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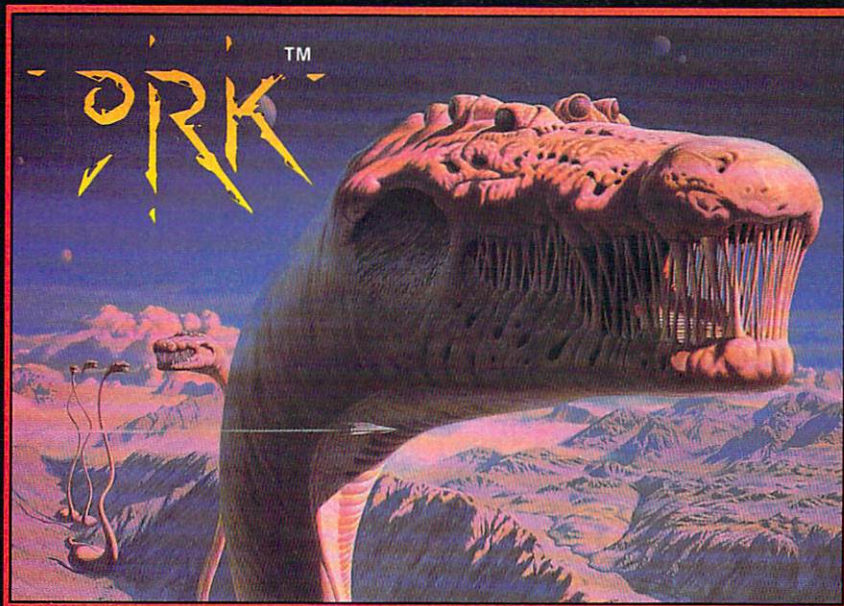
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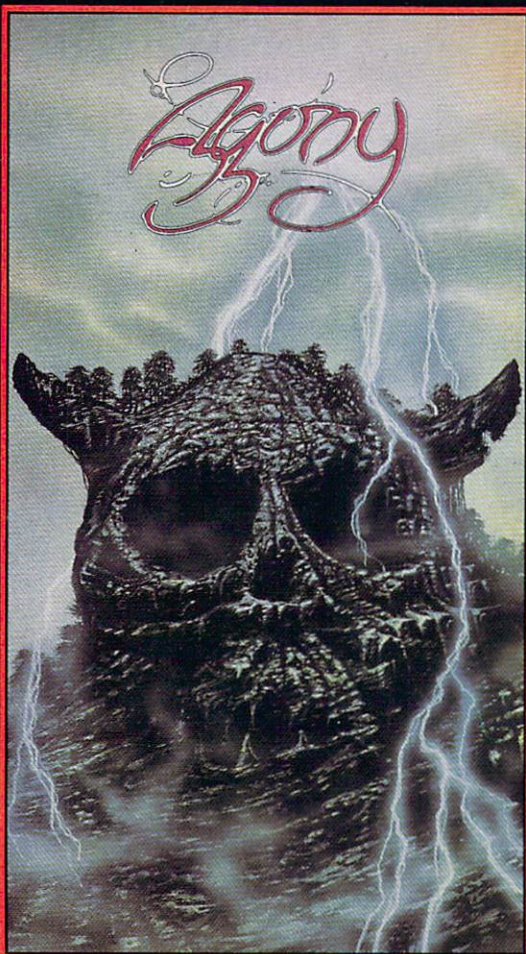
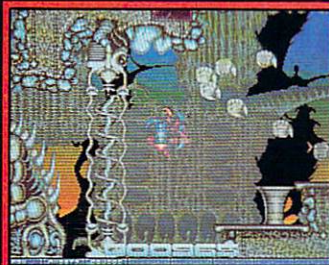
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Issue #49, April 1992

About the cover: The entire cover this issue is a single 24 bit LightWave 2.0 rendering using the 3008 X 1920 "Print" resolution. This image is actually several generations deep- the inset image was first rendered in LightWave (using a modified workstation scene from the 2.0 "phonebook") then mapped to the cover scene. Likewise, the .info mag cover in the inset was itself from a previously rendered LightWave scene! Other products used include Digital Arts' Apogee 3D Fonts, Unili Graphics' Broadcast Fonts 3D, and ASDG's AdPro 2.0.

