, 300 dpi scanner, 9600 baud modem, and telephone all in one unit. There are some all-in-one machines available for the IBM/PC and Macintosh that claim to do this, though every one I've seen has a cheap thermal fax-type print unit in it and costs almost $2000. Why can't a high-quality plain paper unit be built right and sold economically? You can get a great fax machine for well under $500. A simple plain-paper copier sells for about the same. A laser printer costs $1000. If you glued everything together without duplication of parts, there's no reason such a unit couldn't sell for under $1500. There's only one reason you don't see such a machine on the market right now: greed. The companies that make faxes, copiers, printers, scanners, et. al., would rather you buy lots of machines with duplicated parts than one simple unit that would do it all. The first company that decides to junk this exploitative philosophy and actually deliver home office power to the people will make an absolute fortune.

MORE POWER

Motorola has finally released their 68040 microprocessor in production quantities. The latest in their 68000 series, this chip will be the heart of new NeXT and Hewlett-Packard computers, and will probably surface in new Macintoshes and other machines on down the line. Commodore will not be idle either, as the word from within their organization is that work has proceeded on a 68040 upgrade board for the Amiga 3000 since before the A3000 was even finished. We've been told that the A3000 architecture was designed from the ground up to mesh perfectly with the 68040's capabilities. In the meantime, Motorola is rushing to fill backorders for a quarter to a half million chips.

TECH JOURNALS

By now you've probably seen *The AmigaWorld Tech Journal* and *AC's Tech/Amiga*, the new print-and-disk based Amiga technical journals. We're sure these journals will provide a valuable addition to the already available sources of Amiga tech information like Commodore's own *Amiga Mail* newsletter for developers and the tech sections online on American People/Link, BIX, and UseNet.

We do, however, question whether the marketplace can support even one such publication, let alone two. In our opinion, the demise of the *Amiga Transactor* a couple of years ago tolled the death knell for any tech-only magazine. If that fine magazine couldn't make it, no one can.

As you might gather, *.info* has no plans to launch a tech-only Amiga magazine. We're quite comfortable delegating the back pages of *.info* itself to technical topics, in our *.info technical support* section. We feel fortunate to have Chris Zamara and Nick Sullivan, the former editors of the above-mentioned *Amiga Transactor*, on board as the editors of *.its*. We think a careful balance of product reviews, news, and technical information in one magazine serves the reader better than splitting things up into two separate publications. Then, too, *.info technical support* is geared to the beginner and intermediate user, not the advanced C or Modula-2 programmer; the articles are intended to get you up to speed on what's happening inside your Amiga. We feel that if you know what's going on "under the hood" you'll be able to get more out of your machine. We hope you agree.

- Mark & Benn

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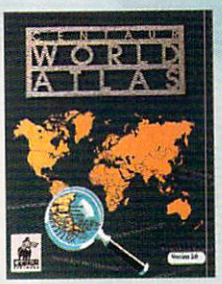

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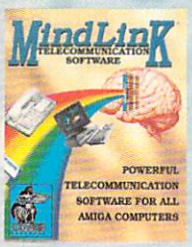

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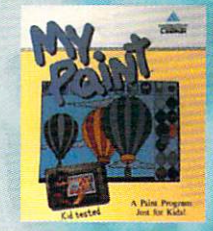

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Everybody loves My Paint. This highly-acclaimed paint package was designed especially for children but it's fun for all ages. Includes an animated-icon interface, drawing tools, special effects, multiple palettes, digitized sound effects and more. A really nifty computerized coloring book with 28 pages to color in. Also available: Additional coloring books for My Paint: Alphabet Fun and Majelix Characters.

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I enjoyed Sue Albert's article on George Christianson in your November issue (#34) very much. In fact I was so intrigued by it I called up Premier Software to order the Deskbench disks *(specialized Workbench disk designed by George - ed.)* The phone was answered by none other than Roy Tretheway himself. Roy turned out to be an enthusiastic Amiga-phile and I enjoyed an extended conversation with him about Amigas. Thanks for introducing the rest of us to people like Roy and George. - Phil Bennett, Cullowhee, NC

Roy and George are two genuinely nice guys and enormous assets to the Amiga community. We are fortunate to have so many fascinating and talented people supporting the Amiga. Write and let us know who you would like to see featured in the pages of .info. *We'll do our best to track them down.* **- Mark & Benn**

I read in #36 a blurb about something called the A1500. Could you tell me exactly what this thing is and give me the address of someone who sells it? - P. Clift, GEnie

Not to be confused with a European Amiga 1500 which comes from Commodore and is simply a bare-bones Amiga 2000 with two floppies, an A1500 is an expansion/replacement chassis for an Amiga 500 produced by Checkmate Digital Ltd. In a nutshell, your A500's insides are removed from the case and transplanted into the A1500 box. This gives you space for two internal floppies, or one floppy and a 3.5" hard drive, A2000-style cards, and a video slot. The A1500 also provides a detachable 2000-style case for the keyboard. You can reach Checkmate Digital at 80 Mildmay Park, London, England, N1 4PR. Tel 071-923-0658. The price in Pounds is £969 (roughly $1900). Looks like an interesting solution to the A500's expansion problem although the Bodega Bay from California Access (with the exception of the detachable keyboard) accomplishes much the same thing and you get access to three PC XT/AT slots as well as a third drive bay. **- Mark & Benn**

First, I would like to say how much I enjoy *.info*. Your magazine is the first that I feel really gives honest reviews of products. I base most of my purchases on your reviews. So far you haven't let me down yet. Maybe you can shed some light on the supposed Workbench 2.0. For almost six months I have been asking my local dealer when 2.0 will be available. "Next month" is the answer every time. Now the answer seems to be as far as they are concerned "2.0 does not exist." I am still at version 1.2 and have been putting the upgrade off until 2.0 is available. Can you give me the "real scoop" as to when or if 2.0 will be available? - Scott M. Morris, GEnie

Yes, Virginia (or in this case Scott), there really is a Workbench 2.0. We have actually played with it (.info *slang for testing) and are very impressed with early versions. We keep hearing differing release dates from Commodore too, but we predict you'll find 2.0 well worth the wait.* **- Mark & Benn**

I bought an Amiga 500 and I started to look for specific magazines in computer shops around here. It is very difficult to find such magazines here and when you find one, it's bloody expensive. But I am very persistent. I finally find this spectacular magazine named *.info For Amiga Users.* The magazine is just superb and it was exactly what I was looking for! Could you tell me what's the best joystick to play Amiga games?

- Harry Edward Benford
Rio de Janeiro, Brazil

A joystick with a rapid fire switch is a must-have before attempting most Amiga arcade games. Tom and Judith both use Beeshu's Hot Sticks when playing games for review but joystick choice is mostly a matter of personal preference; a joystick should just "feel right" in your hand. Ask your local dealer to test them out before you buy one and thanks for this issue's ".info *is great" letter!* **- Mark & Benn**

I have never written a letter about the Amiga before, but I feel I should voice my concerns. I've had the opportunity to work with Mac II's and MS-DOS machines, and overall none of these flavors of computing can touch the Amiga. But this is changing. Apple and IBM are catching up. Microsoft is striving to make Windows a viable multimedia platform and Mac developers are starting to offer 64-bit color. Commodore has some work to do. The Amiga co-processors must be redesigned to allow for higher clock speeds and higher color resolutions. When I bought my Amiga I never thought I'd see the day when 256 color software would run on Macs and PCs. Eventually, through the brute force of powerful processors (I would hope that the i486 can push an animation around the screen as well as a 16-bit Amiga) and larger budgets, the bigger companies will have their way. It's time for Commodore to pull out the stops and put the Amiga back at the top. It may take some unorthodox designs but it can be done. I wonder if Jay Miner is bored making hardware for pacemakers yet?

- Jonathan Hirschman, Albany, NY

You have highlighted some important issues that the Amiga industry needs to be thinking about. Commodore, are you listening? **- Mark & Benn**

All photographs are of actual DCTV screens.

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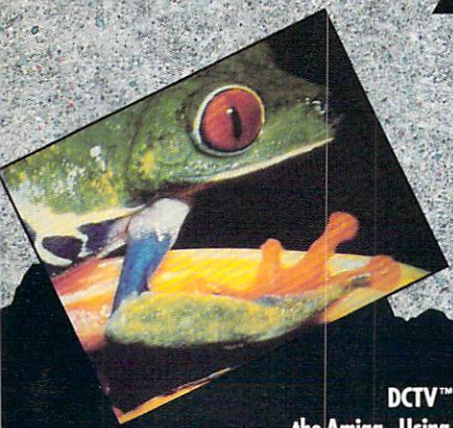

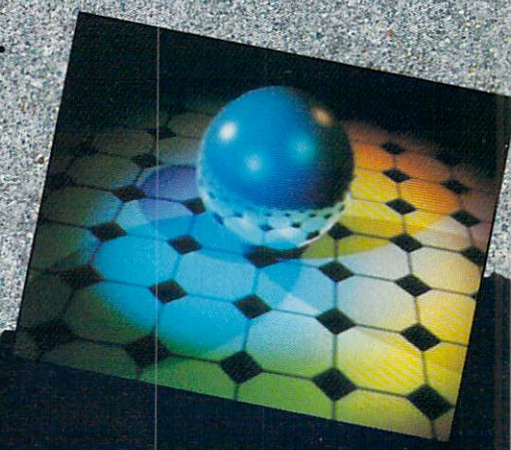

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NEWS & VIEWS

COMMODORE NEWS

Former Commodore President Harry Copperman and Frederick Smith, CEO of Federal Express, recently dedicated a new Customer Support Center at a ribbon-cutting ceremony in Memphis. The new Center establishes the CommodoreExpress customer support service as a long-term program. CommodoreExpress is the unique service begun last year that provides Amiga 500, C64, and Select Edition owners with free pick-up and return delivery for in-warranty repairs of their machines. The program includes a 24-hour toll free "helpline" service offering new owners the availability of ongoing assistance in setting up and operating their computers. The new facility will be operated by Business Logistics Services, a division of Federal Express. Details regarding CommodoreExpress are available by contacting Commodore's Customer Satisfaction Department at 1200 Wilson Dr., West Chester, PA 19380.

Commodore stockholders recently received notice of an impending settlement in a class action suit filed by Lee Squitieri, a Commodore stockholder, against Commodore, Irving Gould, Carden Welsh, and Mehdi Ali, who are all officers of the company. The suit alleges that certain misrepresentations caused Commodore stock to be overvalued during the period of June 5 to Oct 19 of 1989. If the proposed settlement passes the courts, all persons who bought Commodore stock during that period will be eligible for a share in a $3.15 million settlement.

THE RUMOR MILL

DISCLAIMER: The following are among the most entertaining rumors we've heard the past month. They are presented for your entertainment and amusement only. Please do not make any important decisions based on these rumors, as some will prove to be inaccurate or just plain false.

➲This Just In: After months of rumors and denials, Antic's *Amiga Plus* magazine has given up the ghost. It looks like Dec90/Jan91 (the one with the hologram on the cover) was their last issue. Inside sources tell us that *Amiga World* will be fulfilling their subscriptions. Meanwhile, most of the *Amiga Plus* staff - who originally produced an Atari ST magazine - is moving on to launch an IBM/PC title. Well, I guess you've gotta follow your heart.

➲NEWS FLASH! The Wall Street Journal reports that Microsoft has quit trying to make OS/2 work. It seems the "Operating System of the Future" for the IBM PS/2 has proven to be the "Operating System From Hell". *Windows* has proven to be much more popular for the PC, and Microsoft will be concentrating its efforts in that direction. Of course, *Windows* also requires beaucoup processing time, RAM, etc., to do anything worthwhile, which still makes AmigaDOS the only *practical* multitasking operating system on the market.

➲We hear the little elves at Shereff Systems are busy converting a bunch of fonts to *Video Toaster* format...

➲CDTV units are now in the hands of developers, with Commodore's promise that they'll be on the shelves by the time you read this.

A BEAUTIFUL NIGHT ON THE NEIGHBORHOOD

The Public Data Network is a new 64-line recreation, communication, and information telecommunications resource that describes itself as a nationwide neighborhood BBS. Public Data Network was created as a reasonably priced alternative to the better known nationwide telecommunications networks and includes many of the same popular services. PDN is available 24 hours a day, 7 days a week to all computer types. PDN features hundreds of message bases and special interest groups with topics ranging from cooking to UFO's, EMail with features like carbon copy and return receipt, a large and growing PD library, a MasterSearch service for searching online databases such as Grolier's Encyclopedia, and a long list of fun online activities including friend and matchmaker services, user created novels, an Adults Only Room, cool sounding online games, and much, much more. Access to the entire Fred Fish library of public domain and shareware on CD-ROM should also be available by the time you read this.

Online access charges are a reasonable $9.50 per month which includes three free hours of connect time. There is a one time account setup fee of $14. Additional evening and weekend hours are $2.50 each. Rates are even better if you live in Oregon. PDN offers a special user group rate as well. For $25 per month plus the hourly rate all of the members of your users group can become Public Data Network members with access to all PDN services. Local access numbers are available in all 50 states. According to Sysop Tony Javoric, the Amiga section is by far their most active with all sorts of uploading and downloading going on, and many interesting Amiga-philes to converse with in the chat areas! Call 800-869-9561 for more info and a list of access numbers in your area.

News & Views continues on page 46 . . .

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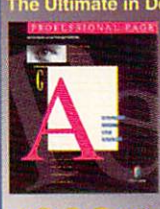

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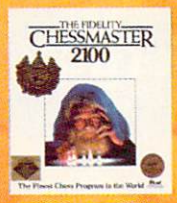

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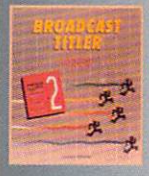

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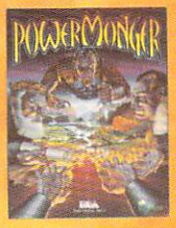

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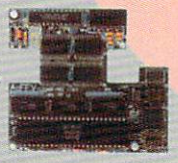

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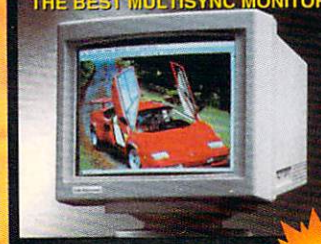

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Circle #122 on the Reader Service Card

STITCHERY

Do you know someone who does counted cross stitch or needlepoint? If you do, you've probably seen the charts the designs are worked from: they look like graph paper filled in with little symbols, a different one for each color of thread. The finished needlework is done by counting the stitches on the chart, with one square on the chart representing one stitch. Graphing a project is not only time-consuming in the extreme, it also takes a lot of experience to translate an idea or an image into a workable chart.

There's an Amiga shareware program that makes the whole process easy, and though Harv Laser mentioned it a few months ago in his PD column, it's worth mentioning again. Written by Brad Schenck, *.info*'s own graphics columnist, *Stitchery* will take any IFF image (original art, scanned images, grabbed video, or whatever) and translate it into a very accurate symbolic needlework chart. Done with *The Director*, the program works on a pixel-by-pixel basis, meaning that one pixel on the screen becomes one stitch on the graph. The program automatically divides the image into pages 60 pixels wide by 70 pixels high, more than enough resolution even in lo-res for any project. (Most counted needlework has from 10 to 22 stitches to the inch.) *Stitchery* also generates a color key, so you'll know what color translates to what symbol, and it handles up to 64 colors. About the only changes I would make to it would be a little faster speed, the ability to change the symbols to ones of my own choosing, and the option to overlap the designs a little from page to page. At a suggested donation of $20, Stitchery can make your favorite needleworker very happy. It's available from the author or from American PeopleLink's AmigaZone.

- Tom Malcom

STITCHERY

★★★★★

$20.00 Shareware

Brad Schenck, 62 Dombey Circle, Thousands Oaks, CA 91360

HIGH-DENSITY FLOPPY DRIVE

This compact little 3.5" external disk drive looks like a Mac drive, though it's not Mac compatible. It actually handles *two* separate Amiga disk formats. The first is, of course, standard 880K AmigaDOS format. The other is a 1.5 megabyte high-density format that is 100% compatible with the Amiga operating system. You just plug the *AEHD* into the external drive port and transfer a couple of files into your DEVS: directory and you are set to go. It acts simultaneously as both a regular and a high-density drive - mine is set up as df2: (normal) and df6: (high-density). High density 3.5" disks have an extra hole in them, and the *AEHD* uses this to autodetect which format to use.

So far, mine has worked without flaw for over three months with my A2000. It's especially handy for those slightly too large animation files, or combining two-disk programs like *Pro Draw 2.0* onto one disk. And the latest version of *Quarterback* (v4.2) now supports the *AEHD*. But if you plan with future compatibility in mind, something to consider is that Commodore's soon-to-be-released high-density floppy will not use the same HD format, so disks will not be cross-compatible.

Do I have a wish list? You bet! I'd like to see: variable speed for reading Mac disks (Applied Engineering makes a Mac drive already, so they should be up to the task); the ability to read MS/DOS high-density disks; and compatibility with Commodore's high density format. If these are not considerations for you, then the *AEHD* is a nice device.

- Mark R. Brown

AEHD HIGH-DENSITY FLOPPY DRIVE

★★★★+

$239.00

Applied Engineering, PO Box 5100, Carrolton TX 75011, 214-241-6060

THE ELECTRIC THESAURUS

You can buy a nice hardbound thesaurus for about $25, so why should you spend twice as much for an electronic version on disk? Simply put, it is soooo much more convenient. SoftWood's *Electric Thesaurus* sits in a handy window right by your wordprocessor, waiting for you to ask it to find a synonym. When you do type in a word, it comes up with a definition and a whole list of alternates, complete with various parts of speech. You can then simply click on an alternate to have its meaning pop up; you can even follow a whole train of words. If you want, you can open multiple windows, each with its own word, definition, and synonym list. *The Electric Thesaurus* includes the *Roget's II* database of over half a million synonyms, so it seldom leaves you high and dry. There are some gaps, of course, as in its definition of *blue: bordering on indelicacy or impropriety.* Where is *blue: melancholy, or in low spirits*? *ET* will work from disk on a 512K system, though I find hard drive access almost a necessity, and extra RAM will be required if you want to make it co-resident with your wordprocessor. Indispensable for writers, *The Electric Thesaurus* is another fine product from the good people at SoftWood.

- Mark R. Brown

THE ELECTRIC THESAURUS

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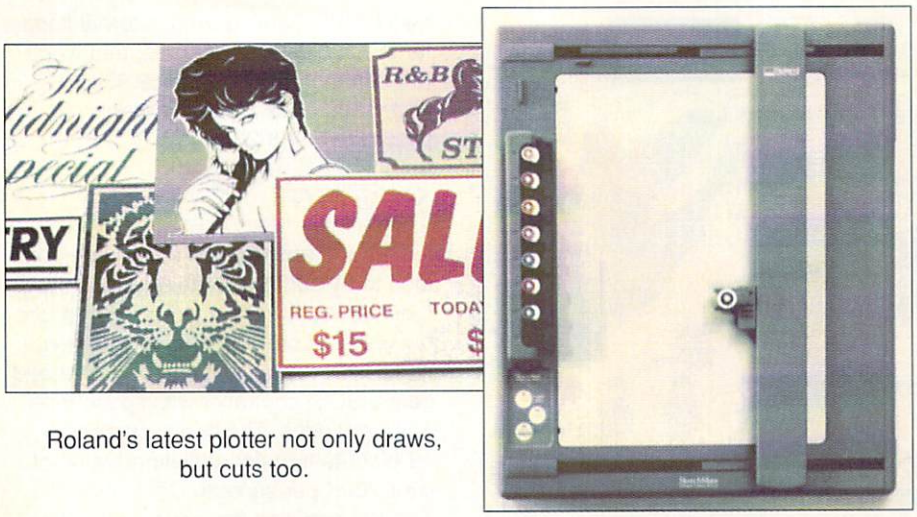
$49.95

SoftWood, PO Box 51209, Phoenix, AZ 85076, 200-247-8314

NEW PRODUCTS



Roland's latest plotter not only draws, but cuts too.

THE PLOT THICKENS

Among other things, like music keyboards, *Roland* has been manufacturing plotters for eons (well, OK, since 1983 anyway). The latest in the plotter line is **SketchMate**, a compact, 9-pound, 8-pen unit that will handle letter-sized paper, transparency film, or other material. It's the 'other material' that makes the *SketchMate* so nifty. In addition to the pens for drawing plots, it will also accept a knife blade for cutting out stencils, signs, and anything else your imagination can come up with. (Iron-on designs for t-shirts spring immediately to mind.) The machine will accept HPGL-compatible input, which most Amiga CAD packages support. At a retail price of $695, *SketchMate* would be ideal for small businesses as well as those of us who would love to make our own rude t-shirts. 1961 McGraw Avenue, Irvine, CA 92714. 714-975-0560.

COLORFUL QMS

Color PostScript printers are just coming into their own, though the prices are still astronomical compared with black-and-white units. *QMS*, thankfully, has lowered the price of their *ColorScript 100 Model 30i* from $15,995 to $12,995, which indicates that prices are beginning to come down. The Model 30*i* uses thermal transfer technology and sports an internal controller that uses a 16Mz 68020. It has 8 MB of RAM, a 1 MB ROM, and contains 35 PostScript typefaces that it can print onto paper up to 11" x 17". As for connecting it to a computer, it will handle RS-232, Centronics parallel, and AppleTalk and also has a SCSI port for attaching a 20 or 40 MB hard drive. One of the more useful features, particularly for the publishing business, is built-in Pantone color simulation. QMS, One Magnum Pass, Mobile, AL 36689. 205-633-4300.

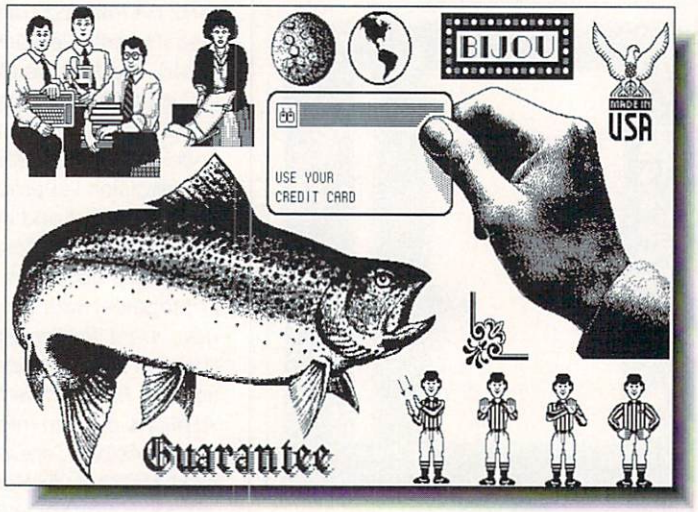
FEELING VIDEO

Interactive MicroSystems has been putting Amiga-based video systems together for some time now and we thought it was about time to give you the rundown on what they're doing. The **MediaPhile 2.0 Desktop Video System** is available in more configurations than you can shake a hot pixel at, with prices ranging anywhere from a $50 tape deck sensor cable to an entire $6844 Amiga 3000-based system that includes 5 megs of RAM, a multisync monitor, *SuperGen 2000S* genlock, 100-meg hard drive, and all the *MediaPhile* software. If you're comfortable with putting together your own hardware, the *MediaPhile* software and and the necessary controllers and interfaces are available separately: *MediaPhile MP2.0A Infrared Controller* ($215, handles IR controlled devices from the computer), *MediaPhile Utilities* ($80, includes *MediaController*, *MediaEditor*, *TCGen* window-dub and SMPTE time-code generator), *MediaProcessor* ($195, edit decision list processor, also includes *MediaFiles* list and image management software), *MediaBase* ($195, provides interactive access to A/V presentations put together with *MediaProcessor*), *Programmers Toolkit* ($195, includes linking libraries & bmap files for the shareable library), *MediaPhile Servers* ($195, *ARexx* & custom interfaces for use with *AmigaVision*, *CanDo*, & *The Director*), *MediaPhile 2.0M Sony 8mm Video Deck Interface Controller* ($135, brings counter information from two modified camcorders and includes a *Counter Sense* cable), *MediaPhile 2.0S Sony CTL-L Port Interface Controller* ($190, brings counter info from 5-pin CTL-L equipped video decks; an optional IR and Sony S-port option is available for $85 more). Are you thoroughly confused by now? The *MediaPhile* systems are primarily geared to using Sony and JVC video equipment, but if you know what you're doing, you can most likely get other brands and other configurations working. For more information, contact Interactive MicroSystems at 9 Red Roof Lane, Salem, NH 03079. 603-898-3545.

CARDS

We are always on the lookout for things to make life around an Amiga a little easier, and *Vidia*'s reference cards fit the bill nicely. The latest they've published include the **Guide to Professional Page** ($6.95), which is primarily a sample book of typefaces, rules, screens, symbols, pattern fills, and the like. The **Amiga Programmer's Quick Reference Guide** ($6.95) is just that, with an emphasis on C and assembler code. Also available is a new version of the **Amiga Graphics Reference Card** ($2.95), which now includes information on the A3000 modes, PAL, and 24-bit hardware. PO Box 1180, Manhattan Beach, CA 90266. 213-379-7139.

NEW PRODUCTS



A small sample of the clip art to be found in Softwood's new collection.

NO PENALTY FOR CLIPPING

There's clip art galore in *Softwood*'s two new volumes of images. Aimed at the desktop publishing market, each volume consists of four disks of hi-res bitmaps. **Volume 1: Classic Clip-Art** includes such stand-bys as borders, symbols, animals, international symbols, dinosaurs, automobiles, desktop items, US and world maps, and so on, for a total of over 1000 pictures. **Volume 2: People Clip-Art** focuses on occupations, sports, leisure activities, with 490 images in all. Each collection comes with a manual showing all of the images so you won't have to hunt through all the files to find the one you want. Price per volume is $79.95. PO Box 50178, Phoenix, AZ 85076. 602-431-9151.

SOUND GRABBING

Oxxi is releasing a new audio digitizer, **Aegis Soundmaster**. The box will contain not only the hardware, but also a copy of *Aegis Audiomaster III*, the recently released sound sampling/editing software. The digitizer supports sampling rates from 0 to 56K (just for reference, CD standard is 44.1 to 44.7 samples/second), has two standard RCA input jacks, two microphone inputs, and a slider to control the input volume. It also has a built in microphone that is controlled via the *Audiomaster* software. The unit even has a couple of lights on it to add a little flash: a red one tells you if the volume level is too high, and green one indicates that the internal microphone is active. Oxxi hadn't finalized the price at presstime, but said they're targeting under $200 for the whole works, and there will be an upgrade option if you already have *Audiomaster III*. PO Box 90809, Long Beach, CA 90809. 213-427-1227.

DRIVING AROUND

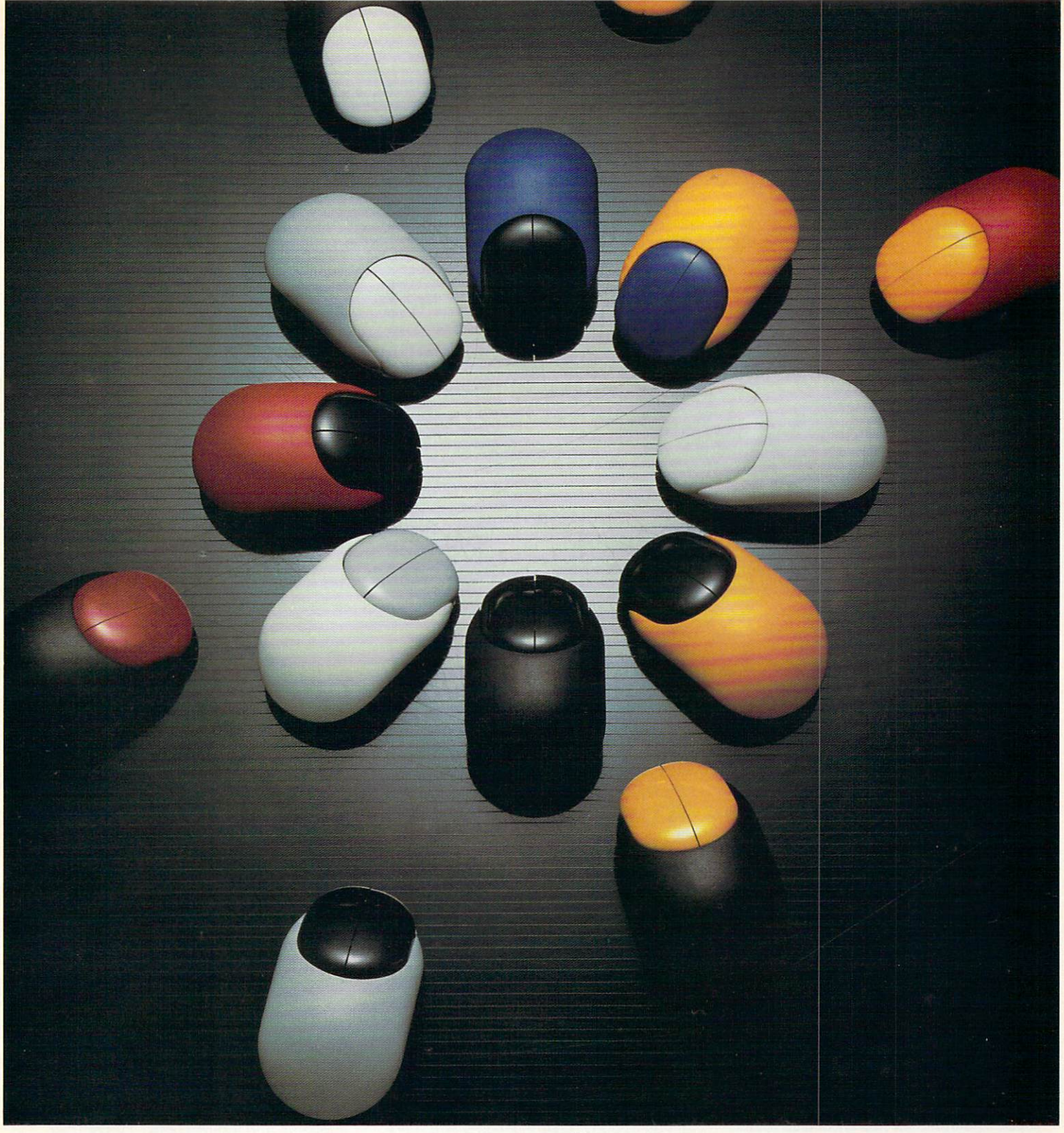
If you've ever shopped around for a hard drive, you've probably noticed that there are two basic flavors, SCSI and IDE. Intelligent Device Electronics drives predominate in the IBM world while SCSI drives are primarily for Apple users and generally more expensive. The main difference is that IDE drives use an embedded controller with a modified 16-bit AT buss, making them very fast. Until now Amiga users have pretty much been limited to SCSI drives, but *ICD* has a new controller that allows you to use 2.5" and 3.5" IDE drives with your Amiga. The card itself is tiny, measuring only 3.32" by 1.62", and is compatible with the A500, A1000, and A2000. The **AdIDE** not only allows auto-booting from the hard drive, but the included software also permits you to install a 3.5" hard drive in the internal floppy space in the A500 and boot from it. (The software will also handle booting from external floppy for those things, like games, that won't run from a hard drive.) $159.95 from ICD, 1220 Rock Street, Rockford, IL 61101. 815-968-2228.

SURFING

It probably wouldn't be a very good idea to try surfing on the **Malibu Board** (you can try if you want, but you'll probably wipe out pretty quickly), though you can certainly plug it into your Amiga and gain a SCSI controller with space for a 3.5" hard drive. The board offers true 16-bit data transfer at claimed rates of over 700K per second. *California Access*, has also designed a modular RAM expansion daughterboard called - what else from the company that gave us the Bodega Bay and Rodeo Drive? - the **Catalina Card**. It plugs into the *Malibu Board* and has space for 8 megs worth of SIMMs in 2, 4, or 8 meg increments. The *Malibu Board* retails for $229.95 and the *Catalina Card* for $99.95 unpopulated. Like, gnarly. 130A Knowles Drive, Los Gatos, CA 95030. 408-378-0340.

PAINT ME HI-RES

Lake Forest Logic is shipping **Macro Paint**, a hi-res paint program that lets you use all 4096 Amiga colors onscreen at once. Note that this is NOT a HAM paint program. You can do all this colorful drawing in realtime because the Copper is used to full advantage (I think they use a cattle prod on it). The package records 12-bit color information in memory and can read in and modify standard 32-, 64-, and 4096-color images as well as 24-bit ones, and then save the image out again in either dynamic hi-res or 24-bit RGB format. Bi-directional ARexx support is built in and you can even make drawing tools of your own and have them appear in the tool menu. Macro Paint will work on a standard Amiga with one meg, but two or three megs are highly recommended. Price is $139.95. 28101 E. Ballard Road, Lake Forest, IL 60045. 708-816-6666.



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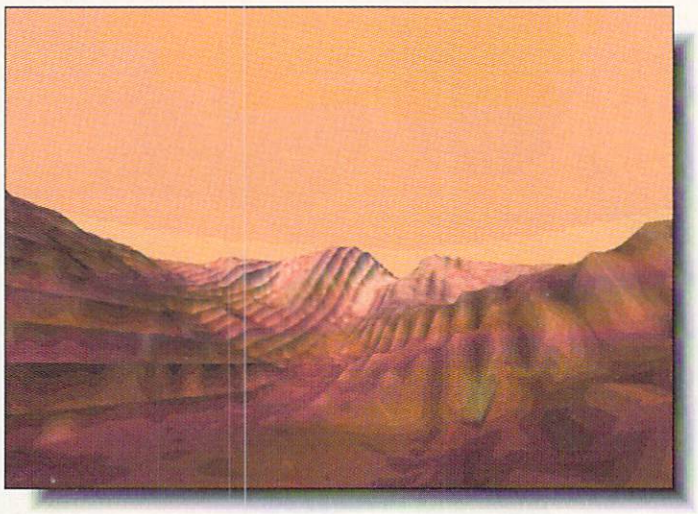

Having a wonderful time on Mars, wish you were here. (You can be with Virtual Realities' DEM disks.)

VIRTUAL VACATIONS

Talk about being able to impress your friends with vacation pictures! *Virtual Reality Laboratories* has released a 6-disk set of DEM data files for Mars. Renderable in *Vistapro*, their outstanding fractal/chaos-based landscape generation software, the disks cover the Valles Marineris, an area approximately 4000 km long by 700 km at the widest point. The data is at a resolution of 930 meters per point, which is fine enough to make you think you're seeing it for real. The landscape is made up of 11 interconnected canyons, making for some very interesting scenery. (Of course, you don't have to tell your friends you only went to Mars on your Amiga.) The company is also shipping two other data disk sets. One covers parts of Southern California, including Lake Arrowhead, Big Bear, San Gorgonio, Mt. Baldy, and Big Sur. The other set has DEM files for the west side of the Grand Canyon, running from Lake Meade to Kanab Creek along lower Granite Gorge. Each of the three data disk sets retails for $80. 2341 Ganador Court, San Luis Obispo, CA 93401. 805-545-8515.

LOCKING IN

VidTech's **VideoMaster** genlock isn't exactly cheap at $1295, but it promises high-quality, glitch-free video, and lots of conveniences for your video production work. Compatible with any Amiga model, the slick-looking box plugs into the video port and will accept just about any video source (there are separate versions for PAL and NTSC) you care to feed it, be it composite, Super-VHS, Hi8, ED-Beta, from laserdisk, tape, live video, or whatever. It has a built-in RGB splitter so you can plug directly into video digitizers and has sliders for dissolving between Amiga/Reference sources or to black. There are also a few built-in wipes, controlled by a slider either manually or timed. Other features include continuous output in three formats (composite, S-Video, and RGB), a bypass switch, key out for compatibilty with a video mixer, and the ability to generate an internal sync signal so you can record without a reference video input. Since it's an external unit, your video slot is left free for other uses. If you already have VidTech's *ScanLock*, you can upgrade to the *VideoMaster* for $795. 2822 NW 79th Avenue, Miami, FL 33122. 305-477-2228.

GENERATION GENERATION

Geneological software is rare enough that the release of Version 2 of **norgen** is well worth mentioning. The first version was released a couple of years ago and this new incarnation has been considerably reworked. The number of records and length of the fields is limited only by storage space, and there are 10 user-definable fields in addition to the standard ones (noteworthy for LDS Church purposes). The set of standard geneological reports has been expanded and there are utilities to ensure the integrity of your data as well as make sure it's organized for the best performance during searches and other functions. Probably the best thing about this version, though, is that it can link IFF images to records. What a great thing to do! You could scan all those old photographs and attach them to the record of the person in the picture. No more wondering if that's Aunt Bessie on a bad day or Uncle Cletus without his mustache. $99.95 from *Norris Software*, 3208 West Lake St., Suite 65, Minneapolis, MN 55416. 612-827-2766.

ON PAPER

There are a couple of new books worth noting. First and foremost, **Dvorak's Guide to Desktop Telecommunications** offers a thank-you to *.info* regular columnist Harv Laser, who is also sysop of PeopleLink. The 778-page volume covers about anything you could conceivably want to know about getting online, staying there, and paying for it as cheaply as possible, whether you're using an IBM, Mac, Amiga, or UNIX system. Price is $34.95 and it's published by *Osborne/McGraw-Hill*, 2600 Tenth St., Berkeley, CA 94710. 415-548-2805. *Tab Books' Windcrest* imprint has published **Desktop Video Production**, a guide to producing high-quality animations, music videos, presentations, promotional and training films, TV commercials, and other stuff to put on a video screen. Written by Michael Brown, the book focuses on using Amigas and Macs in real-life production. It's 208 pages and will cost you $16.95. Tab/Windcrest Books, Blue Ridge Summit, PA 17294. 717-794-2191.

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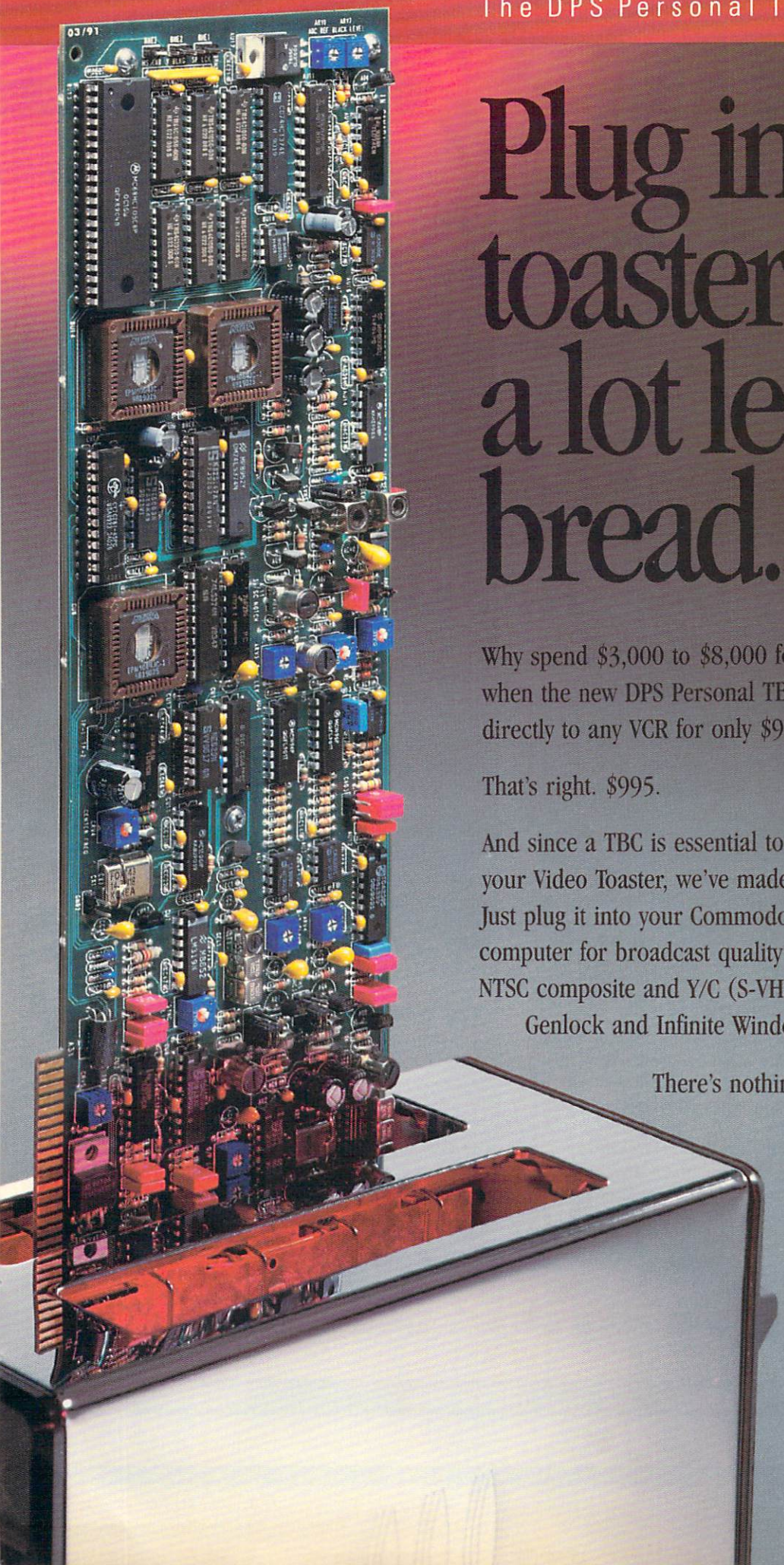

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Part 1 of a two-part article on networks in general and Amiga networks in specific.

by
John Foust

NETWORKING
ON THE AMIGA

In today's world of computers, "connectivity" is a popular buzzword. No computer is an island, and each must become part of the LAN (Local Area Network). It is becoming more and more important for any computer to connect to other computers. People want to share documents, databases, and drawings between computers as easily as if the data was stored in their desktop computer.

This two-part series emphasizes a practical, working knowledge of Amiga networks. Because networks intimately involve so many different technologies and parts of each computer they touch, an overview is necessary. This installment is the introduction. The next part discusses the finer points of each networking alternative available for the Amiga.

WHAT IS A NETWORK?

In office environments, networking often means linking groups of computers in a department, linking dissimilar computers such as IBM/PCs, Macintoshes, and Unix workstations, then linking these computers to the company mainframe computers.

Today, networking means mostly a mechanism for sharing access to files. For example, the user runs a wordprocessor and retrieves a document from a central computer, edits it, and saves the file back to another network computer. Meanwhile, the network software prevents anyone else from changing the file.

What doesn't networking do? For the Amiga, it *doesn't* mean you can use the memory of an Amiga 3000 on a networked Amiga 500, though you *can* share a hard disk. For now, you *won't* be able to run a memory-hungry program such as a 3D modeling program on one machine and see the user interface on another. This just isn't possible with the Amiga's Intuition at this time. However, with up-and-coming technologies such as X-Windows, it will become possible for computers to share programs and user interfaces. As Amiga networks become more popular, we can expect new and exciting ways of using a network. The Amiga is on the cutting edge in many technologies such as video and graphics, and we can expect innovative Amiga developers to create new ways of using networks, too.

NETWORKING LAYERS

A network is composed of many logical layers. These layers break the networking task into manageable pieces, insuring that data is delivered to the proper computer in a usable form.

The lowest level is the physical medium used for connections, such as boards and cables, while the highest level is the application program running on a particular computer. Ultimately, data is delivered from one application to another, but must pass through the operating system, over the cable to another operating system and another application.

Any network scheme rests on a foundation of some physical connection that can reliably move data bytes from one place to another. An ideal physical connection delivers more data in less time, without any transmission errors. Practical examples of the physical connection are names such as Ethernet, ARCnet, Appletalk, the serial port, and the parallel port.

Ethernet and ARCnet often carry their signals over coaxial cable not unlike the wire that carries cable television into your home. Ethernet generally transmits more information more quickly than ARCnet, but ARCnet is cheaper. Ethernet can move data at up to 10 megabits per second, or about a megabyte a second, while ARCnet can transfer about 2 1/2 megabits per second. Coaxial cable can carry a large amount of information very quickly. Another advantage of Ethernet is that different network software can co-exist on the same cable. For example, if your office's PCs are wired with Ethernet cable for Novell software, you'll be able to use the same cable to connect two Amigas running *TSSnet* in different parts of the office.

You are probably most familiar with serial transmissions. Modems are traditionally connected to the Amiga's serial port. With a modem, your Amiga conducts a two-way conversation with one other computer. Your computer sends bytes of data to the other computer, and the other computer can respond in kind. There is only one connection between two computers at a time, though; it's not quite a network.

The parallel port can move data generally faster than the serial port. A computer's parallel port is traditionally uni-directional, but the Amiga parallel port is capable of bi-directional data transmission. In other words, on an IBM/PC, the parallel port only outputs data to a printer, but the printer can't return any meaningful data over the same cable. Parallel data transmission takes place eight bits at a time, while the serial cable only carries a single bit at a time. The public domain *DNET* networking software can use either the serial port or the parallel port to move data between Amigas.

The next level of networking that concerns us is the reliable delivery of packets of data - but back to the modem example for a moment. Simple modem communication isn't error-free. Noise on the phone line can introduce errors that result in garbled characters. By using a transmission protocol such as XModem, two computers can transfer a given amount of data (usually a single file) with little chance of an error, regardless of the noise on the phone line.

XModem breaks the file up into pieces. Each piece is sent wrapped in data that protects it. Each packet is assigned a number that insures that the receiver correctly assembles the packets in sequence. Each packet also includes a few bytes of data that can detect an error. The sender summarizes the data in the packet using a special technique. This "checksum" is sent in the packet. The receiver performs the same checksum calculation on the data when it arrives. If the checksums aren't the same, a transmission error occurred, and the receiver tells the sender to retransmit the data packet.

Network software performs the same task, on streams and packets of data. With this sort of packaged, insured delivery, network software can transmit error-free data using a slightly error-prone physical connection. Or transmission can take place over different types of physical connections. For example, a network might be composed of both Ethernet and serial port connections between machines.

Next in the onion-skin layering of network software is addressing. Each machine needs an address for delivery of messages. Each machine might want several simultaneous connections to other machines, and each machine should be able to accept and maintain more than one connection from other machines. For example, the Amiga can run more than one application program at a time, and each might want to access other programs on the network. One machine's mail program wants to talk to the mail program on your machine, at the same time you're accessing a database on a third machine.

A system of naming network machines and connections is needed. Unfortunately, each network implements this in its own way, although products exist that can resolve the names and addresses of one network into the names and addresses of another, effectively linking two dissimilar networks.

Finally, after progressing through these layers, we have reliable data connections between many programs on many machines. At this level, the network's data must be translated and packaged in a form suitable for a programmer. This usually involves some cooperation with the local machine's operating system, which is also running the network software as well as the application program. With its true preemptive multitasking, the Amiga is at an advantage here. AmigaDOS is a natural for running network applications. Implementing networking on a single-tasking IBM/PC is a nightmare, and application programs suffer for it. Network applications on the Amiga will thrive in this environment.

BORN TO SERVE

Practically, a network computer user views network file access in one of two ways. In the simplest scheme, popular on single-tasking computers such as the IBM/PC, all applications store their data on a central computer on the network, called a "file server." Typically, this machine has the most horsepower and disk storage of any other computer on the network. All office traffic is routed through this server machine. Of course, each network computer can access its own hard disk, but to exchange

data with another user, the file must be copied to the central computer, then copied back down to the other user's computer. Novell's NetWare is a server-based system.

The second scheme is called "peer-to-peer." Each node on the network can access any other machine. In essence, each machine can act as a file server, allowing more free access to files and resources of the network than a server-based system. GVP's *A-Net* and Syndesis's *TSSnet* are examples of peer-to-peer networking.

Within each scheme of file access, it is possible to have transparent or non-transparent access to files, with respect to how an application program sees the network.

Here is an illustration of a non-transparent method of file sharing. You'd access a file on another machine using a special program. *TSSnet* includes a utility that works this way. A program called "NFT" serves as the interface to other machines. NFT has its own commands for functions such as "DIR", "COPY", and "DELETE". For example, to get a directory listing on another machine, you could enter "NFT DIR BARNEY::DF0:" at the CLI prompt. However, you can't use the ordinary CLI "DIR" command to view other DECnet machines.

To provide this sort of transparent access to the network, we need what AmigaDOS terms a "file handler." It provides a file system device name such as "DF0" or "DH0" that lets all other application programs access the files stored on that device. File handlers provide a consistent interface to file systems, whether they be stored on floppy disks, hard drives, or CD-ROMs. Or, in this case, across a network.

Imagine a new breed of file handler that could process file handling requests across a network. Imagine a superdrive called NET: that is composed of all the other systems on the network. Each machine is given a name, such as "Barney," like the way hard disks and floppies are given volume names on today's Amiga.

In any ordinary Amiga file requester, you could enter "NET:Barney/df0" as the disk and drawer name, and "Hours" for the file name. You'd access a file called "Hours" on the DF0: internal disk drive on a machine called "Barney" across the network. The "Barney" machine could be across the room or across the country, depending on the network.

Or, from the Workbench, you'd see an icon named "NET". Double-clicking here produces a window containing icons for all other machines that you can access on the network. Open each of these machine drawers would display a window of icons for each of the volumes available on that machine, just as you'd see them on your own Workbench.

In fact, the developers at the non-profit Software Distillery are working on a NET: file handler. If all goes according to plan, it would provide a consistent, AmigaDOS file-system interface to all Amiga networks. It would also allow transparent NET: access to different types of networks. With a NET: interface for each, then TCP/IP, *TSSnet*, and Novell machines would have Workbench-level support for file exchange.

Obviously, a peer-to-peer Amiga network requires additional layers of security to specify which volumes, directories, and files can be accessed by other nodes on the network. Surely you'd want to lock-out other users from viewing, editing, and formatting your hard disk's partitions.

Also, AmigaDOS 2.0 adds new functions for a concept called "record locking" that is important for networks. With record locking, more than one person at a time can read, write, and update a given database file. A network-wise application tells the networking software which parts of the file it plans to change, and the network software on other machines prevents other applications from changing that same part of the file. Record locking requires cooperation between the application, the network, and the operating system. Record-locking isn't present in AmigaDOS 1.3.