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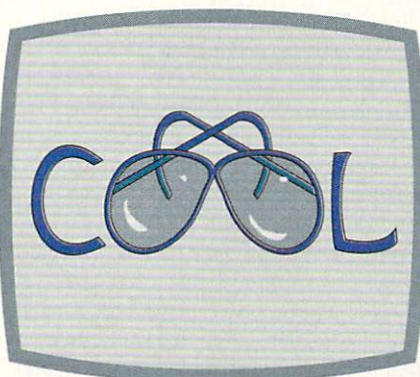
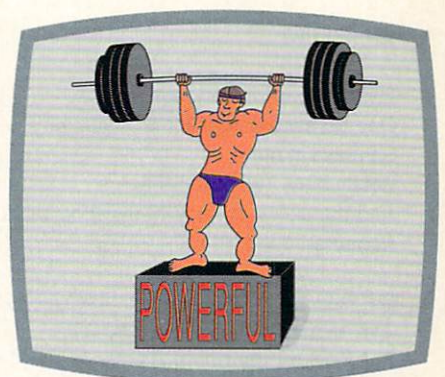
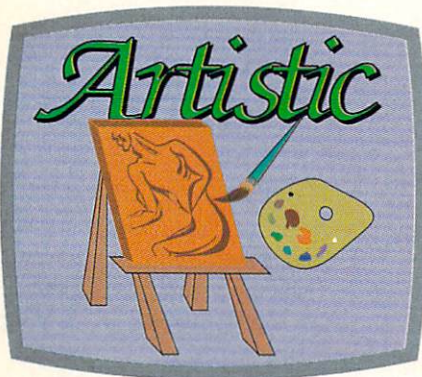
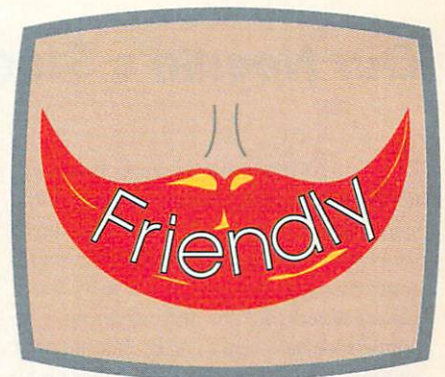
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A few words about ProVector™, the professional illustrator's choice...



Each of the above drawings was created using just a few of the incredible number of features and effects in ProVector 2.1. Professionals and home-users alike are praising the remarkable speed, ease of use, and flexibility of ProVector. If you're serious about creating professional-quality structured artwork on your Amiga, ProVector is the only real choice.

All illustrations were created with ProVector 2.1, then imported into Saxon Publisher 1.1 to create this ad. Registered owners of ProVector 2.0, be sure to contact Stylus, Inc. for upgrade information, you'll find a tremendous number of additional features and functions in ProVector 2.1 over previous versions. ProVector is a trademark of Stylus, Inc., Saxon Publisher is a registered trademark of Saxon Industries, Amiga is a registered trademark of Commodore-Amiga, Inc. Copyright 1991 - Stylus, Inc.

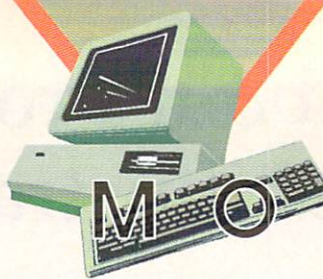
Any questions?

Stylus, Inc.

P.O. Box 1671
Ft. Collins, CO 80522
(303) 484-7321
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Circle #128 on the Reader Service Card



Our Needle's Stuck

If this editorial seems familiar, it's because we talked about essentially the same subject matter last month. But maybe we need to stay stuck in this groove until some changes are made. Because we keep getting letters like this one, which came on a little blue card sent to us by an old friend and longtime Commodore computer user. Here's what it said:

AM I BLUE?

It was one of those tough choices
One between sentiment & practicality
So now I'm blue
Really blue... as in Big Blue
And there's no more rainbow checkmark
No more bouncing ball

But hey! There were exciting discoveries
And all the warm and talented folks
Befriended through Amiga mania
Folks that can forgive a defector
TRUE BLUE folks like you!

It was a strange card to get, but I suppose my friend felt the need to somehow cleanse her soul after switching to an IBM computer. I know she didn't do it for fun. She did it for practical, business reasons. She is forgiven.

Unfortunately, my friend is not the only one making the switch from the Amiga to an MS/DOS machine. We've gotten hundreds of letters from other Amiga users making the same switch, or contemplating it. It's time to ask why.

As we pointed out on this page last month, you can still find lots of reasons to love the Amiga: integral multitasking, quick blitter animation, built-in stereo sound, etc. Besides all that, an Amiga is just more *fun* than a DOS clone. But that doesn't change the fact that lots and lots of people are making the switch from the Amiga to MS/DOS.