In the next part of this series, I'll discuss each of the network products available for the Amiga. This includes AppleTalk from Progressive Peripherals for linking with Macintosh, Novell *NetWare* from Commodore for linking with IBM/PC networks, Syndesis's *TSSnet* for DECnet compatibility, Commodore's TCP/IP for communication on Unix networks, and Hydra System's *A-Net* for pure Amiga-to-Amiga networking. Other products will influence the Amiga networking marketplace, such as GfxBase's *X-Windows* for the Amiga, Commodore's Unix workstation, and Commodore's "SANA" standard for networking interfaces.

The synergy of Amiga networking products promises an explosion of new applications that will be network-wise, user-friendly, and always affordable. It's all good news from this day forward. The Amiga will excel in networking just as it led the way in graphics, animation, and sound.

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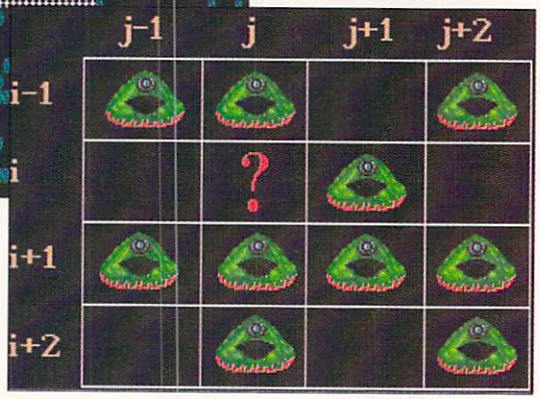
Classroom Video

by Daniel J. Barrett

At left - Solving a simple maze, in video real-time.



At right - Illustrating the rules of *Life*.

In this article, the author demonstrates how minimal equipment can be used to maximum effect.

Learning computer programming at the college level can be a difficult task for beginning students. I see their struggle, because I teach hundreds of these students every year at The Johns Hopkins University. Even if they have previously used languages such as BASIC, Pascal, or C, the students soon discover that knowledge of the *language* is totally different from knowledge of *programming methodology*. There are important underlying concepts that few students learn before reaching college.

Many of these concepts are difficult to illustrate to hundreds of students in a large lecture hall. To combat this problem, for the last two years I have been using my Amiga to create instructional videos for computer programming. They are displayed in the lecture hall using a video cassette player, a projector, and a movie screen.

These videos are *not* self-contained presentations that are meant to replace a human instructor. Instead, they replace the blackboard, and they are more powerful and dynamic than slides or overhead transparencies. Of course, it takes much longer to create a video than it does to write on the blackboard, so I cannot replace the board completely. At present, I try to show one five to ten minute video for each of the major concepts covered.

My goal in writing this article is to encourage other educators, particularly those with large classes, to use custom-made instructional videos in class. They are easy to create on Amigas; you don't have to be a great artist by any means (I'm certainly not!). Nor do you need a lot of expensive additional equipment. I can testify that my videos have a positive and lasting effect on my students.

WHY INSTRUCTIONAL VIDEOS?

A college student typically has many learning aids: the teacher, teaching assistants, textbooks, and friends. Why add instructional videos? Because they can improve the quality of lectures in several ways:

1. Blackboards are fine for illustrating static processes, but terrible for displaying things that change over time. Video is a great alternative. For example, I often want to demonstrate pictorially what happens while a program is running. Rather than fill the blackboard with dozens of drawings, I would much rather use a video so students can see the process in "real time."

2. Videos stand out in the viewers' minds. At the end of every semester, when the students rate the course, many of them remember the videos and call them helpful and enjoyable.

3. It's a fact: in a large, stuffy lecture hall, late in the afternoon, students tend to get sleepy. Videos wake them up!

THE GENERAL METHOD

The methods I use for creating videos are available quite inexpensively to Amiga owners. Some of the techniques are somewhat brute-force, but the results are perfectly good for classroom display. I tend to use a mixture of animations, still screens, and C programs. Once all of these are made, I just connect a cable from my Amiga 1000's composite output to my home VCR, and then dump the results to tape. *[Though they have no built-in color composite output, you can do the same thing with an A3000, A2000, or A500 by using Commodore's inexpensive $49.95 A520 adapter. -Ed.]*

In place of expensive videotape editing facilities, I often make a CLI script that displays the different parts of the video in order. For example, the script might display some title screens using an IFF picture viewer, run an animation player, and then execute some C programs. To minimize loading time, I often move everything to RAM: disk. For faster transitions on tape, I make careful use of the VCR "pause" key.

The output quality would be better if I used a genlock, but clear resolution is not very important in my work. This is because any fine details in the final get washed out by the video projection equipment anyway.

The following are three examples of some videos that have been used in my classes, or are currently in progress.

LIFE IN DIFFERENT DIMENSIONS

Life is a famous program that simulates the evolution of single-celled creatures in a Petri dish, generation by generation. Based on a set of simple survival rules, creatures in a colony are born, grow old, and die. The "dish" is often represented by a two-dimensional grid (an array), with one creature per grid

cell. Here is a sample set of rules:

• If exactly three creatures border an empty cell, a new creature is born in that cell in the next generation.

• A creature with too many neighbors dies of overcrowding, and a creature with too few neighbors dies of loneliness.

I used *Deluxe Paint III* to draw a rectangular grid and a sample "creature." Then, using *Aegis Animator*, I designed animations to illustrate the rules, showing how new creatures appear and old ones disappear in the grid.

For a full-blown demonstration, I chose Tomas Rokicki's Freeware program *Life* from Fish Disk #306. It displays thousands of creatures evolving at 20 generations per second.

MAZE SOLUTION

The concept of recursion (a subprogram that invokes itself) is difficult for beginning students to master. One of the most involved recursive programs we cover is that of maze solution. Given a two-dimensional maze (a grid) with a start and end point, the program must find an unbroken path from the start to the end.

Because it is important to understand the underlying algorithm, I wanted my students to be able to watch the entire process of maze solution, including correct and incorrect attempts. This problem was too tough for *Deluxe Paint* and *Aegis Animator*, so I pulled out my Manx C compiler and Amiga manuals and went to work.

First, I wrote a small program that generated a random maze on a custom screen. (The program "flipped a coin" for each area of the maze, to see if it would be empty or contain a wall.) For simplicity, I used ASCII characters for the display, since the students themselves would be working on non-graphic terminals.

Once this was done, I added code for solving the maze. The program would drop a "marker" as it explored a particular square of the maze. If that square turned out to be part of the solution, the marker remained; otherwise, it was "picked up" (removed) and another path was explored. In this way, the students could watch the program explore one path, reach a dead end, turn around, and try another route.

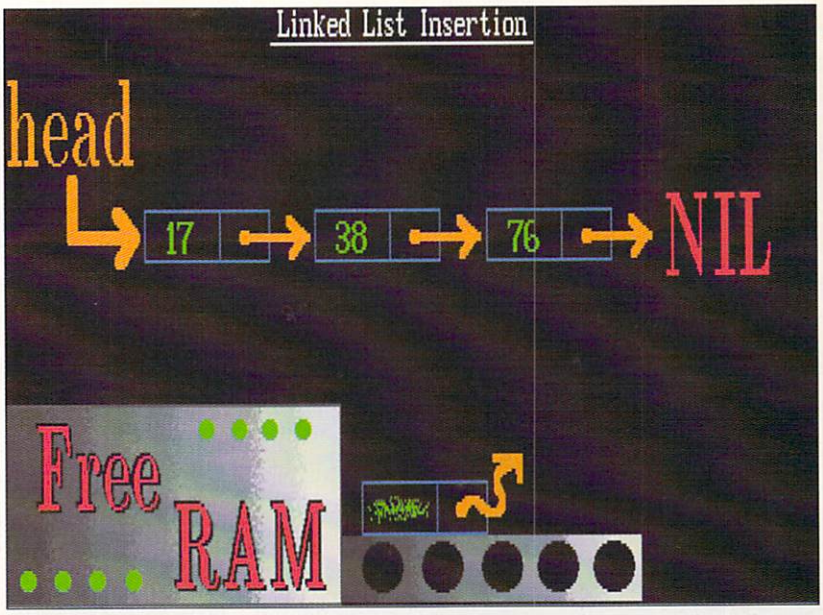
Finally, I used *Deluxe Paint* to create a few motivating title screens, made a CLI script to execute everything in order, and dumped it all to videotape. This turned out to be the most popular video of the semester.

DYNAMIC MEMORY ALLOCATION

The toughest subject in the course is definitely dynamic memory allocation and pointer-based data structures. This is the process of asking the operating system for chunks of memory, and then chaining these chunks into structures that can grow and shrink. One such structure, the "linked list" is simply a chain of memory chunks linked together, much like the cars of a railroad train.

Since all of this "asking" and "chaining" occurs in memory, it can be difficult for students to visualize the process. Instructors typically have to draw many pictures on the blackboard, erasing and redrawing as needed. Through video, I have found a better method.

Using *Deluxe Paint* and *Aegis Animator*, I constructed an abstract "machine" (with a little conveyer belt) that produces a chunk of memory whenever asked. This is a model of what happens inside the computer. Initially, the memory contains undefined (garbage) values, indicated by blotches and bent arrows.



Illustrating the difficult concept of dynamic memory allocation.

The students watch as the new memory chunk is filled with proper data values, and then inserted into the linked list. The arrows (pointers) are animated so the students can see the order in which pointers are linked and unlinked. The students also see what happens when a programmer is careless with unlinking: part of the list can be lost.

THE FUTURE

One problem I would like to overcome is that my video-making method is primitive. Since the time that I started making these videos, some fine multimedia packages have come to market. In the near future, I'd like to get a faster Amiga with a genlock, and use *AmigaVision* and *ARexx* for more integrated and convenient presentations.

Another problem is that video projectors are not interactive; I currently need to plan the entire video in advance, and narrate as it is displayed. Instead, I would like to bring an Amiga directly into the classroom and connect it to a projection unit, giving me greater flexibility during the presentation.

Videos have a positive and lasting effect on my students.

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USENET	(barrett@jhunix.uucp)
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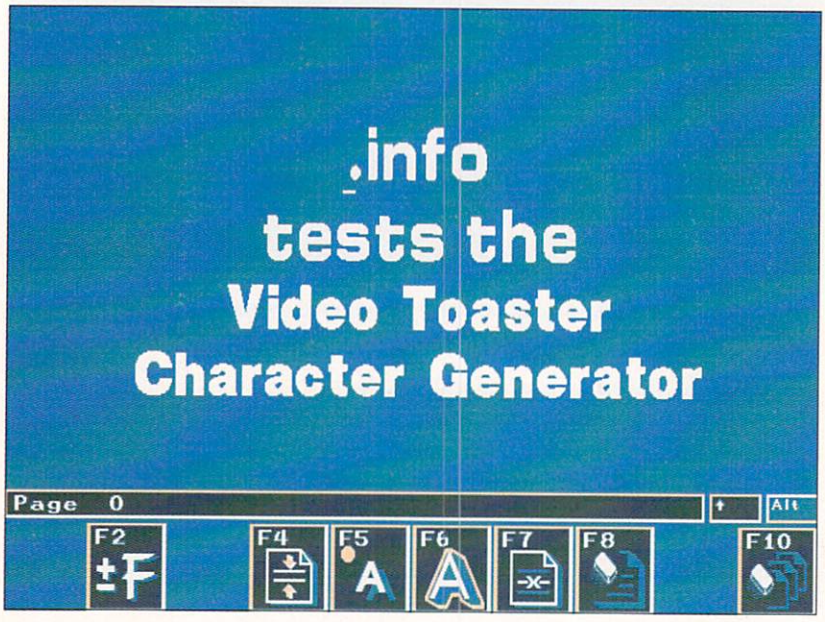
Oran J. Sands III on Video



The *Toaster*'s Character Generator interface. The top three words are written in a converted Amiga font which is normally 90 lines tall.

Join OJ as he examines the *Video Toaster*'s character generation capabilities.

The *Video Toaster* is a multi-faceted device. It not only functions as a Digital Video Effects unit but also provides for character generation, a primary use of graphics in television. The CG module is accessed from within the *Toaster*'s Switcher interface. As with any of the *Toaster*'s modules it can be loaded and made resident with a single mouseclick. After that it is never farther than one more mouseclick away.

That is, however, the last mouseclick you'll use, because the CG itself is entirely operated via the keyboard. You'll find it uses the function keys, normal, shifted, and ALT-shifted to accomplish all of its tasks. In fact, users of *Pro Video Post* will find it quite familiar. All of the selections are made using the cursor keys or + and - keys. It takes the typical Workbench enthusiast a while to get used to, but it eventually becomes second nature.

All CGs create and display multiple screens of information. The *Toaster*'s character generator can create and hold 100 screens, called "pages," in memory at a time by actually saving the information describing the makeup of a page rather than a pixel-by-pixel image of it. The CG can save this info file as a "book" that may be called up later as desired. Other books are loaded or saved at any time with the caveat that only one may be in memory at a time. Each book may use 20 different fonts maximum (remember that a font is a typestyle in one size).

PAGES

The pages that the CG creates are one of four types (as specified by the user): Key, Framestore, Scroll, and Crawl. The Key page is familiar to most Amigans. All text is laid over the video image with the background becoming transparent, as in Amiga genlocking style. Fonts may be of any color, with shadows and font outlines available in black to white shades. The Framestore page does not key over other video, but uses a background of its own for the text. The background may be a single color or a continuously graduated range of color. Font outlines and shadows may be any color on a Framestore page. Scroll and Crawl pages display text that either scrolls or crawls across or up the screen, similar to movie credits or weather warnings. The length of the script is unlimited except by memory. Fonts used in these pages are limited to white with black shadows and outlines.

Page composition is facilitated by a number of editing features including kerning, page duplication, right, left, and center justification, custom positioning, graphic line separators, etc. After creating a page you must "render" it for use. Pressing F9 accomplishes this with the rendering time taking from a few seconds to as much as one and a half minutes for a Framestore page, so plan your work accordingly. The page can be taken immediately after rendering by pressing F10, or you can wait until you're back in the Switcher interface to load and take the CG page.

FONTS

The *Toaster* CG comes with its own set of ready-to-use fonts. While their size is mostly small to medium, you *can* convert Amiga fonts to *Toaster* fonts using a CLI utility included with the other *Toaster* software. Because of the way the conversion program modifies the Amiga font so it is anti-aliased, the converted font ends up one half the height and width of the original Amiga font (AROCK's *Masterpiece Fonts*, which start at up to 160 points, produce excellent results). The anti-aliased fonts appear to be much higher resolution than they actually are (the actual resolution of the *Toaster* is 736 pixels per horizontal line, or 70 nanoseconds, the same as the Amiga's hi-res.) There are several fonts that are multi-colored or shaded,

similar to Amiga ColorFonts. They're called ChromaFonts and come in a gold-shaded font, a metallic-silver font, and a Rainbow-shaded font.

There are three more special chroma fonts included. ChromaCards font is not really a font but different graphics characters instead of letters. These images are small national flags and credit card symbols, just ready for use in your first K-Tel record commercial (operators are standing by...). The other two fonts have only instructional (and promotional) value, allowing you to create the NewTek corporate and *Video Toaster* logos from small brushes.

Amiga ColorFonts are not currently supported by the conversion utility but I have been assured by third-party developers that it shouldn't be too hard to do. Keep your eyes on your dealer's shelves. With that capability we should expect the ability to also create ChromaFonts made of our own brush images.

ALL IN ALL...

The *Toaster*'s CG module is quite powerful. The transparent shaded backgrounds and letter shadows are very tasty, and many types of transitions can be achieved by putting the CG page into the buffer and using the overlay device to make the background transparent while using the Switcher's DVEs to move, fade, and wipe titles over another image. And when connected with the *Toaster* framebuffer's color capability, this CG is one of a kind.

Amigans who are used to bit-mapped titling packages may be disappointed to find some of *their* bells and whistles missing (like the capability to chain together several pages in a self-running repeating display, or to pre-program page times to sequence your graphics automatically etc.). But if you still want to use your *Pro Video Post* or *Broadcast Titler* you can always run the *Toaster*'s output through a second Amiga's genlock to get your CG work done and not give up any of the *Toaster*'s abilities. ★

Video Toaster

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TOASTER TALK by Benn Dunnington

FIRST TOASTER-GENERATED MUSIC VIDEO AIRS

The best demo I have seen yet for NewTek's *Video Toaster* was recently completed outside of NewTek by Singer/Songwriter and ***e/x***-Macintosh disciple **Todd Rundgren**.

Rundgren's two-minute video *Change Myself*, from his new Warner Bros. album *2nd Wind*, is reportedly the first commercial computer-animated music video produced entirely on a personal computer, and is also the first produced entirely by the performer. All 7200 frames of this mind-boggling video were modeled and rendered with Allen Hasting's *LightWave 3D* package, which is included with the *Toaster*.

Off-the-air capture from Rundgren's new video.

To get this massive amount of rendering done by Warner's deadline, Rundgren eventually put together a bank of ten Amiga 2500s, each equipped with a *Toaster* and a 300 Meg hard drive, all running simultaneously! He also rented a videodisc recording deck on which he recorded himself singing the song, and then framegrabbed every other video frame. These frames (mostly close shots of Todd's face) were then mapped sequentially on various 3D surfaces to create 15 fps video *within* the animation! *Change Myself* is currently being aired on VH-1 and is expected to be picked up by MTV very soon.

Estimated total cost for producing the video (including purchase of ten *Toaster*-equipped Amigas) is under $100,000. Estimates by video professionals on what it normally would have cost in today's video market range from one to one and a half million dollars.

Hats off to Todd Rundgren: the song is marvelous, and the video is *incredible!*

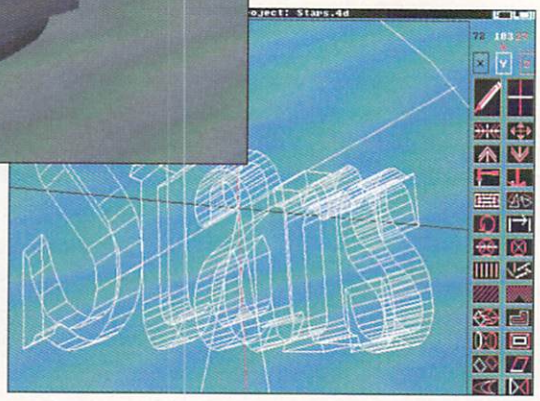
TOASTER TIDBITS

◆ The Press Secretary from the Soviet Union recently spent five hours at the Alpha Video store in Minneapolis playing with some *Toasters*. He has since invited Commodore and Alpha Video to visit the Soviet Union to demo the equipment there.

◆ Allen Hastings continues to push *LightWave 3D* to new levels. Below is a combined image showing both limited depth of field with soft-edged shadowing, and new bump-mapping effects.

Brad Schenck on Graphics

At left - *Draw 4D* may be partly a desktop publishing program, but at heart it's a 3D object modeller.



At right - The *Draw 4D* screen shows a perspective view of the work in progress and can be rotated in steps or continuously.

Brad explores the possibilities of *Draw 4D* and *Auto-Script*.

There are several major new releases appearing now and in the near future. Some of these, like the *Video Toaster* and its application software, and Impulse's *Imagine, Firecracker* frame-buffer and 24-bit paint program, are significant products that we've been awaiting for some time. We at *.info* are preparing reviews and articles on these and other products, but this month I want to draw your attention to two other releases that could easily be lost in the shuffle.

Each of these programs is from a new developer, without the advertising budgets of the larger publishers. For that reason, this type of exposure may be harder for the authors to come by. I think that each of them is worth a closer look, and I think you'll agree.

Draw 4D introduces itself in its excellent manual as a specialized program that doesn't try to do it all. What it does do, contrary to that, are at least a couple of things. The program is a polygon-based structured drawing tool which works in three spatial dimensions; it can be used to create bitmapped graphics in any Amiga screen resolution but Halfbright, to create IFF ANIM files which look much like *Videoscape* 3D animations, or to export structured graphics clips compatible with Gold Disk's *Professional Draw*. It's uniquely aimed at both desktop publishing and animation.

The responsive editing screen can be viewed from any angle and can be set to rotate continuously to inspect a project. A complete set of editing tools allows the user to create single or grouped polygons, enter text (using a proprietary text object format, with a font editor built into the program), perform extrusions with many options (scaling with ease-in and ease-out, for example), lathing operations, mirroring, rotations, spiral extrusions and more. Multiple polygons or objects can be hidden, and the user can toggle the shown and hidden selections. The editing tools create a powerful and accessible environment for creating three dimensional objects. *Draw 4D* is well suited to logo and title design, but - as you see in the second illustration - it's far from limited to that type of work.

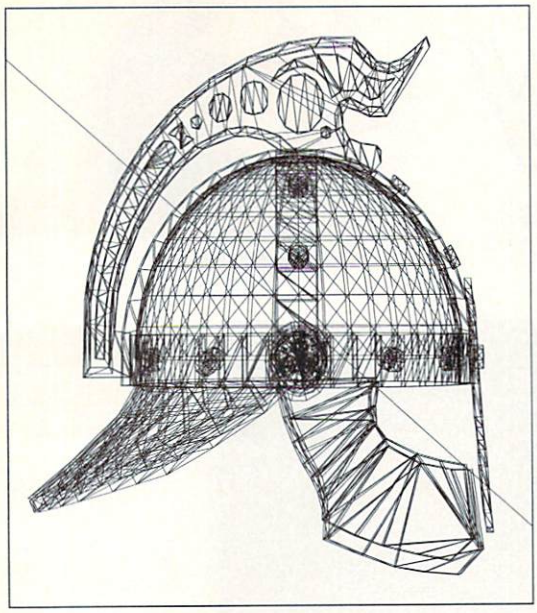
The fourth D implies time, which implies motion. *Draw 4D* offers some sophisticated animation features. Objects can follow paths with acceleration and deceleration, using object hierarchies and all the same tools that are used in design. The renderings are limited to two light sources and ambient light, and can be created in all Amiga resolutions and - with the exception of Extra Halfbright - all graphics modes. Single frames or ANIM files can be created. The example animations I received with the program show a wide variety of effects like running and bouncing titles, in addition to full 3D object animations.

On the desktop publishing side, *Draw 4D* will export *Professional Draw* clips; these can be wireframe, wireframe with hidden line removal, or shaded solids. If you're using *Professional Draw 2.0* you can import *Draw 4D* objects with virtually unlimited colors.

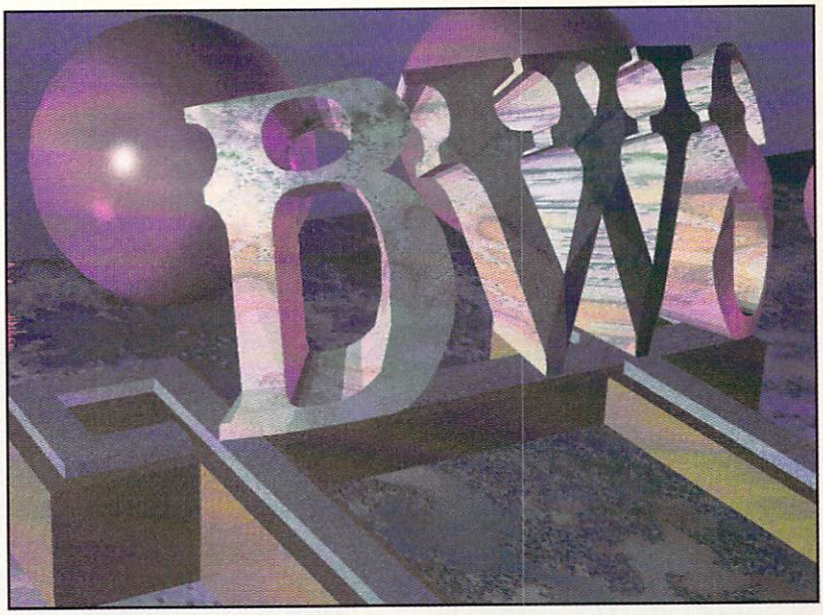
The program performs quite well. It could benefit from more import and export formats, in order to incorporate it with existing tools like *Imagine, Sculpt 4D*, and others. In a pinch, a *Draw 4D* module for Syndesis' *Interchange* would fill the gap. Another drawback is the lack of a true Undo; what the manual calls 'Undo' is actually an abort-in-progress function.

Draw 4D is a powerful and unclassifiable tool. It's possible to use it for a variety of purposes, and its support for other tools is commendable if - in the case of translating 3D objects - not quite complete. The thorough tutorials and sensible interface make it fairly easy to learn. It's well worth exploring.

In *.info* #34 I took a look at Gold Disk's *Professional Draw 2.0* and observed that it was too bad we couldn't import logos and other drawings from *Pro Draw* into our 3D rendering software. Soon after, I was contacted by Mark Steffen of Computerall Services. Mark sent me a copy of Computerall's *Auto-Script*, a Postscript to 3D format conversion program that can be used to translate Postscript files to *Turbo Silver, Sculpt 4D* and *Digi-*



This Postscript drawing was produced with *Auto-Script* from a *Turbo Silver* .cel file, using the camera position and settings.



This egocentric image uses a *Professional Draw* logo converted to *Silver* format with *Auto-Script* and rendered in Impulse's *Imagine.*

works object formats. In addition, *Auto-Script* will convert 3D object, cel, or scene files to wireframe Postscript for use in desktop publishing.

Auto-Script's simple interface sets up formats for loading and saving objects, and lets you set a 'resolution' which controls the number of points that will be used to recreate the source file if it's converted to a polygonal 3D object. Like *Pixel 3D* (which does a similar job on bitmapped images) *Auto-Script* is not interactive; once you set up these few parameters, the program does its job without further input from the user. Any further modifications you'll want to do on a point-by-point basis are done in your 3D modelling environment. Unlike *Pixel 3D*, *Auto-Script* does not (yet) perform a polygon fill on its objects. The user has to add faces manually in a 3D object editor or, with *Digiworks 3D* (from Access Technologies), do it automatically at a loss in outline accuracy. The manual implies that polygon filling is planned for future upgrades, and it would be very welcome.

The entire Postscript drawing will be converted to a single object. Should you want to create multiple parts from a drawing, you would need to split the drawing in a structured drawing program first.

The program comes with an installation script which, unfortunately, didn't work. At some point the authors changed the name of the program disk and failed to update the script. The program is still easily installed by renaming the disk, editing the script, or just copying the required directory and library to your hard disk or boot disk.

As I worked with *Auto-Script* I found it simple to use. The control over resolution of the output object seems quite good. Despite that setting, a perfectly straight line will still use only two end points. The program could benefit from more filtering of its output, though: lines which as bezier curves looked straight but were slightly curved will be interpreted as curves, and I had several instances where duplicate points were created (these were points which occupied the same, or nearly the same, location in space). I also found that the *Turbo Silver* objects created by *Auto-Script* were *Silver 2.0* objects. They work fine with *Silver*, but before loading into *Imagine* (which reads *Silver 3.0* files) they had to be run through *Silver 3.0* or *Interchange*.

When going from 3D format to Postscript, *Auto-Script* can load in *Silver* .cel or *Sculpt* .scene files, creating a drawing that uses the camera position and direction in the 3D data. If you're working with *Pro Page* or *Pro Draw* you may find it more useful to use *Interchange* and convert to *Pro Draw* clip format, though, since Gold Disk's software can load and print, but not display Postscript files. That means that you're unable to do further editing on *Auto-Script*'s Postscript output with those tools.

Auto-Script can be invaluable if you are doing work for a client whose logo or other art has been created in Postscript, even on the Macintosh or on MS/DOS systems. The program's initial release does need polygon fills and some smarter filtering of objects, but it's doing a job that no other Amiga software does and is likely to improve with age. Couple this with *Professional Draw*'s array of drawing tools and you'll have an impressive logo editing system for rendering in 3D.

Draw 4D v1.01

★★★★

$249.00

AdSpec Programming

Auto-Script v1.03

★★★

$129.95

Computerall Services

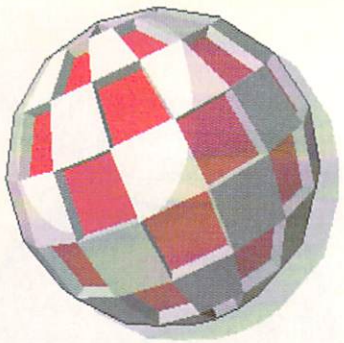
ADDRESSES

AdSpec Programming, 1405 North Ellsworth, P.O. Box 13, Salem, OH 44460, 216-337-3325

Computerall Services, 1304 West 1st Street, Cedar Falls, IA 50613, 319-277-2327

★

CyberPlay



Incredible ★★★★★ Very Good ★★★★ Average ★★★ Awful ★★ Drek ★

OBITUS

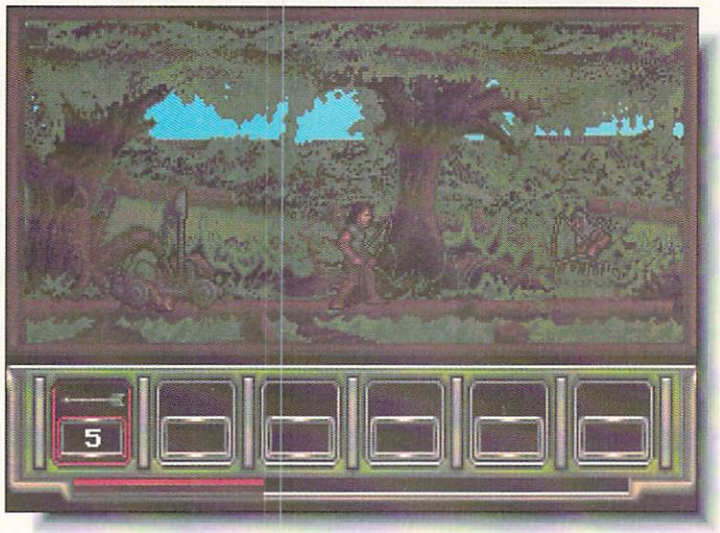
★★★★★

Psygnosis, 29 Saint Mary's Court, Brookline, MA 02146 617-731-3553

Encounter with a knight in the first maze section. Note the easy-to-use control panel.

I saw a small sample of *Obitus* at CES last summer in Chicago and was impressed. Then I saw the nearly finished game when I visited Psygnosis in Liverpool in November and was bowled over. For the past couple of weeks I've been playing the release version and I'm completely overwhelmed. Psygnosis has jumped into the graphic adventure pool and made a splash that's going to cause ripples for years to come. *Obitus* is the next generation in the genre, setting new standards. It's the difference between a Lascaux cave painting and one by Vermeer.

Psygnosis has always been known for their outstanding graphics, in this case exquisitely done by Michael Haigh, and what is done with those graphics. The programming, by Giulio Zicchi and Justin Garvanovic, provides smooth movement, fine scrolling, and animation that is among the best I've seen (wait 'til the first time you see your character do a flip in the parallax section!). There are three basic types of movement and action in *Obitus*: mazes, parallax arcade, and moving around through a castle. The mazes are the most elaborate I've ever seen. Where most graphic adventure dungeons allow you to move in only four directions, *Obitus* permits eight, using a sidescrolling window to change direction at the junctions, with smooth forward and backward movement through the passages. If the movement is easy, getting lost is even easier. There's a map of the first maze in the manual, but after that, you're on your own. In these mazes and dungeons, you'll encounter all sorts of objects, some useful and some not, and characters, some friendly and some otherwise. Nor are these mazes all alike, the scenery varies from forest to catacomb. The parallax-scrolling arcade sequences are found between the mazes, and the action involves more skill than luck, with conservation of your energy and arrows more important than killing off all your enemies. The scenes inside the castle are the most impressive of all. The rooms are shown in a head-on perspective view, and you can move your character not only side to side, but also front to back, with the proper perspective maintained (the figure is larger in the foreground and smaller as he moves away). All of this is, of course, rendered in lavish, highly detailed graphics that are so pretty that I find myself going back to the parallax sections just to get a better look at the backgrounds. I've heard a minor complaint that there isn't enough music and too few sound effects. Granted, there only seems to be music during the intro, and the sounds are minimal, but I don't find this lack a drawback. When I'm down in a mine, I expect it to be quiet and when I'm in the woods, I find the silence mood-enhancing in an ominous sort of way. I suppose it just fits my taste.



Parallax-scrolling arcade section leading to the mines and the castle.

Obitus is the most involving and most playable game Psygnosis has ever released and destined to become a classic. In fact, *Obitus* is the best game I've ever played.

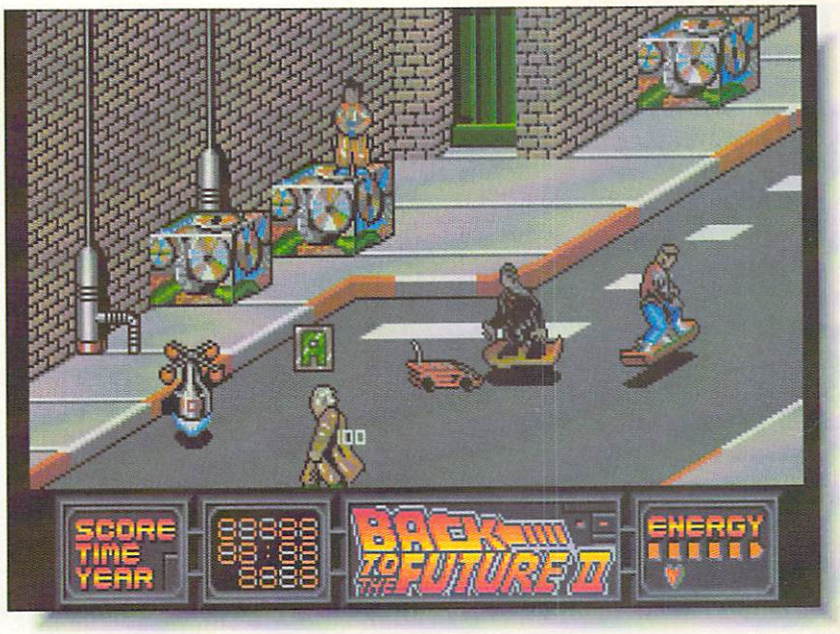
- Tom Malcom

Back to the Future II is a set of five arcade sequences based on key scenes from the blockbuster movie of the same name. Doc, Marty, and Jennifer have warped into the future to fix the past. Having seen the movie nine times you already know how well that worked out.

Three of the levels are scrolling arcade obstacle courses. In the first (and best) level you zoom Marty through the streets of the future Hill Valley on a high-tech hoverboard alternating from a typical sidescrolling to a *Paperboy*-type slant perspective, while avoiding an elderly cane-wielding Biff, young Griff and his gang of 21st century skinheads, and other assorted bad guys. Two of the levels are puzzle-oriented mind games which are a pleasant break from the joystick gymnastics of the other three. Graphics, animation, and music are nothing outstanding but certainly adequate.

While not a blockbuster game, *Back To The Future II* has just enough pizazz to send you back to your game shelf often enough to make it worth checking out.

- Judith Kilbury-Cobb



BACK TO THE FUTURE II

★★★+

Konami, 900 Deerfield Parkway
Buffalo Grove, IL 60089, 312-215-5111

STAR CONTROL

★★★★

Accolade, 550 South Winchester Blvd.
San Jose, CA 95128, 408-985-1700

When I first looked at *Star Control*, I wasn't much impressed. Then I sat down to do the review and decided that since I was still playing it three hours later, it must be better than I originally thought. The game is a blend of strategy and arcade that has a subtle way of drawing the player in. It has a few problems, but they mostly have to do with the manual's being long on plot and descriptions of options and being very short on how to play.

Basically, you manage the resources of a planetary alliance and fight off other empires. First comes a strategy phase, where you can fortify planets, plant mines, move troops around, and the like. This is done on a keen rotating display of the star system involved. The arcade part of the game comes when you actually engage the interlopers who are trying to take over your bases. This display is handled very well, with automatically (and appropriately) changing levels of magnification. There's also a scenario editor.

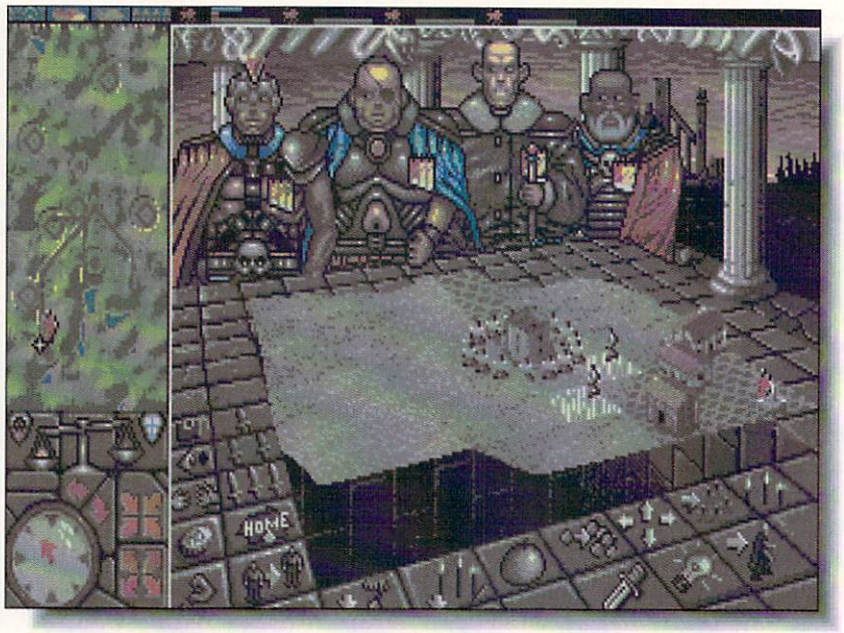
If you're willing to be completely bewildered while you learn to play, *Star Control* will amply reward you once you do. - Tom Malcom

CyberPlay

Land and power-grabbing aren't as popular these days as they once were (just ask Saddam Hussein), but that hasn't stopped me from doing my best to take over all of *Powermonger*'s territory. The object of the game, as the title obviously implies, is to act as general and conquer all of your neighbors you can. Using basically the same player interface as *Populous*, though with many different functions, the level of detail is phenomenal. The towns and even the people have names and personalities. You can magnify and rotate the display to follow the people in the game; as in *Populous*, you don't directly control the characters, but guide and motivate them.

The graphics are as good as can be expected for what's required of them, but some of the objects are a little hard to recognize at first just because of the scale. I can only dream about what Bullfrog could accomplish with better and higher screen resolutions. The sound effects are wonderful; I love the bleating of the sheep.

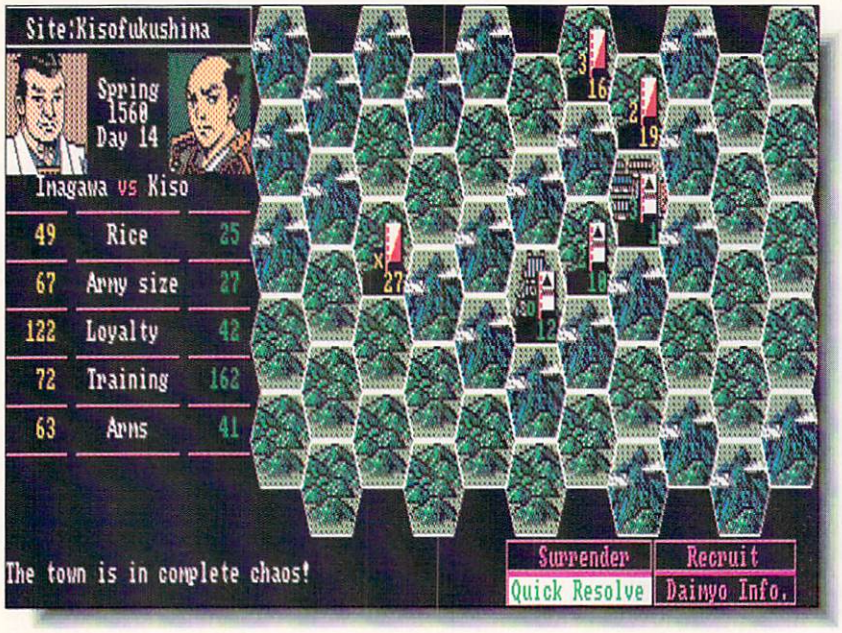
Powermonger is a worthy successor to *Populous*. It's thoroughly involving and highly playable. - Tom Malcom



POWERMONGER

★★★★★

Bullfrog / EA, 1820 Gateway Drive
San Mateo, CA 94404, 415-571-7171



NOBUNAGA'S AMBITION

★★★★★

Koei, One Bay Plaza, Suite 540, 1350 Bayshore Highway
Burlingame, CA 94010, 415-348-0200

Nobunaga's Ambition is the latest release in Koei's sophisticated line of historical wargames. This installment takes you deep into the heart of the Warring States period of 16th Century Japan where feuding daimyos struggle to unify Japan and become Shogun.

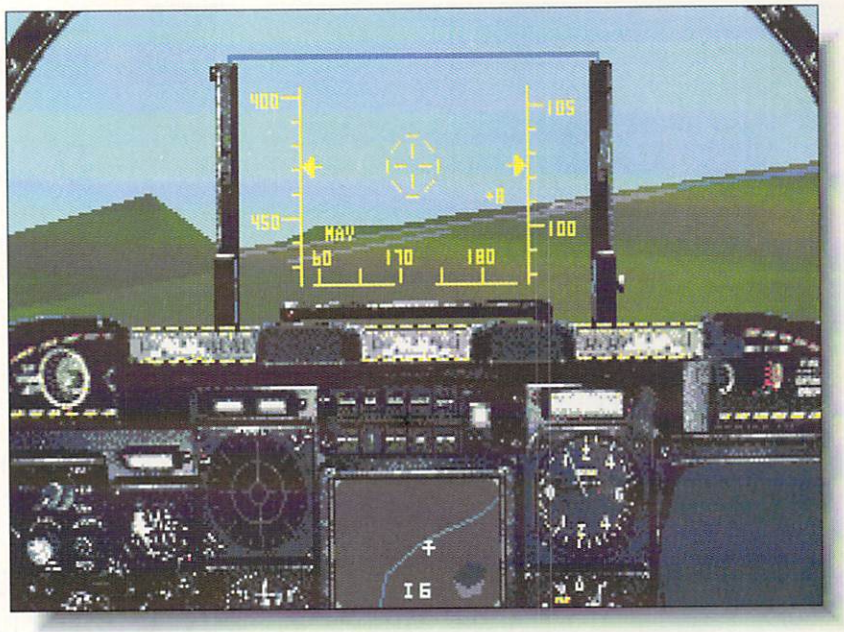
As with the other Koei titles *Nobunaga's Ambition* is largely a game of battle and conquest but goes far beyond simple wargaming to include realistic simulation of military, economic and diplomatic situations and includes elements of role-playing games, which I think is an entertaining addition. Up to eight players may play out two scenarios and choose from 50 warlords to control. The possibilities and outcomes are endless.

Strategic combat, the heart and sushi of every wargame, is sophisticated and complex without being overwhelming or tedious. Action is accomplished by intuitive menus choices. Graphics, animation, and music are simply captivating. I'd play a lot more wargames a lot longer if they were even half as good as this one. - Judith Kilbury-Cobb

It is a very weird feeling to play this game and then see the real A-10 Tank Killers in TV coverage of the war with Iraq.

An obvious port from the PC version, *A-10 Tank Killer* is still one of the more easily flyable flight simulators I've pulled a joystick in. It puts you in the cockpit of an A-10 Thunderbolt II and then sends you on seven different missions, providing commentary on your performance as you go. (I found it added greatly to the experience to make snotty comments back to headquarters since I knew they couldn't hear me.)

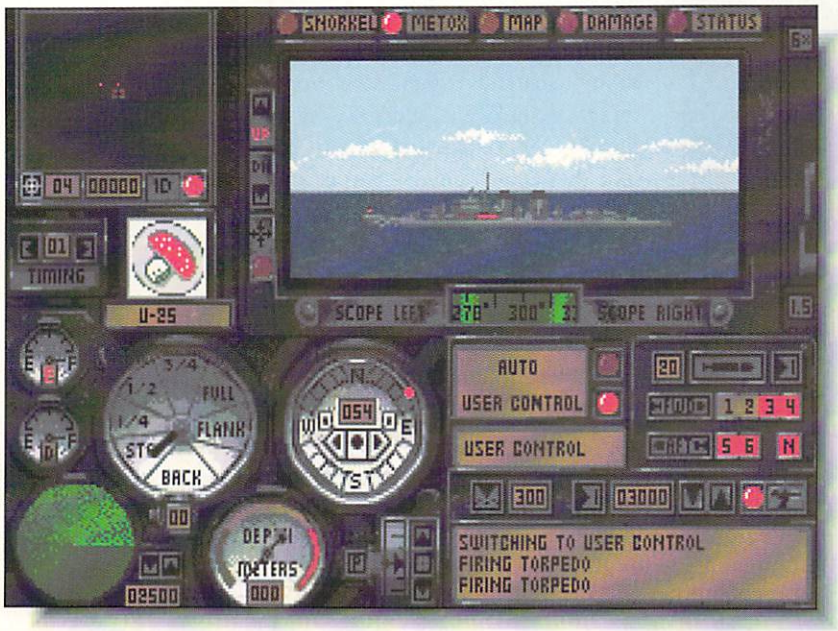
The game has all the usual accoutrements: vector graphics, adjustable detail level, weaponry selections, variable viewpoints, and seemingly interminable disk loads: play it from a hard drive if at all possible. The music is very nice, though I found the sound effects a little tinny. What I do like about *A-10* is that you don't have to have a pilot's license and a doctorate in aeronautics to fly it. The controls are reasonably easy to master and there's a training mission so you can get the hang of flying before going up against the enemy. - Tom Malcom



A-10 TANK KILLER

★★★+

Dynamix / Sierra, P.O. Box 485
Coarsegold, CA 93614, 209-683-6858



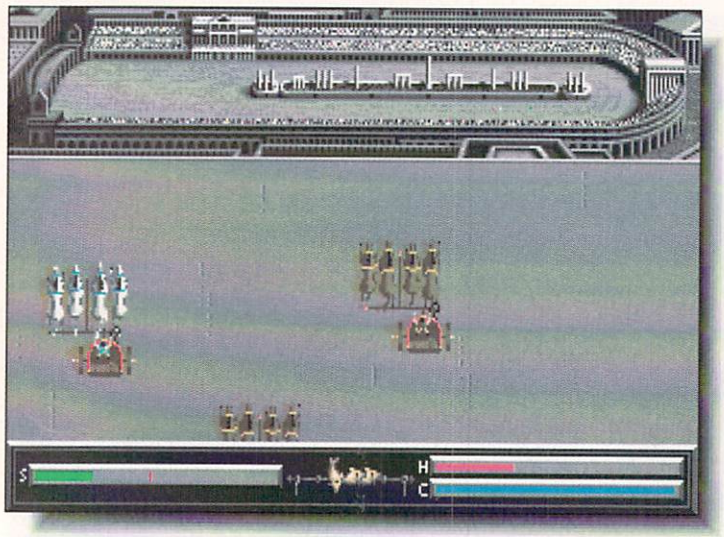
WOLF PACK

★★★★+

Broderbund, 17 Paul Drive
San Rafael, CA 94903, 415-492-3200

I must admit to idly reflecting as I booted up *Wolf Pack* whether anybody really needed another naval combat simulator. I quickly found that the answer to that question is a definite yes if your simulator collection doesn't include *Wolf Pack*. *Wolf Pack* vividly recreates the terror and destruction that small groups of German U-boats wreaked on Allied merchant marines and warships during World War II.

Intuitive point-and-click commands make this simulation easy to dive right into. Twelve missions of varying difficulty, a mission construction set, and choice of either Allied destroyers or German U-boats to command are included. *Wolf Pack* also gives you the ability to control any ship on your side by jumping from bridge to bridge. The graphics are superb and the level of realism incredible, with excellent sound effects that clearly convey the tension and excitement of combat. Battle between the swift Allied ships and deadly U-boats is thrilling and spectacular. *Wolf Pack* is a clear leader of the naval simulation pack. - Judith Kilbury-Cobb



CENTURION

Preview

Electronic Arts, 1820 Gateway Drive
San Mateo, CA 94404, 415-571-7171

Designed by Kellyn Beck, who also did *Defender of the Crown*, this elaborate and very playable conquest game is set in ancient Rome during the 3rd Century BC. The idea is to gain wealth and status by conquering neighboring territories and participating in chariot races and gladiatorial contests. There's plenty of attention to detail, like little stretcher-bearers carrying you off after you wreck your chariot, and the battle sequences are very well done. Considerable liberty has been taken with historical accuracy, but I still think my high-school Latin teacher would get a kick out of it.

- TM

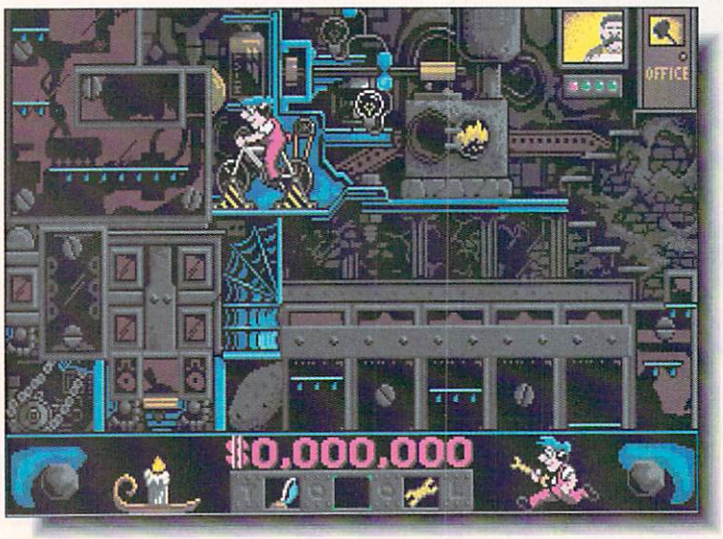
GOLDEN AXE

★★★+

Sega / EA, 1820 Gateway Drive
San Mateo, CA 94404, 415-571-7171

Another of Sega's cartridge games translated into an Amiga version, *Golden Axe* is a highly playable, if not terribly original, piece of game candy set in the standard stone-age fantasy land. The graphics are typical Sega, with enough detail to make them look good on a TV screen, but the animation suffers from those abrupt transitions common to cartridge games: if you change your character's direction, he's just suddenly facing the other way without turning. Sega does this type of game very well, and if you like them, *Golden Axe* is certainly worth adding to your collection.

- TM



NIGHT SHIFT

★★★

Lucasfilm / EA, 1820 Gateway Drive
San Mateo, CA 94404, 415-571-7171

Lucasfilm generally has terrific ideas for games, but too often spoils them with inadequate execution. *Night Shift* is no exception. The idea of an arcade-type game set in a toy factory is great fun, and the game would be too, if it didn't have awkward controls and incomprehensible objectives. You're supposed to operate the machine that makes the toys, but the detail is so overwhelming that it's often impossible to tell what's background and what are objects, let alone what to do with them. There is, thankfully, a demo mode, but it's still not enough to show what you're supposed to do.

- TM

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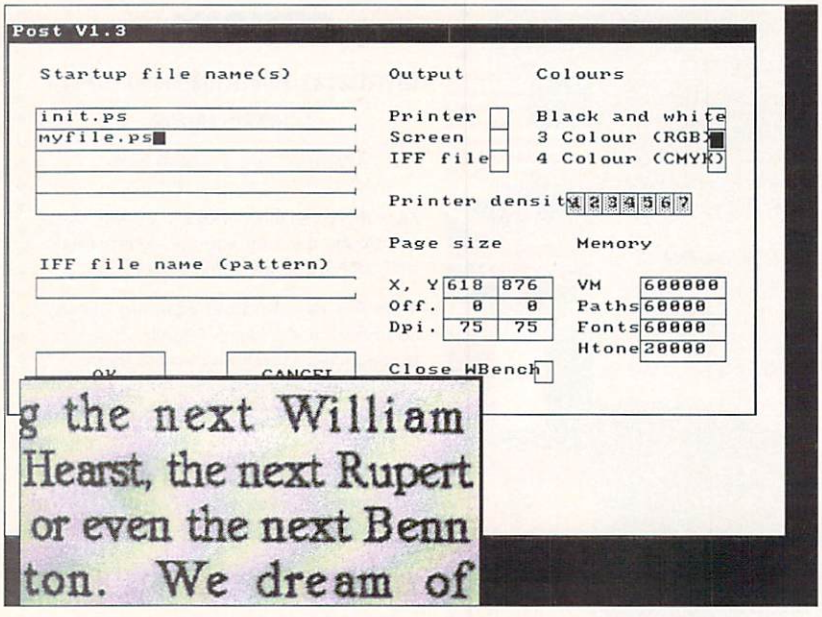
Circle #129 on the Reader Service Card

Jim Meyer on Productivity



Post's user interface and an example of its dot-matrix output.

How do you squeeze Postscript out of an Amiga? Jim reveals two methods.

Lurking deep within the heart of every Amiga Desktop Publisher lies the vision of becoming the next William Randolph Hearst, the next Rupert Murdoch, or even the next Benn Dunnington. We dream of tearing the shrink- wrap from our brand-new software and creating something worthy of a Pulitzer prize. Somewhere between our dreams and reality, however, lurks one obstacle: the printer. Sure, printer technology has evolved considerably since the early days. We can now choose from reasonably priced dot-matrix, inkjet, and laser printers, all capable of 300 Dots Per Inch or better. Still, the Holy Grail of DTP - the Postscript printer - comes with a price tag that puts it out of the reach of many of us. Is that all there is? Must one be confined to the jaggies of bitmap printing until that winning lottery ticket comes through?

No. Well, no and yes. There is a way to get Postscript output from your printer, no matter what the flavor. It's called a Postscript interpreter. Every Postscript printer comes with one. That's part of the reason that Postscript printers cost considerably more than "ordinary" printers. Postscript, you see, is actually a programming language which "describes" the appearance of text and graphics. The Postscript interpreter takes a set of commands - Postscript output - and turns them into specific instructions for the printer. If a Postscript printer can do it, why not have the Amiga do it?

POSTSCRIPT FOR THE REST OF US

That's the idea behind two Amiga programs. One, *PixelScript*, is a commercially available package. The other, *Post* by Adrian Aylward, is a "freely distributable" package which can be obtained from your local user group, bulletin board, or a commercial network service. Both of these packages will take Postscript output, interpret it, and send the results to your printer. *PixelScript* lists for $149, considerably less than what it would cost you to upgrade your printer. *Post* is available for the cost of downloading. The price is right, but what about the performance?

One of the things your money buys, if you purchase a Postscript printer, is speed. These printers are typically capable of printing eight pages per minute. (I say "typically," because printing speed depends on many factors, including the complexity of the page and whether the fonts used are resident in the printer.) Neither *PixelScript* nor *Post* set any speed records on my 68000 system. Some pages took more than an hour to print. Still, it can be handier to print a page at home than to drive 20 minutes to a printing service, especially if you're not absolutely certain of the results.

Of the two programs, *PixelScript* (as you might expect) is the easiest to use. It comes with a bound 56-page manual, five font "families" - in a proprietary *PixelScript* format - and an ARexx port. There's an Install program to get you up and running, and a fairly painless interface. There's also a major drawback: You can't easily, if at all, use fonts other than those supplied with *PixelScript*. I obtained a good sampling of Public Domain fonts, but had no success in using them. The manual, unfortunately, is silent on this subject. You can, of course, purchase fonts from Pixelations which are *PixelScript* compatible.

Post, the "freely-distributable" Postscript interpreter, is a little more complicated. You'll need to know how to use CLI commands (not a bad idea, in any event) to install *Post*. You'll need the freely-distributable arp.library, and *ConMan*, a shareware console handler written by Bill Hawes of ARexx fame. (*ConMan* isn't absolutely necessary, but it makes life easier.) You'll also have to make sure that Post.library is installed. *Post* comes in two versions: A standard version for 68000-based machines, and a version for the 68020 processor. You'll need one more thing if you want to use *Post*: fonts. Fortunately, my source for *Post* - the AmigaZone section of the American People/Link Network (PLink) -

also had a number fonts available for download.

If you want to use either program, you're going to need extra memory. You'll probably need at least three megabytes if you want to render directly to your printer at resolutions higher than 180 dots per inch. If you're merely "proofing" something before you take it to a printing service, use the lowest printing resolution possible. It will save both time and memory. *Post* features a utility called "PostBand" which divides the document into bands. Each of these bands is processed as a separate job, which cuts the memory requirements considerably.

USING *PIXELSCRIPT*

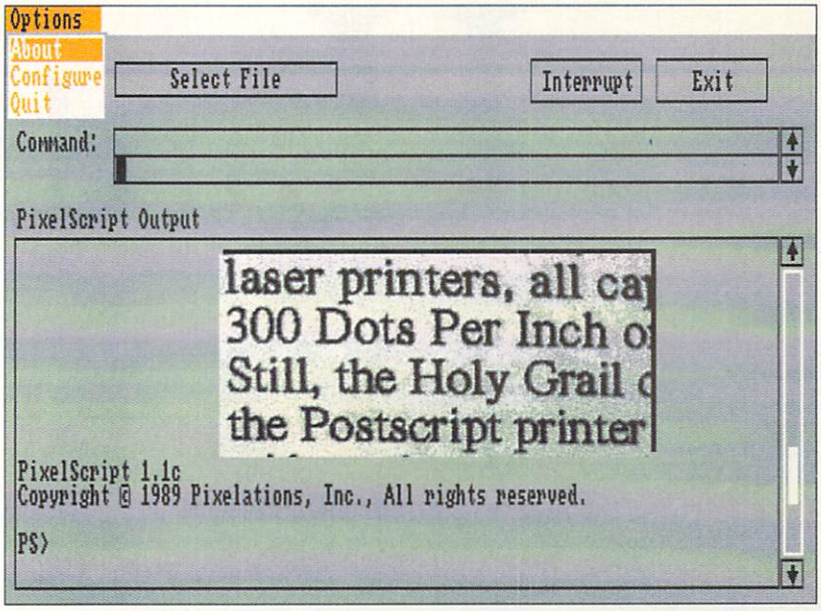
You can start *PixelScript* from its icon or from the CLI. Starting *PixelScript* from the CLI allows you to run it with or without the Intuition interface, and with or without an ARexx port. Running *PixelScript* without the Intuition interface will save you about 170K of memory. The Intuition screen has three gadgets - Select File, Interrupt, and Exit - a Command Line area (with a history buffer), and a Postscript Output area. You can enter Postscript commands directly in the Command Line area and use *PixelScript* as an interactive interpreter. Normally, though, you'll simply load a file and let *PixelScript* take care of everything.

Postscript files are actually programs which are fed to the Postscript interpreter. (Even Postscript fonts are programs.) As *PixelScript* processes a file, the commands it is currently executing are displayed in both the *PixelScript* output window and in the Command Line Input gadget. You may edit these lines before they're processed and then send them on to the interpreter. Some of the commands in your Postscript file might not be understood by *PixelScript*. When this happens, *PixelScript* displays the line and gives you the opportunity to ignore the error and continue, or quit. Most of the time, there is no harm in ignoring these errors.

USING *POST*

Running *Post* is similar. You may run *Post* with or without the Intuition interface, from the CLI, or from Workbench. Once *Post* is running, you are presented with the Options screen. From this screen, you specify the output device (printer, screen, or IFF file), colors, printer density, page size, memory allocation, Startup file, and IFF file. Some of these settings are tricky. *Post* allocates four types of memory: Virtual machine memory, font cache, line drawing and image workspace, and a halftone buffer. If you have less than three megabytes of memory, you'll need to tinker with these settings to find a combination which works. The documentation has both default settings, and "small machine" settings.

Before *Post* can process your files, it must run an initialization file, init.ps. You specify this file first in the Startup file names field, and you can enter up to four files that you want to process. Once *Post* runs init.ps, it will go to work on the files you have specified. Any errors encountered will be displayed in a "communications" window at the top of the screen. *Post*, like *PixelScript*, offers an interactive mode. In this mode, you type the Postscript commands in, and *Post* interprets them.



PixelScript screen display and dot-matrix output.

SO WHO'S THE WINNER?

Well, it depends upon what you want to do, and how high your patience level is. Both programs functioned well within their limits, but both had serious drawbacks. The big win for *PixelScript* is the printed manual, the (slightly) easier to use interface, the availability of support - by phone, mail, and online - and the *PixelScript* fonts. Those fonts also happen to be the big loss for *PixelScript*. Unless there really is a way to use non-*PixelScript* fonts, you're limited to those fonts provided and those fonts you care to buy.

The big win for *Post* is its price. You can download it from a commercial network or bulletin board, get it from your local user group, or get it from a friend. The big loss for *Post* is the absence of high-quality fonts. Then again, there are high-quality fonts out there, both Public Domain and commercial, that you can use with this program. The "manual" included in the *Post* archive is a bit technical for most people, but the information is there. In short, *Post* works, but it makes you work a little harder. It feels more like a "Tool for Techies" than *PixelScript*.

As you can see from the illustrations, both programs produce comparable output. (The *PixelScript* example uses the *PixelScript* font Tempora; the *Post* example uses the Public Domain font ClassicaRoman.) If you can handle a program which is a little more technically demanding, go with *Post*. It works. If you're going to need some hand-holding, though, *PixelScript* is the better choice. Either way, you'll come out as much as $1,000 ahead, as long as you have the time, the memory, and the patience.

ADDRESSES

Pixelations, P.O. Box 547, Northboro, MA 01532, 508-393-7866

Adrian Aylward, 20 Maidstone Road, Swindon, Wiltshire, UK ☆

PixelScript

☆☆☆

$149.95

Pixelations

Post 1.3

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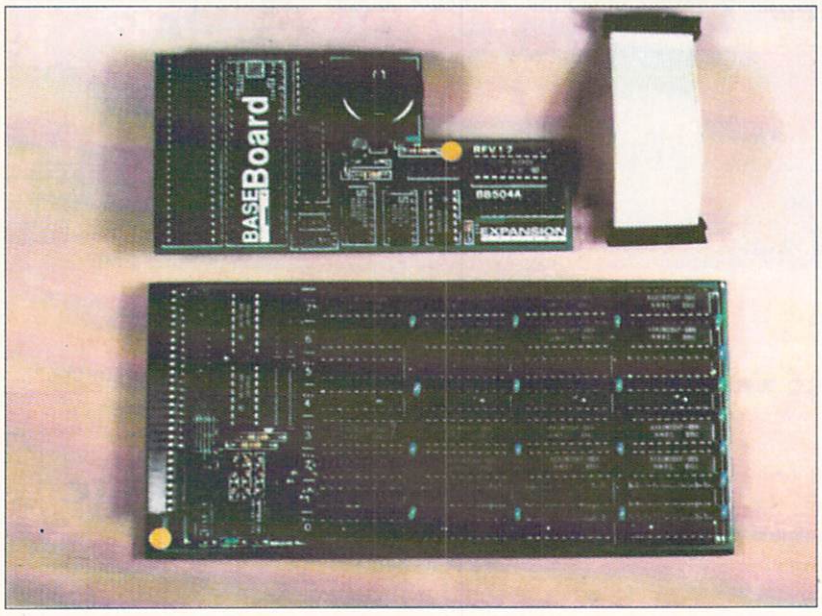
Adrian Aylward

Morton A. Kevelson on Hardware



Top: Board connector cable, GARY board.
Bottom: *BASEboard* with two megs.

Mort examines big belly RAM boards for the Amiga 500.

Now that memory prices have finally come down, every Amiga should have a few megabytes of RAM. A quick look at the latest productivity software, as well as at many games, will show that more often than not, one meg is the minimum memory requirement. In many cases, the software will need more than a meg of RAM in order to attain full functionality.

Eight megabyte memory cards, in the Amiga 2000 standard format, are readily available at prices which are well under $200 for an unpopulated board. With one megabit 100-nanosecond chips selling for less than $40 per meg, the multimeg Amiga 2000 is becoming the rule rather than the exception. Amiga 500 users are not nearly as fortunate. Although the Amiga 500 has an external expansion slot, it requires an adaptor board or interface in order to accommodate the Amiga 2000 standard expansion cards. A variety of these interfaces are available which let you add both a hard drive and a memory expansion card at the same time. Most of these require that you purchase the hard drive first with the memory board (or chips) as an add-on option. The addition of an interface and its power supply typically doubles the price of the original memory board.

The ICD *AdRAM 540* and the Expansion Systems *BASEboard* offer multi-megabyte RAM on plug-in cards for the Amiga 500's internal belly slot. This slot was originally intended for Commodore's *A501* expansion board which comes with 512K of RAM and a battery backed real-time clock/calendar.

Installation of these boards is not for the fumble-fingered nor the faint of heart. Both of these memory boards are two-part affairs. To start with, you will have to open up the Amiga 500, remove its internal radiation shield, extract the 48-pin GARY chip from its socket and install an adapter board in its place. The GARY chip is plugged back into a matching socket on the adapter board. The main memory board, which can accommodate up to four megs of RAM, installs in the internal expansion slot. Since this board fills the belly cavity, you will have to clip the plastic pins which are designed to hold the shorter *A501* in place.

You will also have to set some jumpers on both the GARY board and the main memory board. The jumper settings depend on the amount of RAM that is installed on the board, whether you have a 1.2 or 1.3 Kickstart ROM, and the version of your Agnus chip which can be fat or fatter. The fat Agnus supports only 512K of chip RAM; the fatter Agnus can handle a full meg. Finally, depending on the Amiga's final configuration, you may have to cut a printed circuit trace and solder a jumper between the Amiga and the GARY board. Although the installation process is not very difficult, it is just as easy to damage the Amiga if you do not know what you are doing. The actual installation should take less time than it takes to open and close the Amiga's case. Nevertheless, the entire process is guaranteed to violate the computer's warranty. Now that Commodore is offering a one year warranty with Federal Express pickup and delivery for Amiga 500s, the warranty is worth worrying about.

Since these boards accept one megabit chips in the 256K by 4 format, they can be expanded in 512K increments by adding four chips at a time. The installed chips must all be of the low power CMOS variety, which lets the system run off the Amiga's original power supply. Both of these boards lack the radio frequency shielding which is provided with Commodore's *A501*.

The *BASEboard*'s main memory board uses four-layer printed circuit construction. As is typical for this design, the two inner layers are the ground and five volt power planes which also serve to isolate the printed circuit traces on the outer layers from each

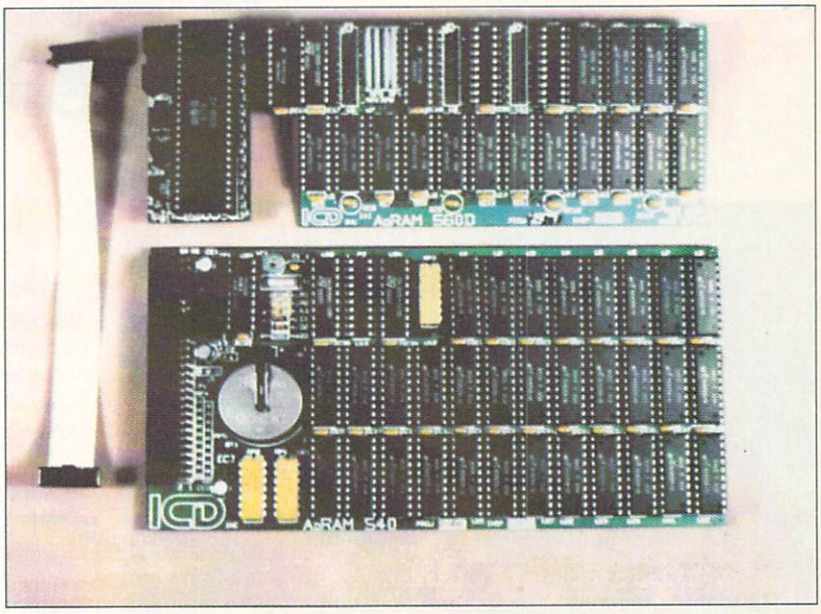
other. Its associated GARY board, which also contains the battery-backed real-time clock/calendar, is constructed on a conventional two-layer printed circuit board. The main memory board contains sockets which will accept up to four megs of RAM. One of the jumpers on the *BASEboard* can be opened to disable the extra RAM. Access to this jumper is difficult as the board has to be removed in order to get to it.

The *OVERboard*, as it's known in the instruction book, or the *XRAMboard*, as it is referred to in an AmiEXPO handout, is a plug-in board which lets you add up to two more megs to the *BASEboard* system. The *OVERboard* comes with 512K of RAM soldered in place, with sockets for an additional 1.5 megs of RAM. A soldered jumper wire has to be installed between the Amiga and the GARY board when the *OVERboard* is installed. The jumper wire is also needed to increase the size of the maximum contiguous block of fast RAM from 512K to two megs on Amigas which are equipped with a fatter Agnus and a meg of chip RAM. If your Amiga already has the one meg chip RAM option installed, you will have to undo part of the modification which was required to enable it.

The *AdRAM 540* uses standard two-layer printed circuit board construction. The main plug-in board contains sockets for up to four megs of RAM as well as the battery-backed real-time clock/calendar. Since the clock/calendar is on the *AdRAM*'s main board, its GARY board is not much larger than the GARY chip. The *AdRAM 560D* is a two meg add-on expander board for the system. It is supplied fully populated with all of the RAM chips soldered in place. Installation of the *AdRAM 560D*, or the upgrade to a meg of chip RAM, requires the soldering of a jumper wire between the computer and the *AdRAM 540*.

Since the belly board socket does not have all of the logic lines which are available at the computer's external expansion slot, the internal memory does not autoconfigure in the same way as external memory does. In fact, depending on your particular configuration, only part of, or even none of the internal memory may autoconfigure. To get around this limitation both of these boards are supplied with a small memory linking program. This program should be copied to the C directory of all your boot disks and added to the startup-sequence. Copy protected programs whose startup-sequence cannot be modified may not be able to access the expansion RAM. The *AdRAM 540* package also includes a rudimentary memory test program. The memory test program automatically cycles through all of the system's memory, including chip RAM and the RAM from which it is running.

A second limitation of this installation is the fragmented way the memory is added to the Amiga's memory map. Depending on the system configuration, the largest contiguous block which is added by these boards can be as small as 512K, even though the installed memory may be more than this. In any event, the largest contiguous block with the four meg configuration will be two megs. If you add on the two meg secondary board, the largest contiguous block goes up



Top: Board connector cable, GARY board, and *AdRAM 560D* with two megs.
Bottom: *AdRAM 540* with four megs.

to four megs with the *AdRAM 540* and up to 5.5 megs for the *BASEboard*.

Either the *BASEboard* or the *AdRAM 540* is a cost effective way to add up to four megs of RAM to an Amiga 500. The *BASEboard*'s four-layer printed circuit board should also enhance the reliability of the system. The *BASEboard* also offers more memory configurations than the *AdRAM*. However, the lack of an illustrative memory map in the *BASEboard* 's manual makes it difficult to figure out what is going on.

Depending upon the application software you are using, the two meg limitation on the largest contiguous RAM block may or may not be a problem. The memory map can be significantly improved by installing the two meg extender board. This will also raise the cost of the system to the same level as a conventional memory board and an expansion interface. If you are trying to squeeze the most possible memory into your Amiga 500, you can try adding six megs using one of these systems along with a conventional four meg RAM card on the external expansion bus. This could give you a system with 10.5 megs of RAM with an eight megabyte contiguous RAM block.

If you are on a limited budget and looking for additional RAM as an initial expansion then these systems are well worth considering. Memory can be added with a minimum initial investment and then expanded gradually. But if your budget can handle it, then the external expansion looks like the better way to go.

BASEboard

★★★+

$159.95

Expansion Systems

AdRAM 540

★★★+

$159.95

ICD

ADDRESSES

Expansion Systems, 44862 Osgood Road, Fremont, CA 94539, 415-656-2890

ICD, 1220 Rock Street, Rockford, IL 61101, 815-968-2228

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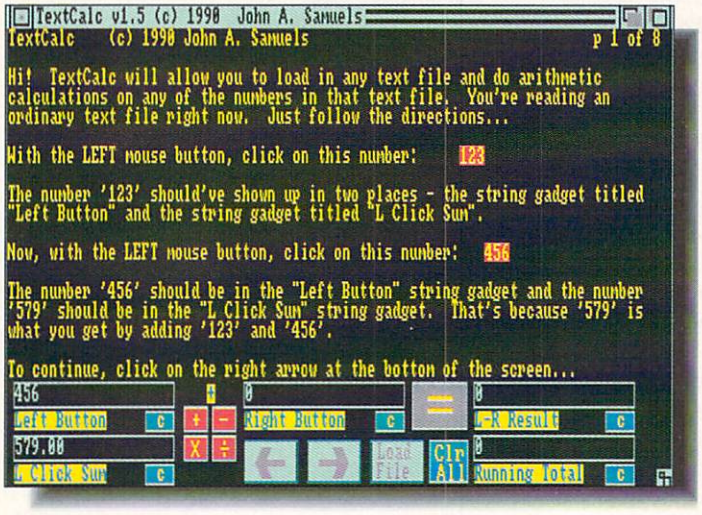
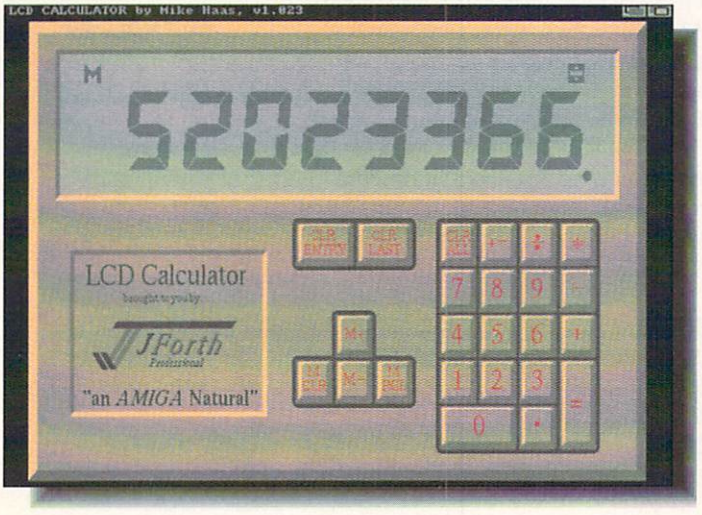
PUBLIC DOMAIN





AMERICAN PEOPLE/LINK

The Amiga Zone and Amiga Zone PRO are American People/Link's popular Amiga support areas. Each file is listed below with its library file number and is tagged either "AZ" or "AZPRO" to indicate in which Zone you'll find it. For information on getting your own People/Link account, call 1-800-524-0100 (voice) or 1-800-826-8855 (modem).

RINGS.LZH [25822/AZ]

"This is simply the highest quality shareware game ever released for the Amiga," claims George Broussard, author of *Rings of Zon* (shown). It's an arcade/strategy/adventure game consisting of: 19 levels, save/restore, high scores, multiple pulse-pounding *stereo* soundtracks, digitized sounds, cheat modes, awesome screen effects, and over 100 objects including: moving walls, lava, water, forests, tons of monsters, spells, weapons, invisible objects and too many more to mention. This game offers a unique blend of puzzle solving and exploration that will keep you coming back for more.

TEXTCALC.LZH [25871/AZ]

John A. Samuels' *TextCalc* (shown) allows you to load any ASCII text file and do addition, subtraction, multiplication, and division on any numbers in the text. It's all Intuition-driven. Just click on the numbers with your left and right mouse buttons to include the numbers in your calculations. Easy and useful. Tutorial included.

LCDCALC.LZH [25974/AZ]

This is easily the prettiest-looking four-function memory calculator I've ever seen on my Amiga's screen (see screenshot). Written in J-Forth by Mike Haas. There's a menu option in the program to switch between A1000 and A500/2000/3000 keypad configurations so anyone can use this artful calculator.

WATCH3D.LZH [26289/AZ]

Here's the same color cycle animation found in the *Watch2.lzh* archive elsewhere in our library, (and which was shown in the *.info* #34 feature about its creator, Amiga artist George Christensen). George has redrawn his intricate gold-toned pocket watch as a stereo 3D picture with eight layers of depth. X-Specs owners can now see the many levels of little gears and springs rotate and twirl deep down inside the mechanism.

LPC.LZH [2905/AZPRO]

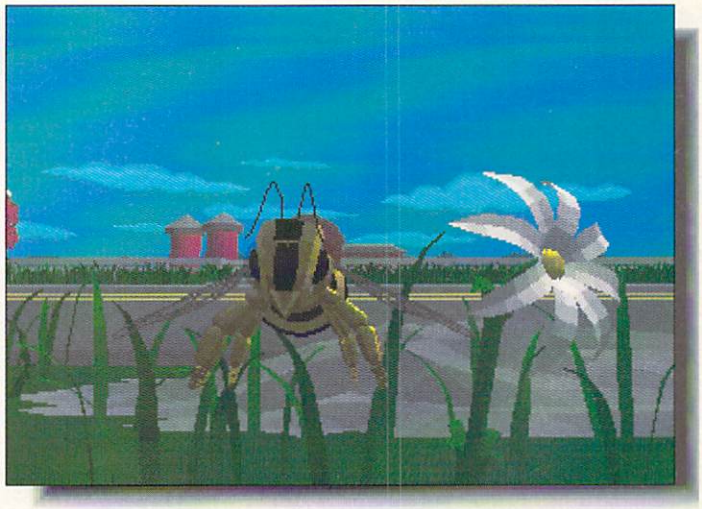
So you thought *AmigaVision* was only good for "multimedia" presentations and slideshows? Ha! Bill Fischer has cooked up this *Loan Payment Calculator*, an actual useful utility program written in and for *AmigaVision* (so you need to own that package since there's no freestanding *AmigaVision* "flow" player yet, thankyouverymuch...) Not only is *LPC* insanely easy to use but it's very pretty to look at, too. If instead of just clicking on *LPC*'s icon, you run *AmigaVision* itself first, you can take it apart and see what makes it tick. Perhaps you can even use some of the concepts and routines in your own *AV* creations. - Harv Laser [CBM*HARV]

PUBLIC DOMAIN

DISK COLLECTIONS

MGHSoft

MGHSoft is the creation of 23-year-old Mark Hadland. A computer buff since 1980, he's been selling Amiga PD since 1988. His company provides a good variety of programs at low prices, and a few unique twists on the PD software business, including a true copying service: he will copy his programs onto disks you supply for $1.25 each. Mark has sold thousands of disks, and MGH is, as he says, his only job. He ships to 15 countries, and it's easy to see why - overseas shipping costs nothing extra. MGH makes an effort to provide a wide selection of material, with much of it coming from Europe.

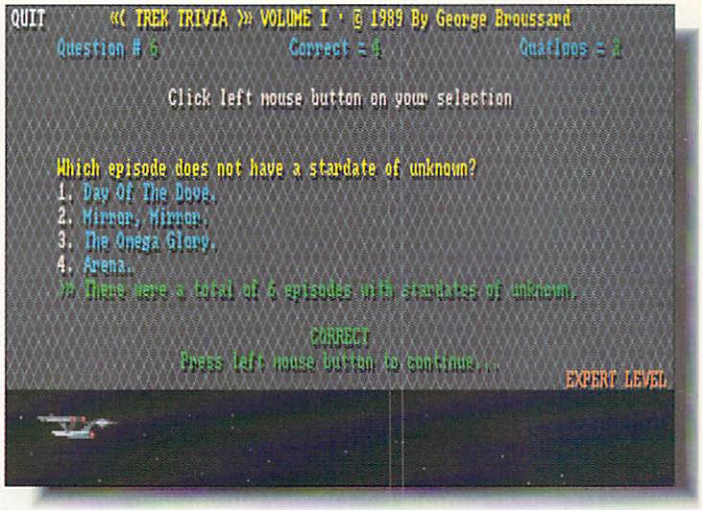


BUZZED #342/343/344

This three disk set contains one of the best animations I have seen on the Amiga. Jim Robinson's *Buzzed* (shown) brings a new slant to the birds and the bees. To see what I mean, you'll need three megs or more, but if you have the memory you will certainly want to buy this. A large bee is seen against a variety of backgrounds, often with what I'd call "wide-angle lens perspective," where objects in the forground are much larger than those in the back. The smoothness is remarkable, and the action lasts more than 30 seconds. An animation player is included; all you have to supply is the RAM.

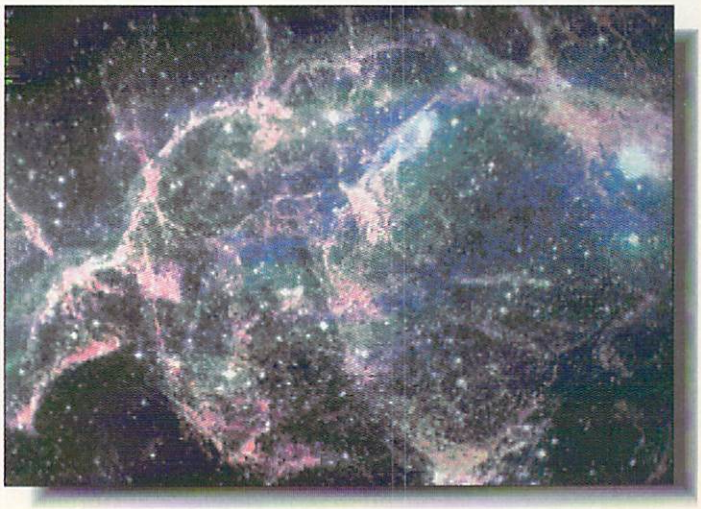
TREK TRIVIA #345

Trekkies, this is for you! This quiz game (shown) tests your detailed knowledge of the famous TV show. No matter how many times you've seen the series, some of these questions will probably stump you. To give you a fighting chance, there's a cheat mode, and you are shown the correct answer, along with more trivia to remember. There are nine more disks available from the author. The disk also includes several other games, including *Air Traffic Controller*.



SPACE SLIDE SHOW #343

This disk is the real thing: deep space pictures showing the far reaches of the universe. The digitized images - like this one of the remnants of Vela - were assembled by Dan Bonachea and are simply beautiful. You should see them.



SOUNDS OF GNOME #233

I've had this disk for a while, but this is the first time I've seen it in a commercial PD collection. Describing it is difficult, because so much is going on at once. This "EuroDemo" is basically a music player, with dozens of original tunes from which to select. As they play, the screen provides an amusing series of effects. It's a classic.

HOW TO ORDER

Call or write: MGHSoft, PO Box 645, Bayfield, WI 54814, 715-779-5600. $2.50 per disk, shipping free. First class shipping, $3.00. One free disk included with each order, limit 1 per month. Special: 30 disks, plus 1 free: $49.95. Copy service: You supply disks, $1.25 copying fee. Catalog disk, free. Mastercard and VISA accepted, also checks and money orders. COD (USA only), $3.00.

- Jeff Lowenthal

NEWS & VIEWS

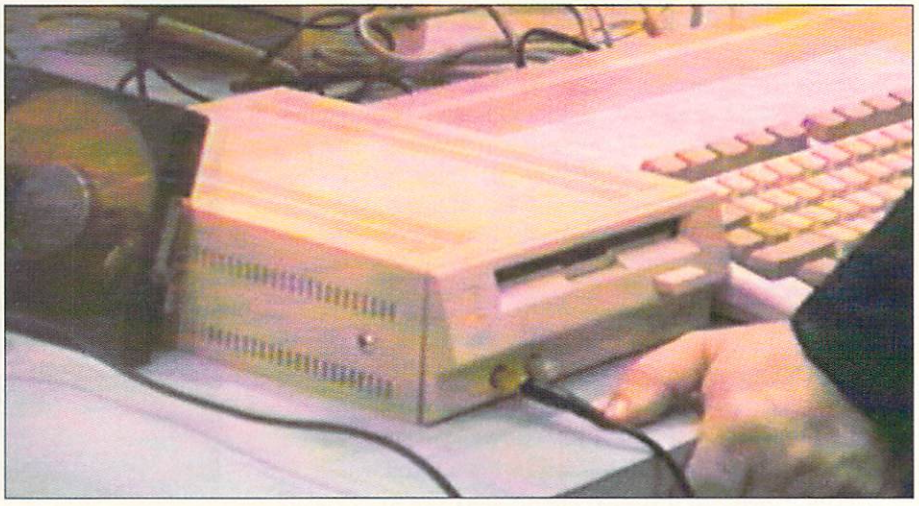
. . . continued from page 12

SHOW REPORTS

CES IN LAS VEGAS

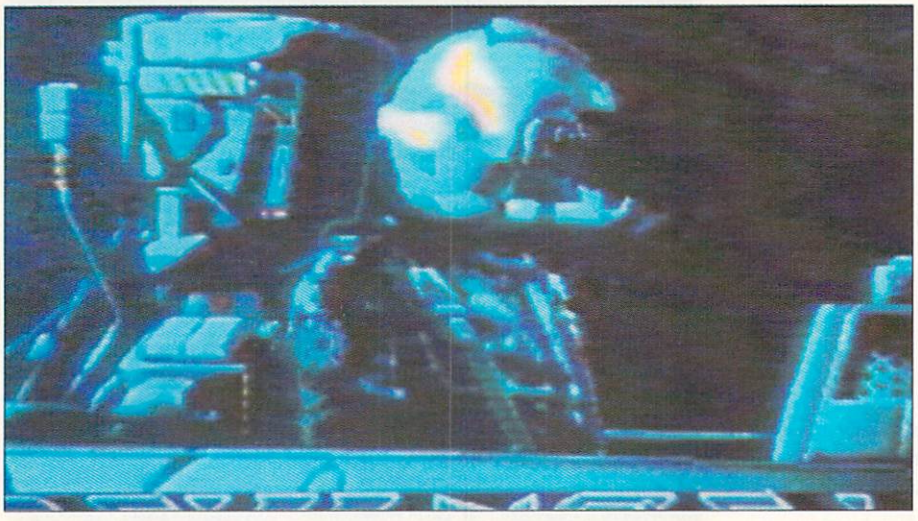
CES is where the game publishers showcase their newest diversions and while cartridge games dominated the show, with Nintendo once again having a booth nearly the size of Cleveland, there were plenty of Amiga games to see. One of the most impressive new games was Interplay's *Castles*. It was officially debuted (in the IBM version) at a party held, appropriately, in the Excalibur's King Arthur's Tournament, where dinner is served without silverware and jousting is the main form of entertainment (watching people eat with their fingers is a close second). *Castles* is a sort of hybrid of *Defender of the Crown* and *Sim City*. Also on the horizon from Interplay are *Cruise for a Corpse*, a murder mystery set in the 1920s, and the long-awaited Amiga version of *The Lord of the Rings*.

Accolade gave me the news that they've signed an exclusive US distribution deal with European publisher U.S. Gold. The first four titles to be released will be *International Soccer*, *Gold of the Aztecs*, *Vaxine*, and *Rotox*. *Soccer* is self-explanatory, and the other three are arcade games, with *Vaxine* the most unusual. It uses raytraced graphics and has something of the look of Accolade's *Harmony*, though in this case the game is set in the human body and you have to keep viral cells from coming together. On their own label, Accolade is coming out with another add-on disk for *Jack Nicklaus Golf*, this one called *The Great Courses of the U.S. Open*.



Commodore's Outboard CDTV ROM Drive for the A500. Anticipated ship date: June.

Electronic Arts seems to have more affiliates than the Mirage has poker chips. Their French affiliate UBISoft is about to ship *Pick 'N Pile* (a favorite around the *.info* offices), *Pro Tennis Tour*, and *B.A.T.*, their cyberpunk adventure epic. SSI has more of their *Advanced Dungeons & Dragons* series on the way, with *Eye of the Beholder* and *Death Knights of Krynn* to be the next releases. Origin Systems will be bringing their blockbuster IBM game *Wing Commander* to the Amiga in the near future. New World Computing is working on *Planet's Edge* and *Might and Magic III*, while Three-Sixty is doing *Megafortress*, a B52H flight simulator game.



Sneak peek at Psygnosis' as yet unnamed space epic featuring near realtime fractal terrain and 3D animation!

Capstone is nearly ready with *Bill & Ted's Excellent Adventure* and are also working on a new version of *Trump Castle* which looks like it will be much better than the first one. Konami is releasing *Bill Elliott's NASCAR Challenge*, which is being developed by the same team that did *The Duel*.

Commodore did their usual lackluster presentation of CDTV, with Irving Gould doing the intro and Nolan Bushnell the pitch. From what I've been able to find out, it's almost the same presentation Commodore did for CDTV at last summer's CES in Chicago.

I said goodbye to the booth bunnies (those showgirl wanna-bes hired to hang around booths and pass out literature or other stuff - even *Amazing Computing* had a couple) and got on the plane with smug satisfaction. Loss Vegas had left my bankroll almost even this time.

- Benn Dunnington

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NEWS & VIEWS

WORLD OF AMIGA IN TORONTO

Attendance was down a bit at this year's Toronto show, I estimated the body count at less than 30,000 as compared to last year's nearly 35,000, but I heard very few complaints. It seems that those who did attend were on a real buying binge. Several exhibitors had run out of stock on some of their product by Saturday, leaving very little for the last day of the show.

In spite of some pre-show pessimism, there were still a number of new products to be found. Just one week before the show, Xetec started shipping their CD-ROM player. Several of these nifty units were set up in the Xetec booth along with their Fred Fish and PD software collection on CD-ROM, about 500 megabytes worth. One unit was also set up playing music off an audio compact disk. Of course, the Amiga program which ran the CD player had an interface that looked just like a CD player.

ICD has developed a hard drive interface that conforms to the Intelligent Device Electronics (IDE) standard, and the hardware is barely larger than the 68000 microprocessor.

As with previous Toronto shows, the massive Commodore booth at the back of the hall occupied about 20% of the show's floor space. An array of CDTVs were set up along one wall. Some of these were being operated by some very serious-looking Commodore executives in business suits who were deftly fingering the two-handed wireless remote controls and playing, among other things, *Barney Bear*. Also in the Commodore booth I came across a working version of *DynaCADD*, the new high-end CAD program from Ditek International.

Pre'Spect Technics showed a collection of peripherals including an Amiga 500 expansion box with room for two floppy drives, a built-in power supply and four Amiga/AT expansion slots. To set up the *Avant* box you have to gut your Amiga 500 and transfer all of the components.

Avant, Pre'Spect's A500 expansion box as seen at World of Amiga.

Spirit Technology was showing their *Inmate* board for the Amiga 500 which accommodates an incredible array of options, including: up to eight megabytes of RAM, a SCSI hard disk interface, a 68881 math coprocessor, and a low-power CMOS 68000.

- Morton A. Kevelson

UNIFORUM IN DALLAS

Well, we've seen Commodore's Amiga 3000-based UNIX machine before [in *.info* #35], but January marked Commodore's official introduction of this workstation to the UNIX-using community. The UniForum Show in Dallas hosted the official unveiling of this machine, and it's fair to say that the A3000UX turned a few heads. The Commodore booth was certainly less impressive and ostentatious than those of IBM, Apple, Sun, and some other established UNIX merchandisers, but the machines Commodore showed gave the others a run for their money. Stations manned by Commodore staff and representatives from the University of Lowell included an interactive laserdisc/XWindows demo, video image enhancement under UNIX, and control of a networked A2000 with *Video Toaster* through a UNIX-based interface program.

Emphasis was on price/performance, with an ad in the show daily underscoring the fact that XWindows, Open Look, and a full SVR4 UNIX are included in the base price of the unit. CBM's sales slogan for the machine is "Born to Run UNIX SVR4," a direct assurance that this A3000-based system is fully integrated with the UNIX system, and not just a hack like Apple's implementation of UNIX for the Macintosh. The A3000UX is a turn-key system with UNIX installed on the hard drive - turn on the computer, and you're running UNIX. Two models will be available, both based on a 25 MHz A3000. The A3000/B has a 100 megabyte hard drive and five megs of RAM and sells for $5499; the A3000/D includes a 200 meg drive and nine megs of RAM and sells for $6999.

Commodore is working with several well-known vendors who are developing ports of their products for the A3000UX platform. Since Amiga UNIX is a standard implementation, porting applications is a straightforward thing, and a wave of products should be available soon. Perhaps the only real surprise of the show was that Commodore was showing a tape backup unit which they said was "ready to ship." A CBM spokesperson said that the availability of the tape unit meant Commodore was ready to ship UNIX on tape to Amiga owners who want to upgrade Amigas that are already in the field. No price was available; we'll update you as soon as we can get that information from Commodore.

- Mark R. Brown

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Other useful products from Central Coast Software:

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Dos-2-Dos for transferring MS-DOS/ Atari files to and from the Amiga.

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Product Round-up: 1000 product listings for C64, Superbase 64, Commodore LOGO, C64 Forth, Model Diet, Computer Mechanic.

#6 INFO 64 Spring 1985
Color Gallery! C64 hard drives, Intro to Assembly Language, COMAL 2.01, The Print Shop, Whither C/PM.

#10 INFO May/June 1986
Monitor Roundup! C64 wordprocessors, Multiplan for C64/C128, Amiga BASIC, Tips & hints.

#11 INFO Aug/Sept 1986
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Games issue: C64/C128 and Amiga games. 8-Bit business and application software (part I), Telecommunication networking, Amiga Music.

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In this installment of *.info Technical Support*, guru Jim Butterfield teaches about structured programming and flowcharting; Derek Grime examines painting in Dynamic Hi-Res mode; *Support* editor Chris Zamara fills you in on the Amiga's speech capabilities; and co-editor Nick Sullivan presents Part 4 of his series on programming fundamentals.

Programming, Structuring, and Flowcharts

by Jim Butterfield

You're free to write programs any way you like: neat, sloppy, elegant, sprawling, primitive, chaotic... it's your machine, your project, and your fun. There have even been articles about the joy of spaghetti, a term which is used to mean tangled and disorderly code.

On the Amiga, there are strong arguments in favor of neatness. Your program may be sharing the computer with other programs. Code that is excessively wild and free may spatter damage beyond its own horizons and interfere with other tasks. Your programs must participate in the global sense: no program is an island, entire of itself. At least, not on the Amiga.

For the last two dozen years, computer scientists have been talking about methods to make programs more orderly. You may have heard the buzzwords: 'structured', 'top-down', and 'goto-less' programming. These three terms have slightly differing definitions, but they point in the same direction: plan your work, build in modules, and don't let the program get lost in some backwater piece of code.

I'll note in passing that many of us start out by writing sloppy code and then cleaning it up as our concepts become better formed. One of my regular AmigaBASIC rituals is: "Now that I have something plausible written, I'll go back and take out all the labels". The act of taking out the labels (other than those needed for subroutine and procedure calls) usually converts a program into 'structured' form.

Structured Flowcharts

I'd like to tell you about structured flowcharts. They are a good way to help you plan a program. These charts are often known as Nassi-Shneiderman diagrams, named after the two people who devised the method. We'll use this charting method

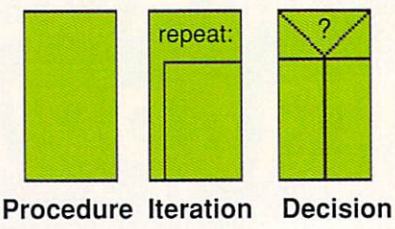

Figure 1.
The three elements of a structured flowchart.

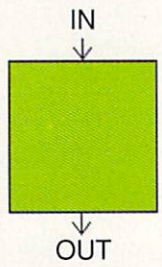

Figure 2.
A procedure has only one way in (at the top) and one way out (at the bottom).

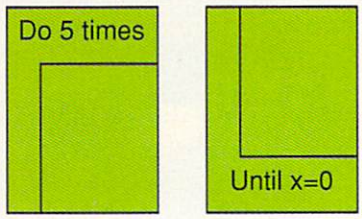

Figure 3.
Iteration: the 'inner' procedure is repeated as shown. The repeat decision may be made at either the top or bottom of the loop.

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Featured Disk

WB79: Home & Business Accounting - Includes Ckbacct - the most complete checkbook accounting program going, LCDCalc - this well done calculator has a very large display and operates from the keyboard or mouse, Mileage master - monitor your automobile mileage with this mileage log, Grammar - a grammar checker, and Worldtime - the time displayed in 50 global cities.

New Disks

FD46: Adventure Game and Trek Trivia - This disk was submitted directly to us by George Broussard. George has created a well done graphic adventure game, loaded with lots of interesting puzzles and challenges, similar in concept to Larn and hack. Also contains Trek Trivia, an outstanding, and very challenging set of StarTrek trivia questions.

FD47: Arcade Games - Contains DownHill - a demanding computer slalom ski game, MicroPac - a Workbench mini-pacman game, CrackOut - a break out clone, Jet - a superb aerial dogfight game, AmegaRace - an interesting asteroids type of game, and WindyDay - a unique arcade shoot'em up.

FD48: Puzzles - Contains CWP - a very well done full featured cross word puzzle game and generator, Concentration - like the card game, Hollywood trivia - a very large set of trivia questions on topics including StarTrek tng, HitchHiker's Guide, Indian Jones, StarsWars, MASH, and more.

FD49:Chaos Cheats - This disk contains an everything you wanted to know about cheat set for Chaos Strikes Back, including full maps, spells, object locations, super characters and more.

WB76: Applications - This disk contains Stickery - a often requested knitting design program, Lotto - a rather complete lottery tracking and prediction utility, SSS - this screen capture program can grab almost any screen including games, Today - a personal calender, Tarot - fortune teller, and Grammar - grammar checker.

WB77: AV_Demo - a well done Amiga Vision Demo program.

WB78: AV - On this disk are two Amiga Vision programs (bubbler, sync) written by Lou Wallace, chief technical editor of Amiga World. These programs are marvelous examples of how too's with AV.

DD75: Intermediate Utilities - ConMan (v1.3e) this very popular shell and cli replacement now also works on an A3000's, BinTape, MWTape - two scsi tape archivers, Password - system wide password protection, Woodward - displays software attempts to open any file or libraries (great for finding out why a program exits early). Also CliAnywhere, DosError, Eco, Executer, Gstart, Jmenu, Journalab, LockDevice, MadBlanker, and PS.

DD76: Viewers & Readers - This disk contains several of the most popular text readers and graphic viewers, including several ANSI display programs for adding ANSI graphics to your text files, Additions to the ever popular PowerPacker series (see dd54) including pplib, ppmore, ppshow, and pptype. Also FView and MultiView, two paint display programs, Leggi - a multi Font editor, and more. Many of these program can be used from the Workbench.

Other Great Disks -

FD5: Tactical Games - BullRun - a Civil war battle game, Metro - you play the role of a city planner. Build wisely and your system will be a success, but poor planning will lead to disaster and financial ruin. Very very habit forming.

FD6: GAMES! - This disk is chock full of games including; Checkers, Clue, Gold - A new slide the pieces puzzle, Jeopard - An enhanced version of Risk, RushHour - Surprisingly addicting, and SpaceWar - Best described as a cross between Combat-Tanks and asteroids.

FD7: PACMAN - This disk contains several pacman type games including; PacMan87, MazMan and Zonix.

FD9: Moria -. This has great graphic controls, multiple spells, similar to Larn and Hack. Play time several weeks!

FD10: HackLite - A dungeon adventure game. Considered a must-have classic. This is the second release of this game on the Amiga. Great Amiga graphic interface. Play time several weeks!

FD12A,FD12B: Star Trek, The Game - This is by far the best Star Trek game ever written for any computer. It features mouse control, good graphics, digitized sound effects and great gameplay. Counts as 2 disks. Req. 1Mb and two drives (or hd).

FD13: Board Games - contains multiplayer Monopoly, Dominoes, Paranoids, and others.

FD14: Dungeon Master Hints and Arcade Games - DM maps, spells, item location, and hints and more, also on this disk, Hball - an arkanoid/breakout type game, Trix - a Qix type clone.

FD16: Strategy Games - Includes Diplomacy and Empros, both great conquer and rule multiplayer games similar in concept to Simcity and Populace. Also includes blackbox, hearts, and others.

FD17: Educational Games - This disk includes several games for the younger members including geography, math, science, and word games, also includes Wheel of Fortune.

FD20: Tactical Games - MechForce(3.72): A game that simulates combat between two or more giant, robot-like machines. Simple words can't begin to give you the feel of piloting a 30 - 40 foot tall, fire breathing, earth shaking colossus that obeys your every whim.

FD29: Shoot'em up's - WWII - you're the pilot of a WWII plane flying through enemy territory, you've just been spotted, good luck on you mission, SpKiller - try and penetrate enemy lines with this game, and Retaliator - another great game.

FD32:Flight Simulator - Includes an instrument flight simulator for a DC10.

FD33: Arcade Games - Ffreddy a mario brothers type of game, Gerbils a target practice game, PipeLine a German interpretation of Pipe Dreams, Tron a light cycles version, and wetroids a wonderful version of asteroids with a hilarious twist.

FD37a & b:Tactical Games - Empire (2.2w) This great game comes highly recommended. Now with a full-featured graphic front end.

FD38:Games - Cribbage Master - A great cribbage game and tutor, Spades - a well done card came, ChineseCheckers - A computer version of this classic, Puzz - a slide piece puzzle game and construction set.

FD39a & b:Tobias Star Trek - This is a new, completely different version of Star Trek than that found on FD12. This one was created by the German author Tobias. Now with English instructions. Very Excellent!!! Counts as two disks. Requires 512k memory, a 500, 2000 or Pal.

FD40:Arcade - MiddleEast - a timely arcade game of death and destruction set in Iraq, BackToTheFuture!! - a very playable demo version of this soon to be released commercial game, City - a missile command clone.

FD42:Games - Includes SpaceWar3 - a remake of this original Amiga classic, Trippin - a fascinating board game of intrigue, strategy, and player manipulation, Dominion - an engrossing strategy game of galactic war and conquest, Frog - a frogger type clone, and Mines - a very challenging strategy board game.

WB4:Telecommumnication - This disk contains several excellent pd communication programs designed to get you on line quickly and easily, Access (1.42) - A very nice ANSI term program based on Comm v1.34, but with the addition of transfer protocols, Comm (1.34) - Last version of one of the best public domain communications programs ever made on the Amiga, Handshake (2.12a) Handshake is a Full featured VT52/100/102/220

WB5 - Fonts #1- Several fonts (35) for the Amiga, also included are five PageStream fonts,and ShowFont - a font display program.

WB7: Clip Art - This disk is loaded with black and white clip art. Art includes, trees, watches, tools, US and State maps, and more.

WB10:Virus Killers - The latest and best VirusX(4.0), Kv(2.1), and ZeroVirus(1.3).

WB12: Disk Utilities #1- This great disk is loaded with wonderful utilities for everything including making disk labels, disk cataloging, disk optimizing, disk and file recovery, archiving and organizing, and all sorts of file and directory manipulation. Incuces SID, greatly reduces CLI use.

WB13: Printer Drivers and Generator - over 70 different drivers, and if these don't do it, with PrtDrvGen you can make your own.

WB15: Business - This disk contains a spreadsheet, a database, a project/time management program and financial analysis (stocks).

WB16: Business - This disk contains an inventory manager, a loan analysis program, a great calendar/schedular, a rolodex program, and pennywise a good "Cash Book" accounting for home or office.

WB18: Word/Text Processors - This disk contains the best editors. Includes,TextPlus (v2.2e) a full featured word processor, Dme(v1.35) a great programmers editor with strong macro features,TexED(v2.8) an enhanced Emacs type editor, and a spell checker.

WB20: General Interest - DiskSalv V1.42 a disk recovery program for all Amiga file systems, FixDisk V1.0 another file recovery program with features DiskSalv doesn't have, 3DLookt gives a 3D appearance to your WorkBench, Clean V1.01 a program to de-fragment memory, Tracer - trace any part of an image.

WB23: Graphics and Plotting - Plot (20b) a three dimensional mathematical function plotter. Can plot any user defined function, BezSurf2 - produce awesome pictures of objects one could turn on a lathe. Can also map iff image files onto any surface that it can draw. Now compatible with most 3D packages, and VScreen - makes a virtual screen anywhere, great for DTP .

WB25:Educational - On this disk are two programs that can generate maps of differing types, World Data Base uses the CIA's data base to generate detailed maps of any entered user global coordinates. Also Paradox a great demonstration of Albert Einstein General Theory of Relativity.

WB26: Disk Utilities #2 - MrBackup, KwickBackup - two well done utilities to help with harddisk and floppy disk backups, FileMast - a binary file editor, Labelprinter - Disk label printer with very powerful features.

WB27: Nagel - 26 Patrick Nagel pictures of beautiful women.

WB29: Graphics and Sound - This disk has several different Mandelbrot type programs for generating stunning graphics. Includes, MandelMountains - a realistic terrain generator, Fracgen - generated recursive fractals from user input, Mandelbrot and Tmandel - two fast mandelbrot generators, also Mostra - the best IFF display program to date, will display ALL IFF's including Dynamic HAM, and Sound - a great IFF sound player, will play anything. Try this disk, you'll love it!

WB33:Circuit Board Design - several terrific routines for the electronic enthusiast, Including PCBtool - a circuit board design tool, LogicLab - circuit logic tester, and Mcad (1.26) a well done new release of this PD CAD program, now comes with predrawn common circuit components for insertion into schematics.

WB36: Graphics - On this disk are several programs to create stunning graphical images including, MPath - creates swirling galaxy images, Roses - produce an unlimited number of variations of images that a symmetrically similar to a rose, SimGen - display those spectacular images as part of your workbenck screen, and RayShade - a very good raytracing program, create your own beautiful 3d graphics.

WB38: Plotting and Graphics - Plotxy is the most powerful full featured plotting package. Used by many colleges and universities. A welcome addition to our library! Highly recommended. Plans - a incredibly well done Computer Aided Drafting program, very full featured. Tesselator - a program that helps generates fantastic looking, recursive M.C. Ecsher type pictures.

WB39: Music - Intuitracker is an German offer of an exquisitely well done program that allows you to play music on your Amiga with CD like controls. Lets you strip out music from your favorite games or others and include them in your music library.

WB40: Music - "CD on a disk", 90 minutes of modern music on this well presented collection.

WB41: Music - MED an incredibly well done, full featured music editor. Create your own stunning music directly on your the Amiga. Similar to SoundTracker but better. Very powerful, easy to use program.

WB43:Business - This disk contains AnalytiCalc - probably the most powerful spreadsheet program on the Amiga. A full featured spreadsheet with many features expected in a commercial package.

WB53:Graphics - The disk contains C-light - The easiest to use raytracing we have seen to date. This one started out life as a full featured commercial product similar to Sculpt3d. Raytracing programs can generate stunning, realistically shaded objects. Also, sMovie - a full featured video text titler similar to ProVideo, Broadcast Titler. Great video scrolling, wipes, special effects, and more...

WB54:Printing - This disk contains several routines to help with the chore of printing. Includes Gothic - Finally a Banner printer for the PD! PrintStudio -a well implemented all-purpose printer-utility with a very comfortable graphic interface and many advanced features, Lila - with ease, print ASCII files to a PostScript printer, and many more.

WB55:Application - XCopyIII - a full featured disk copier, make backups of write protected disks. RoadRoute - find the quickest route from one city to another, highway description included, Diary - a diary program like "Dougy Howard M.D", Cal - a calendar program, Magman - a database tailored to maintain records on articles and publications.

WB71:C64 Emulation - The A64 Package is a complete, very powerfull, Commodore 64 emulator.

DD47: Pascal - This disk contains everything needed to program in Pascal. Includes, A68k (1.2) 68000 assembler, Blink linking software and PCQ (1.0) a modest Pascal sub-set compiler.

DD49: C Compiler - contains zc(1.01) fully K&R, zcc(1.0) front end, A68k(1.2) assembler, Blink linker.

DD51: Circuit Analysis - Aspice (2.3) A full featured program for electric circuit analysis.

DD52: Scientific - Includes Elements - an incredibly well done periodic table program with source, Scientific plotting - over 600k of Lattice C source routines that can be included in your own programs.

DD54: Compression - This disk is loaded with ALL of the best file compression programs and aids for the Amiga. Many of the programs can be used by the new user. Includes Arc(2.3), Lharc(1.0), Lhwarp(1.03), Pkax(1.0), PowerPacker(2.3a) a must have by all, Zip(1.0), Warp(2.04), and Zoo(2.0). Also IFFcrunch an excellent compression for IFF files.

DD55: ARP - On this disk you will find the complete ArpRel3.0 release including the full user docs, the full Developers guide, and Conman (1.4). ARP is the official AmigaDOS Resource Project (ARP) release 1.3. ARP makes many improvements to AmigaDOS and makes your system easier to use from the CLI.

DD57: Advanced Utilities - Msh - like Cross-dos, copies files to and from MS-DOS, Pal-NTSC - convert any pal program to NTSC and vice versa. Also several utilities that improve your startup-sequence, plus 25 more programs.

DD62: Basic and Xscheme - Cursor - a full featured Amiga Basic compiler, sbasic and ftext - several wonderful routines to help in basic programers, and Xscheme - an interpreted object oriented language.

DD65 C Tutorials - Several well done tutorials on how to program the Amiga. Includes tutorials and working examples on Device drivers, IFF reads and writes, Sound implementation, Arcade game design and implementation, Double Buffering, and others. A must have for Amiga Programmers.

DD71:C compiler - This disk contains Dice, Matthew Dillon's full featured, powerful C compiler and environment system.

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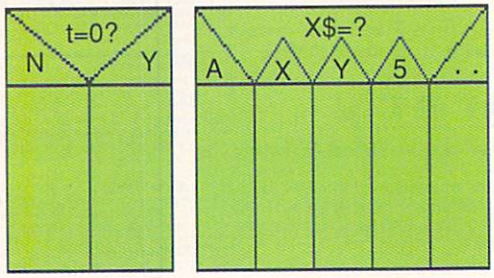

Figure 4.
A decision splits the code into alternatives: either the left or right procedure is taken. The 'case' decision, right, may be split many ways according to the value of a variable.

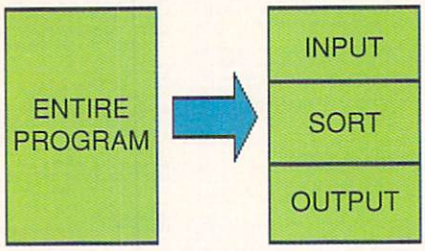

Figure 5.
The whole sort program is a procedure, so it may be drawn as a single rectangle. We may then show it as a sequence of procedures: INPUT, SORT, and OUTPUT. Each procedure is completed before the next starts.

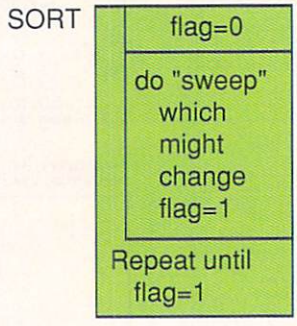

Figure 6.
First detail of the SORT procedure. The program will repeat the inner logic until the flag equals zero, at which time the repetition will stop.

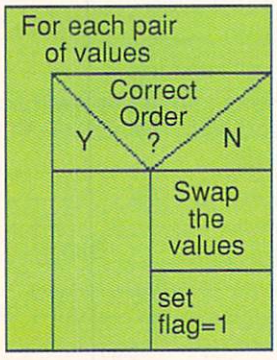

Figure 7.
Detail for procedure SWEEP. The procedure shown under 'Y' is intentionally blank: nothing is done if the pair are in the right order.

to plan a simple program, and then write the program in AmigaBASIC.

Our program will be the well-known bubble sort. It's not the most magnificent sort method ever conceived, but it's easy to describe and the logic won't be hard to follow. First, though, a little detail on structured flowcharts: the three elements and how they work.

Procedure, Iteration, and Decision

The three elements, and how to draw them, are shown in Figure 1. These are the three classic parts of 'structured programming': *Procedure* (doing something); *Iteration* (repeating a procedure); and *Decision* (picking among various procedures). Using only these three elements, you can program anything.

Figure 2 shows a procedure, sometimes called a process. Procedures have one entry point, the top of the rectangle, and one exit point, the bottom. A procedure may be an entire program or just one statement in the program.

Figure 3 shows the iteration (repetition) block. The procedure represented by the smaller rectangle is repeated as directed by instructions in the outer L-shaped area. Note that the decision to repeat may be made at the start of the process or at the end; this may affect the way you draw the block.

Figure 4 shows the third component, the decision block. A simple Yes/No decision will cause one of two procedures to be performed; a 'Case' decision may split many ways, each way selecting a particular procedure. By the way, a procedure block may be left blank; that would correspond to "do nothing in this case".

The Bubble Sort

This simple sorting method is not favored by computer scientists, but it's easy to explain and flowchart. There are several things that can be done to improve the speed and flexibility of this sort, but we'll stick to fundamentals here.

We start our plan by drawing a simple rectangle, as shown in Figure 5. That represents the whole program. We may then choose to split our program into three procedures: Input, Sort, and Output. In doing so, we've already made a design decision: the chart says we will complete the input phase before starting the sort, and complete the sort before starting output. There are other possible ways of approaching the task, of course: for example, we could have decided to sort the items as they were input.

Let's leave to one side details of the Input and Output procedures, and concentrate on the Sort procedure. With this type of flowcharting, we don't need to draw an increasingly complex figure. Instead, we can draw the Sort procedure as a separate chart, as in Figure 6.

To quickly review the idea of a bubble sort: The program sweeps through the items. When it finds two

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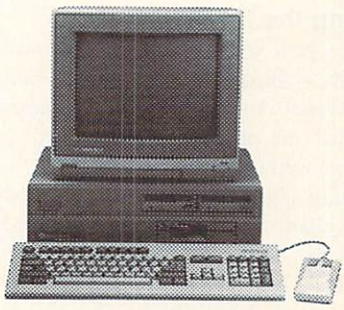

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items in the wrong order, it swaps them. At the end of this sweep, it says "Did I swap anything? If so, I'll do the sweep again".

Figure 6 shows this. We use a 'flag' to tell us whether anything was swapped during the sweep. If the flag has been set to non-zero, we do it all again.

Figure 7 outlines the 'Sweep' procedure. We check all adjacent pairs of items; note that N items will have N-1 pairs to be checked. If any pair is out of order, we swap them and set the flag.

Writing the Code

Once your diagrams have been worked through, writing the code is astonishingly easy. When written, you may be amazed to find that the program is often error-free, and runs well the first time you try it!

Listing 1 gives an AmigaBASIC coding of the charts we have drawn here. Coding would be similar in other languages: C, Modula-2, Assembler... once you have the logic nailed down, the programming is straightforward.

Listing 1: A Simple Bubble Sort in AmigaBASIC.

```
'    Input
INPUT "How many items";n
DIM item$(n)
FOR j=1 TO n
INPUT item$(j)
NEXT j
'    Sort
flag=1
WHILE flag<>0
flag=0
'      Sweep
FOR j=1 TO n-1
IF item$(j)>item$(j+1) THEN
temp$=item$(j)
item$(j)=item$(j+1)
item$(j+1)=temp$
flag =1
END IF
NEXT j
WEND
'    Output
FOR j=1 TO n
PRINT item$(j)
NEXT j
END
```

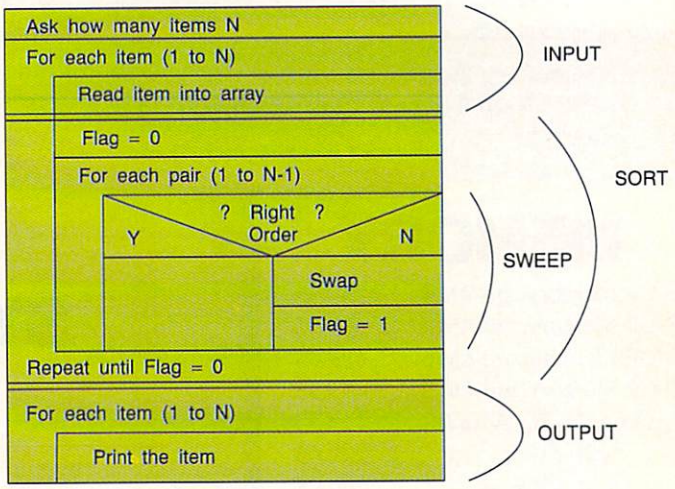

Figure 8.
The whole program. It doesn't need to be put into a single diagram like this.

The Whole Thing

Note that we've been working from the 'big picture' - the whole program - into finer and finer detail. That type of planning is often called *top-down* programming.

You might have noticed that we don't have a single master flowchart. Various modules of the program, such as *Sort* and *Sweep* are detailed in their own charts. The big picture doesn't need to get cluttered.

Figure 8 shows the 'whole thing'. That's possible in this case, since it's a small program. But it's never needed. Even in this case, you might agree: too much detail in any single chart tends to make the logic appear cluttered.

The Paint Program At The End Of The Line

by Derek Grime

Amiga software developers are always in search of newer, better, and faster ways of enhancing our favorite computer. As the Amiga becomes a mature computer graphics platform, the quest for higher performance becomes even more important. Any new twist in a software package is liable to translate into higher sales. Competitive companies have their ears to the ground, listening for reports of exciting new breakthroughs.

Occasionally there is a breakthrough. Someone uncovers a new programming secret and the word spreads like wildfire. The volume rises on the electronic networks as the developer community races to understand the new findings. Often it's only several months from the time a procedure is discovered until the time it is introduced to the public.

Enter Dynamic High Resolution. A little over a year ago the hot topic was the discovery of a new display mode. Dynamic Hi-res allowed the Amiga to show all 4096 colors on the screen at once, in high-res and with none of the 'fringing' effect common in HAM (Hold-and-Modify mode) images. It seemed to be everywhere at once, along with the HAM-mode version known as as 'Sliced-HAM' or 'SHAM'. It was only a matter of time before it was available commercially.

NewTek came first with the Dynamic Hi-res slide-show reel that was shown widely by Amiga dealers. The pictures were fantastic and allowed for more colors on the

Macro Paint

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screen at once than IBM's much-vaunted VGA display mode. Then came NewTek's *DigiView 4* which had the ability to create, load, and save Dynamic Hi-res pictures.

If you've ever used the *DigiView* software to digitize a Dynamic Hi-res picture you'll understand how difficult it is for the Amiga to use this display mode. After the image is scanned, the screen colors flutter and flash for a couple of minutes while the software picks the best sixteen colors to appear on every line of the screen. Once the calculations are complete you can view the finished scan as long as you do not touch the mouse. Moving the pointer causes the screen to explode with digital noise. On top of these quirks, the disk drives shudder while the read/write lights blink on and off. The best you can say about Dynamic Hi-res is that it works - barely. If the programming wizards at NewTek couldn't do any better than this, what future products would use Dynamic Hi-res?

No problem, of course, is too great for a determined Amiga developer. Lake Forest Logic has just released *Macro Paint*, the world's first Dynamic Hi-res paint program. By all rights this should not even be possible on the Amiga. The fact that it works as well as it does is something of a miracle.

Before you can run *Macro Paint* you must copy Lake Forest Logic's 'req.library' from the program disk to the 'libs' directory on your system disk. You also need to run the supplied 'makevport_patch' program before you run *Macro Paint*. While this has not caused any problems, it always makes me nervous when a program patches the officially sanctioned code in the operating system with its own fixes that may or may not be compatible with other software.(*Macro Paint* will start without this setup, but will only show every second display line, before crashing spectacularly.)

As *Macro Paint* starts, you are presented with a window of options. You can choose any level of overscan and can even enter your own values - a nice touch. Thoughtfully, Lake Forest Logic has added a switch for PAL displays. It's good to see a U.S. developer who remembers that Amigas are sold all over the world.

Initially *Macro Paint* runs with a blank canvas and a tool strip that fills the bottom third of the screen. The tool strip contains most of the gadgets that Amiga artists are familiar with: there is a dotted and a free-hand draw, curves and vectors, filled and unfilled circles, squares and ovals, and even a magnify. What draws your attention most is the color palette: all 4096 are available on a high resolution screen.

On an Amiga 1000 with a stock 68000 processor, drawing speed is a little slow, reminiscent of the first HAM programs. Of course it's a wonder that it runs at all with only half a megabyte of chip RAM. It's very easy to outdraw *Macro Paint*. Thankfully, all screen moves are buffered. When you stop moving, the program will follow the correct path as it catches up to you. On an Amiga 2500 equipped with a 68020 and a math co-processor, drawing speed was quite good. This program really benefits from any extra processing muscle. Keep in mind that *Macro Paint* is doing far, far more heavy computing

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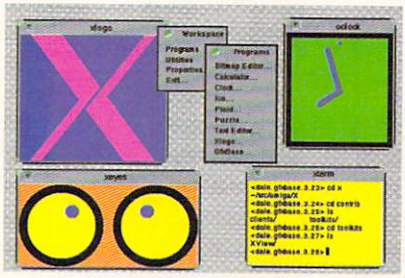

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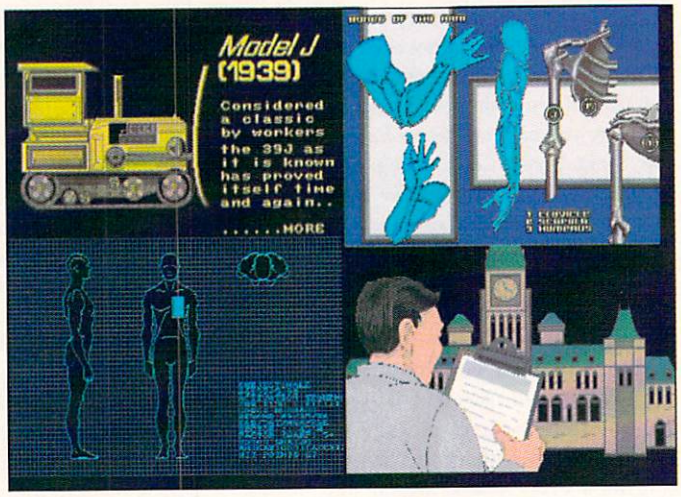

A *Macro Paint* hi-res picture with 64 colors, reproduced here after conversion to 24-bit IFF.

work than any other paint program on the market. For Dynamic Hi-res, *Macro Paint* is acceptably fast.

Most of the tools have the same keyboard equivalents as Electronic Arts' *Deluxe Paint*, which has become the standard by which all graphics programs are judged. *Macro Paint*'s learning curve is acceptably flat. There are just a few new concepts that it introduces to the graphic artist.

One new tool is the 'region' function. There are a bank of image processors built into the program; region allows you to select a rectangular or freehand area and perform an operation just on that section of the drawing. Regions can be saved and loaded from disk, but they cannot be moved like a brush. For example, you can outline a face and then use the monochrome mode to remove all the color from that area. There are modes that sharpen, smooth, tint, halftone, complement, lighten, darken and more. Smooth is especially well executed, yielding excellent results. Some of the modes, like complement and halftone, are unique to *Macro Paint*.

Macro Paint claims to be capable of loading any IFF picture of any size, and I was not able to trip it up. Memory is a consideration of course, but the manual states that pictures of up to 32,000 pixels square can be loaded. Why you would want to do this is beyond me, though if you were doing an actual-size billboard on your Amiga this may come in handy. More practical is the built-in support for SHAM and all the varied flavors of IFF. You can save your masterpieces as Dynamic Hi-res or in the new 24-bit IFF standard.

Some parts of *Macro Paint* are weaker than others. The airbrush function works in a square area instead of the expected circle. It's difficult to keep track of what modes are on and what modes are off while you work; a status bar would have been a big help. The manual is very utilitarian but complete. There are no tutorials or pictures (!) but there is an index and it is ring-bound.

Macro Paint is also a good example of one of my few pet peeves about the Amiga. This is a nifty tool for the graphic artist, yet the box it comes in is gawd-awful. The packaging is very poor, with an illustration and logo that covers only a small portion of the box. Four-color process printing was used, but to no effect. On the back there are no screen shots or pictures that were created by the software. I'm sure that many potential customers will be turned off by this poor presentation. I'd hesitate to recommend *Macro Paint* to my corporate clients because it comes in such a 'cheesy-looking' box. Surely with all the talented Amiga artists out there Lake Forest Logic could have got someone to do a better job on the packaging than this.

On the plus side, *Macro Paint* does what it claims to do. It even multitasks, which is a wonder. Even better is the full ARexx port that is built-in. Almost half of the manual is given over to the ARexx features, which go beyond the functions available from the standard user interface. ARexx programmers can even install their utilities as gadgets on the program's tool strip; these ARexx macros become new gadgets that can be used as easily as any of the existing tools.

As a virtuoso piece of Amiga programming, *Macro Paint* is unmatched. This program works, and the computerphile half of me is amazed that it does. The creative half of me, however, wishes that some of the tools were better implemented. *Macro Paint* could have been made more functional if more artists were consulted while it was being written.

The average user will find *Macro Paint* to be a bit of a challenge - you should be quite comfortable with the Amiga before you buy this one. Keep in mind, also, that the full potential of the software can only be realized by using the ARexx port.

If you want to digitize Dynamic Hi-res pictures and then retouch them in a paint program, *Macro Paint* is for you. If you want to take your graphics as far as you can go without using an expensive framebuffer, then it's your only choice. Lake Forest Logic has pulled off something quite incredible with *Macro Paint*. It'll be interesting to see what they come up with next.

What is Dynamic Hi-res?

Here's an experiment that you can try at home. We all know that the Amiga can only display sixteen colors in high resolution. You can make it do more. If you have the memory, run three copies of your favorite paint program. Flip from one to the other and load a new picture into each separate program. Now pull each screen down a little to reveal the other copies running in the background. With a little finesse, you should be able to see parts of all three screens at the same time. Voila - you have broken the palette barrier.

What is happening is that the Amiga's video co-processor, or 'Copper', is controlling the palette for each different portion of the screen. When programmers noticed this they experimented and found that the Copper could keep track of a new palette on every line of a high resolution display. This means that every horizontal line of the display can have its own sixteen-color palette. Dynamic Hi-res forces the Copper to change the palette on every line, and for this reason it is the most difficult display mode for the Amiga to operate in. While using Dynamic Hi-res is sluggish, the colors are truer and have none of the fringing associated with Hold-and-Modify displays.

Freedom of Speech

by Chris Zamara

We're all aware of the Amiga's built-in speech capabilities - it's one of the things that sets the machine apart from other PCs. What's not always obvious, however, is how to use speech in everyday operations when the software you're using doesn't specifically support it. Fortunately, you don't have to be a programmer to use the Amiga's power of speech.

Besides the low-level programmer support for speech in the Amiga, there are some surprisingly simple-to-use mechanisms for getting the machine to talk without any programming or special software. By using the *Say* command that is included on the Workbench disk, and the 'SPEAK:' device that is mounted in the standard Startup-Sequence, you can get speech from almost any application, or from any text file. First, a bit of background.

Amiga Speech

The Amiga's speech is made possible by the custom audio chips, but it is actually produced by software in the operating system. There are two main parts to this software: the *Narrator* and the *Translator*. The Narrator analyzes symbols representing English-language phonemes - the distinct sounds that make up all of the spoken English language - and produces sounds that are played through the speaker in the monitor or connected audio amplifier. The Translator's job is to convert written text into phonemes for the Narrator to pronounce. As you can imagine, the non-phonetic spelling of many words in the English language makes this no easy task. It also explains why many words are mispronounced by the Amiga unless they are spelled phonetically rather than correctly; there are more exceptions than rules in English pronunciation, and the relatively small Translator program can't be expected to handle them all!

The Narrator and Translator software, while an integral part of the operating system, is not built into ROM (Kickstart on the Amiga 1000), but is stored on the Workbench boot disk. The Narrator is a software 'device', and can be found as the file *narrator.device* in the *devs* directory. The Translator is a shared library, and is stored in the *libs* directory as *translator.library*. The first time the Translator or Narrator is used - when the device or library is opened by the application software - the file is

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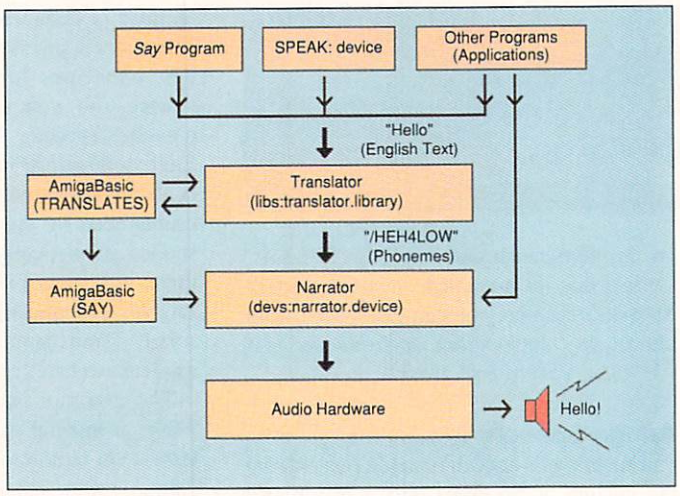


The Translator translates ordinary text, then passes phonemes on to the Narrator, which uses the audio hardware to produce the sounds that you hear.

loaded from the Workbench disk into memory. Unless memory is very tight, the Narrator and Translator will only be loaded from disk this one time.

The fact that the speech software is on disk rather than in ROM is normally of no concern, except for two important points: The *narrator.device* and *translator.lib* files must be present on your boot disk if you wish to use speech; and the speech will fail if the files are not present or there is not enough memory to load the device or library. Such a failure will generally happen only the first time speech is used, and most software applications that use speech will tell you if they can't open the Translator library or Narrator device.

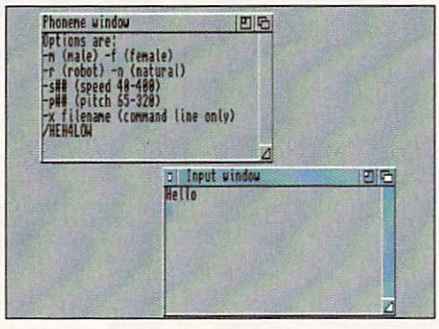
Incidentally, the Narrator device has been significantly revised for version 2.0 of the operating system, and the voice is more natural and human-sounding. The Translator still has its pronunciation problems with many words, however.

Now You're Talking!

So, how do you put speech to work for you in everyday use? First of all, you might want to experiment with how different words sound when translated and narrated. The easiest way to do this is by using the *Say* program from the *Utilities* drawer on the Workbench disk. *Say* can be used interactively to experiment with different phrases, or directly, to say a single phrase. To use the program interactively, just type 'say' from a CLI or Shell window. (For this to work, *Say* must be present on your boot disk, and the drawer it's in - normally *Utilities* - must be in your command path.)

Two windows will open (see diagram): the 'Input window' at the bottom, which is active, is used to type text into; the top 'Phoneme window' gives information about various options, and shows the text after it has been translated into phonemes. Each phoneme is represented by a different one or two-character symbol, along with a digit for stressed syllables, and these are shown on the display and given to the Narrator to speak. You can learn a bit about the phonemes through experimentation; a complete explanation of how they are used to create speech is another topic (a good one, in fact, for a future *i.t.s* article).

By intermixing the special options shown in the top window with your text, you can change a number of speech parameters in the narrator. These options - pitch, speed, male/female voice, etc. - are supported by the Narrator itself, but the commands used here (-p, -s, etc.) are special text strings recognized by the *Say* program, and will not work when producing speech



The *Say* program in its interactive mode, shown here running under v2.0 of the Amiga operating system.

with other software. To exit from the *Say* program, just press RETURN (in the bottom window) without entering any text.

You Don't *Say*?

Using the *Say* program interactively like this can be a lot of fun (try an authoritative command using a pitch of around 250, for example), but using the program in its direct mode can be useful for getting speech from programs that don't explicitly support it. Anything you can type into the bottom window, including the options, can be given to *Say* directly on the command line. You can try this from the CLI: enter a command like,

```
say "What am I saying?"
```

... and it will be spoken. Any program that lets you perform a CLI or ARexx command in response to some action (double-clicking a spreadsheet cell, for example) can be given the power of speech using this simple technique. DOS command macros can be found in all kinds of programs, including spreadsheets, wordprocessors, text editors, databases, and hypermedia/presentation programs.

If only ARexx-command capability is provided, use the ARexx 'shell command' (or the equivalent 'address command') to run the *Say* program like this:

```
shell command say "What am I
saying now?"
```

One disadvantage to this approach is that the *Say* program needs to be loaded for each new utterance. This can be annoying, especially in a floppy-based system where each disk access means a noticeable delay, and may even require a disk to be mounted. To eliminate this problem, you can make *Say* resident ('resident sys:utilities/say pure add'), but since it's not a 'pure' program, you have to make sure you don't try to run *Say* while it's already in use, or you may crash the program and bring the system down with it! A safer - though slightly less efficient - solution is to just copy *Say* to the RAM disk and add RAM: to your command path if it's not already there.

You don't have to put all of the text you want spoken into the command-line invocation of *Say*: the '-x' option lets you get the text from a file. The command 'say -x ram:speechtext' will pass all of the text in the file 'ram:speechtext' along to the Translator and Narrator, so that any amount of text can be spoken with a single

command. This can also be convenient when the program you're using only allows one way to run a DOS command, but has more flexible file operations: you can use the same command every time to invoke the speech, but choose the text to be spoken by writing it to the special speech file before the command is given. Try this test to see text-file speech in action:

```
echo >ram:SayThis "I have a lot
to say, but I'll keep it brief."
say -x ram:SayThis
```

There is a pitfall with this approach: any hyphens in your text will be interpreted as option commands, causing *Say* to report 'Can't understand that option', and the letter after the hyphen to be ignored. On the other hand, if the letter after the hyphen is a valid option (m, f, r, n, s, p, or x), it will be interpreted accordingly (whether that was your intention or not!).

SPEAK: To Me!

Another easy way to get speech out of virtually any application is via the 'SPEAK:' device. This is a purely software device that acts like other AmigaDOS devices such as DF0:, PRT:, etc. It is a real testament to AmigaDOS's flexibility that devices like this can be so easily attached and be fully compatible with the rest of the file system. The SPEAK: device consists of a file in the 'L:' directory called *speak-handler*, and a 'MountList' entry in the *devs:MountList* file. The only other thing required to make this an AmigaDOS device is the command 'mount speak:', which is done in the standard Startup-Sequence. Mounting the SPEAK: device doesn't automatically load in the Narrator or Translator; this only happens the first time the device is used.

SPEAK: is similar to the PRT: and PAR: devices in that you can only write to it. Anything you send to SPEAK: will be translated and narrated for you. You can test it by redirecting the output from the *Echo* command like this:

```
echo >speak: "Just by writing to
a file, we get speech!"
```

What makes this artificial device so useful is that you can use it from just about any program that lets you work with text. You can speak a specific sentence from a wordprocessor, for example, by saving it in the usual way (usually marking a range and choosing 'save selected text' or something similar), and using the file name 'speak:'.

While you could theoretically get the Narrator to read a whole story out loud by saving (or printing) all of the text in your document in this way, in practice a problem arises because the program can save the text much faster than the Narrator can speak it. This can result in chopped-up speech and even entire sentences being lost. The simplest way around this problem is to restrict your saves to the SPEAK: device to single sentences or short pieces of text. The problem doesn't seem as bad when sending text using the *Copy* or *Type* command, but that means saving to a file first and then giving the command. This is not much different than using the *Say* command with the '-x' option, except that you

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won't have to worry about hyphens in the text being interpreted as Narrator options.

Basically Speaking

AmigaBasic provides commands that give direct access to the Translator and Narrator. The *TRANSLATE$* function takes a string containing English text, and returns a string of phonemes. The *SAY* command takes a phoneme string and passes them to the Narrator. Thus, you could say a sentence in Basic like this:

```
SAY TRANSLATE$("Amiga Basic
speech - now you're talking
turkey!")
```

This is an easy way to experiment with simple programs that use speech. Try loading the *speech* sample program from the *BasicDemos* drawer on the V1.3 'Extras' disk. This shows some examples of using speech and changing Narrator options, as well as providing a simple 'speech lab' for experimenting with the different options on text strings. Also, try experimenting directly with the phoneme strings that you give to the *SAY* command; you may be able to get better speech this way than by using *TRANSLATE$*.

Speaking in Tongues

The Amiga's speech is probably one of it most underutilized capabilities. This may be partly because it's only designed for English, whereas many Amigas are sold in non English-speaking countries. The main problem, however, is that it's not always understandable when working from written text. Both of these problems can be at least partially addressed by programs that use phonemes directly with the Narrator instead of relying on the Translator to convert ordinary text. Other languages are still a problem because the narrator is only programmed for English phonemes; direct use of these phonemes might allow for limited speech in other languages, but some sounds would still be missing. The understandability problem in English, however, can be improved through the use of carefully chosen phoneme strings. If a program needs a set of stock phrases, these could be precoded into phonemes that create understandable, semi-realistic speech; this is even more true with the new Narrator in V2.0.

A more frivolous way to use Amiga speech is to translate and narrate long nonsensical words with lots of vowels - try a few for yourself, because any attempt to describe the effect in writing would be doomed to fail. The resulting gargles, yelps, and yodels (a doomed attempt at description) could be hilarious sound effects for games, without the difficulties for the programmer of using digitized sounds or playing musical scores. There's a certain whimsical irony in a computer mimicking a human making sound effects. Narration of these strange long vowel words, coupled with variations in pitch, are the closest your Amiga will ever come to singing - and it can be done completely without third-party software!

Set apart from other PCs, indeed.

PROGRAMMING FUNDAMENTALS

Part 4 - Building an ARexx Program

by Nick Sullivan

In the previous articles in this series our approach has been rather abstract and theoretical. This time, we'll get away from the drab conceptual stuff and get our hands dirty with a real-life programming problem in ARexx.

As you probably know, ARexx occupies a special place among Amiga programming languages: it has unique features that adapt it well to life in a multitasking operating system. You may even feel intimidated by the complex-sounding jargon that is often heard when ARexx is the topic of discussion: phrases like 'macro invocation' and 'interprocess communication' make ARexx seem much more forbidding than it really is.

ARexx's specialty, which the jargon reflects, is mediation: it simplifies and standardizes communication between programs. But it isn't necessary to select this as our starting point. In this article, we will be looking at ARexx as a general-purpose programming language, not too unlike BASIC or COMAL, though with its own advantages and drawbacks.

The Problem

Our programming task for this issue is to write an ARexx script, called **linetype**, that will allow the user to examine a selected range of lines from a text file. The script will be run with a command in this format:

```
rx linetype <filename> <start>
[<stop>]
```

The script will read lines from <filename>, discarding them, until <start>-1 lines have been read. Lines <start> through <stop> will then be read, and typed to the default output channel (normally a CLI window). If the <stop> argument is omitted, all lines between <start> and the end of the file are to be typed. If an error of some kind is detected, an appropriate message should be displayed.

The ability to whip together a simple utility like **linetype** is one of the main reasons why just about every computer user can benefit from learning how to program. A few minutes' worth of programming effort may be repaid many times over if it provides you with a utility that exactly answers your needs of the moment.

Such utilities very often involve file handling and processing of various kinds. The **linetype** script will serve as a good starting point any time you need a file-oriented utility in the future.

Program Structure

An essential step in writing any program is to break the proposed solution down into a series of simple operations. The first few times you write a short program, it is a good idea to do this step explicitly. (With longer programs, this is a good idea even for veterans.) You may find it useful to use a flow chart, either the regular variety or the Nassi-Shneiderman style described by Jim Butterfield elsewhere in this section; or you may prefer to get by with a simple list in text form, like this:

1) Read command line arguments. If the <stop> argument is missing, set the end of the range impossibly high - say one million.

2) Check the number of command line arguments, and verify that both <start> and <stop> are numeric. If there's a problem, exit with a message giving usage information.

3) Try to open the given file. If it won't open, inform the user and exit.

4) Read and throw away lines 1 through <start>-1 of the file. If the end of the file is encountered, inform the user.

5) Keep reading lines until either line <stop> or the end of the file is reached. Display each line read, along with a line number. If the end of the file was reached in step 4, this step will do nothing.

6) Close the file.

Notice that some steps go beyond the programming task as such to deal with practical problems like erroneous input. Because the program is going to be used by humans, we have to allow for a certain amount of human perversity. Step 2, for example, not only checks that the command line input is reasonable, but also gives the user specific information to help correct the problem. Step 4 reflects a decision to report an error if the file has fewer than <start> lines. Depending on how **linetype** is being used, we may wish to let the program quietly terminate without a message when this condition is detected.

ARexx File Operations

Linetype deals with text files line by line, not character by character. The ARexx function *readln*, which reads an entire linefeed-terminated line in one operation, is the heart of the program. A single line of ARexx code reads in a line of text, and outputs it, prefixed by line number *i*, a colon, and a space:

```
say i || ':' readln("infile")
```

This is the code we'll use to read a line of text in step 5 of the outline. Step 4 also has to read lines, but discards them. ARexx's *call* command lets us ignore the return value of a function call:

```
call readln("infile")
```

The string "infile" in these two lines is a name we have agreed with ARexx to use when referring to the file from which the lines are being read. This is distinct from the name of the file itself, which is generally not known when the program is being written, and indeed will probably vary from one run of the program to the next. The agreed-upon name 'infile' is specified in a call to the *open* function, which has this format:

```
result = open(name, filename,
mode)
```

Here is the *open* function in actual use:

```
if open("infile", "ram:textfile",
"r") then
say "The file open succeeded."
```

The string "r" in the *open* call means that we wish to *read* from an existing file ("ram:textfile"), not create a new file and write to it. The agreed-upon name for our read operations will be 'infile'. If the file open succeeds (as it normally will if the file name is correct), the *open* function returns a boolean True value, satisfying the *if* test condition and causing the message to be printed.

Since it is necessary to 'open' a file before

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you can do operations on it, you might guess that it would be a good idea to 'close' it again afterwards, and you'd be right. In ARexx, closing the file is not absolutely essential in a small program like this (ARexx will close it for you when the program exits if you forget), but good programming practice dictates that the file should be explicitly closed, thus:

```
call close("infile")
```

The only other file operation we need is a test to see if the end of the file has been reached. We use the boolean function *eof*:

```
if eof("infile") then say "End of
file!"
```

Checking the Command Line

In most languages, the parsing and validation of command line arguments tends to be rather tricky, with lots of tedious string operations like scanning for separators and magic characters. The strange but very useful ARexx command *parse* does away with a lot of the fuss. The simple parsing requirements of **linetype** are handled with:

parse arg name start stop

Here *arg* is a keyword specifying that the thing to be parsed is the argument string to the script. The string is to be broken up into words and stored in the variables *name*, *start*, and *stop*. If there aren't enough words to assign to all three variables, later ones are set to null. If there are more than three words, the *stop* variable will get the balance of the string. We can find out how many argument words there were by making a separate test on the argument string, which is returned by the function *arg*:

```
argcount = words(arg(1))
```

If the *words* function returns an unacceptable value, we can exit and give usage information.

A final test to make on the command line arguments will ensure that both *start* and *stop* are numeric. The *datatype* function returns True if and only if the value named as its first argument meets a criterion given as the second argument. In this case, the criterion is *n*, for numeric:

```
if datatype(start, 'n') then say
"The type is numeric."
```

Notice that in the **linetype** program the result from *datatype* is inverted by applying the tilde ~ (logical negation) operator.

```
/* linetype.rexx
  linetype <filename> <start> [<stop>]
  Type lines 'start' through 'stop' of a file. If 'stop' argument
is missing, type from 'start' to the end of the file.
*/
argcount = words(arg(1))
parse arg name start stop
if stop  = "" then stop  = 10e6
if argcount > 3 | ~datatype(start,'n') | ~datatype(stop,'n') then
  say "Usage: linetype file start [stop]"
else do
  if open(infile, name, "r") then do
    if start <= 0 then start = 1
    do i = 1 to start - 1
        call readln(infile)
        if eof(infile) then do
            say '"' || name || '" has fewer than' start 'lines.'
            leave
            end
        end
    do i = start to stop while ~eof(infile)
        say i || ':' readln(infile)
        end
    call close(infile)
    end
  else
    say 'Can''t open "' || name || '".
  end
```

Beyond Linetype

After you have looked over (and perhaps typed in and tested) **linetype**, perhaps you will want to try a few similar programs of your own. A good one to start with is a utility to report on the number of characters, words and lines in a text file. Slightly more ambitious would be a utility to read in a text file, and output a version of the file in which every sentence that does not end a paragraph is followed by exactly two spaces. Figuring out how to recognize the end of a sentence in arbitrary text is part of the fun!

Each new program you write is likely to send you back to Chapter 6 of your ARexx manual for helpful functions you can use. Take the time to read about *open*, *close*, *datatype* and the functions we've talked about here: the descriptions in the manual will fill in many details not mentioned here. And that's even more true when it comes to parsing. The description of the *parse* command in Chapter 4 of the manual, and all of Chapter 8 ('Parsing and Templates') are well worth a close reading.

NOTE: Most of the ARexx listings in part 3 of this series ended with an indented "[end". In each case, this should have simply been the unindented word "end". The mixup was caused by some confusion over proofreaders' marks. We apologize for the error.

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1 ❒ Amiga 500 4 ❒ Amiga 2500
2 ❒ Amiga 1000 5 ❒ Amiga 3000
3 ❒ Amiga 2000 6 ❒ None

B. Which of the following software products are you likely to purchase within the next year?
7 ❒ Desktop Publishing
8 ❒ Wordprocessing
9 ❒ Video
10 ❒ Graphics/Animation
11 ❒ Sound/Music
12 ❒ Productivity
13 ❒ UNIX
14 ❒ Entertainment
15 ❒ Educational

C. Which of the following hardware products are you likely to purchase within the next year?
16 ❒ Mass Storage 19 ❒ Video Hardware
17 ❒ Accelerators 20 ❒ Monitors

D. What applications are your primary interests?
22 ❒ Desktop Publishing
23 ❒ Wordprocessing
24 ❒ Video
25 ❒ Graphics/Animation
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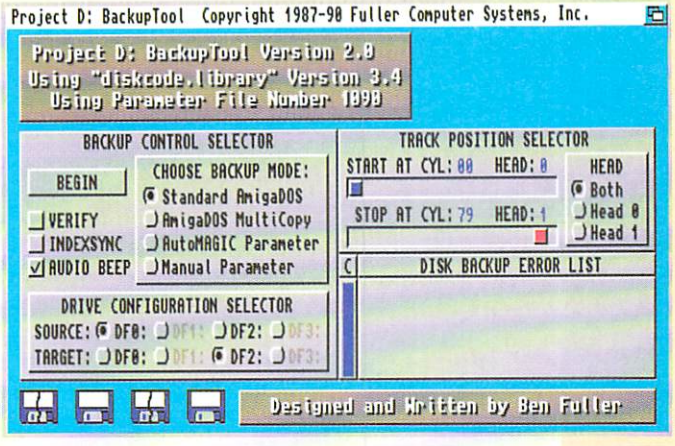

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Just The Facts:

What Makes Digi-Paint 3 the Ultimate Paint Program?

"Finding the best paint program for your Amiga can be confusing, but once you have the facts it's simple."

Laura Longfellow
Sales Manager
NewTek Inc.

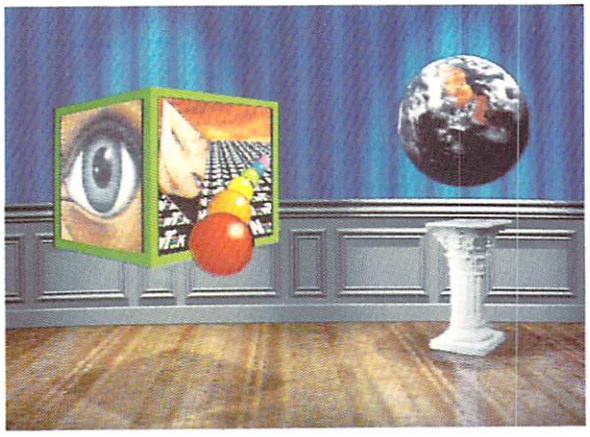
"Why is Digi-Paint 3 better than DeluxePaint III™?"

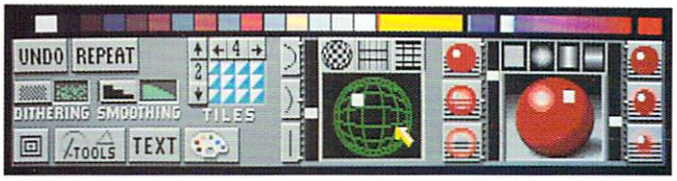
Digi-Paint 3 works in the Amiga's powerful Hold And Modify (HAM) mode, which allows you to paint using all 4096 colors simultaneously. By comparison, Deluxe Paint III (by Electronic Arts) operates in less sophisticated modes, restricting you to a maximum of only 64 colors. Advanced features available in Digi-Paint 3—including Colorizing, Variable Transparency, Shading, Lighten, Darken and Range Painting—are simply not possible in Deluxe Paint III due to its 64 color limitation. AMIGAWORLD warns, "Competitors may want to head back to the drawing board, because Digi-Paint 3 is hard to beat!"

"What makes Digi-Paint 3 better than other HAM paint programs?"

Digi-Paint 3 is the only Amiga paint program written in 100% assembly language. Although challenging to program (taking up to 10 times longer than other computer languages), it's the only way to achieve the incredible speed found in Digi-Paint 3. AMIGAWORLD calls it "the fastest HAM paint program yet" and AMIGA SENTRY estimates it's, "6-10 times faster" than the nearest contender.

Other advanced features found *only* in Digi-Paint 3 include: anti-aliased texture mapping, anti-aliased fonts, ARexx support, 1024 x 1024 super bitmaps with auto-scrolling and dithering to 30 bits per pixel (over a billion colors internally, giving you tens of thousands of apparent colors). COMPUTER SHOPPER magazine reports "Digi-Paint 3 is without a doubt the most advanced HAM paint program to date!"





"But is Digi-Paint 3 easy to use?"

I've learned that no matter how powerful a program is, if it's not friendly it's not worth my time. We designed Digi-Paint 3 with all users in mind—from the beginner just starting out with computers, to the "power user" who demands the most advanced features possible. The spiral-bound manual contains a step-by-step Guided Tour, 11 hands-on tutorials, a color coded reference card, and almost one hundred example photos.

Digi-Paint 3's intuitive user interface was created by Digi-View designer (and NewTek Founder) Tim Jenison and renowned Amiga artist Jim Sachs. It features innovative "Dashboard" controls which AMIGAWORLD regards as "a joy to use" and "very easy to learn and understand". INFO MAGAZINE says the new interface "looks great and works logically".

"What is the Transfer 24 program included with Digi-Paint 3?"

Transfer 24 is a separate program disk included in the Digi-Paint 3 package, allowing you to alter any picture's brightness, color saturation, contrast, hue and sharpness, almost as easily as adjusting the controls on your television set. Transfer 24 also lets you modify the size, palette, and resolution of any picture. These powerful features, known as "Image Processing", give you incredible control over your final artwork. You can also save your image in any of the Amiga's 24 resolution modes (up to 768x480) making it compatible with all Amiga graphics software. AX MAGAZINE notes that "Transfer 24 gives you even more options as to the final appearance of your work". AMIGAWORLD declares, "Transfer 24 is great for making overall changes."

"What technical support does NewTek offer?"

Digi-Paint 3 has one other thing you won't find in any ordinary paint program: a toll-free help line. If you should have any questions while using Digi-Paint 3, you're not on your own. Call NewTek's technical support team at 1-800-736-7617 Monday through Friday, 8 am -7 pm Central Time.

Digi-Paint 3 is available now at your local Amiga dealer or call **1-800-843-8934** or **1-913-354-1146.**

NEWTEK INCORPORATED

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