A great many of them are switching over for the reason my friend did: compatibility. There are just so darned many MS/DOS machines out there, it's hard to fight the tide. Especially when your home computer

has to be compatible with the one at work or school, or if your business depends on being able to work with other people's systems. Sure, you can get MS/DOS compatibility for the Amiga, but these 'solutions' involve either simple file transfer capability or very underpowered (by today's standards) XT or AT hardware adapters. They're fine for occasional use, but lack the 'oomph' for efficiently running Windows, advanced DTP applications, etc. Simply put, the Amiga-to-MS/DOS solutions are just not powerful enough.

Then, too, these days the Amiga itself may not be enough computer for most people. I think the number one reason people are making the switch to MS/DOS is advancing technology. It used to be you could point to an Amiga and say "See? It's got all these features that an MS/DOS clone doesn't, and it's much cheaper, besides." That statement is simply no longer true; DOS machines have caught up with and even surpassed the Amiga in lots of areas. The average under-\$1200 MS/DOS clone now comes with a 386 SX processor that's more powerful than the 7 MHz 68000 in a stock Amiga 2000. It features a Super-VGA display with more colors and higher resolution, and probably comes bundled with a monitor. It even has a 40 or 50 megabyte hard drive built-in. It might even have two megs of RAM, and some packages include *Windows*, a wordprocessing program, database manager, and spreadsheet. That's a lot of computer system for twelve hundred bucks. Compare this to a stock A2000, which now carries a street price of about \$1500, unexpanded.

The Amiga has sold well in the past because of its price/performance ratio. But the MS/DOS market is now capable of delivering better value than Commodore can. It's time for Amiga technology to move on.

We know that Commodore has better machines in the works. Let's hope they hit the market soon and at a price that's competitive with the clonemakers. Commodore can no longer rely on pure brand loyalty to keep their user base intact.

- Mark & Benn

.info Publications

Publisher & Editor
Benn Dunnington

Managing Editor
Mark R. Brown

Senior Editor
Tom Malcom

Contributing Editors

Mort Kevelson
Harv Laser
Bob Lindstrom
Jim Meyer
Oran J. Sands III
Brad Schenck
Nick Sullivan
Chris Zamara

Art & Production

Megan Ward
Tony Bodensteiner

Data Manager

Krista L. Kapacinskas

Advertising Director

Anna Folkers

Advertising Sales (319) 338-3620

Facsimile (319) 338-0897

Subscriptions (319) 338-0703

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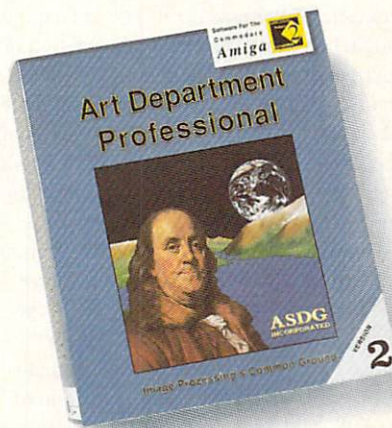
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Our U.S. Mail address is:

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705 Highway 1 West
Iowa City, IA 52246

FAX us at 319-338-0897

Send EMail to the editors at:

COMPUSERVE	70215,1034
PORTAL	INFO MAG
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Thank you for the nice review of *ProVector* in .info #47. We would like to offer some comments and hopefully clarifications on a few points in your review. First, *ProVector* is one word, no big deal, but it is trademarked that way. Also, the address and phone number you listed is for our Advertising and Marketing offices only. For product information, the address is Stylus, Inc., PO Box 1671, Ft. Collins, CO 80522. 303-484-7321

A subject close to our hearts is that of file formats. *ProVector*'s "native" format is IFF-DR2D. Several years ago, Stylus, Inc. determined the lack of a good standardized file format for Amiga structured drawings. We submitted for public comment our proposal for a new IFF form, IFF-DR2D. For over two years, we solicited and incorporated suggestions from Commodore and many prominent Amiga developers, including Saxon and Soft-Logik. These were open discussions on BIX and Usenet, to which all developers have access. Commodore has since endorsed IFF-DR2D as the standard format for Amiga structured drawings, actually singling it out at the last two U.S. developer's conferences as a model for new IFF forms. Both *Saxon Publisher* and *PageStream* directly support this format, and can import and view *ProVector* (or any IFF-DR2D) drawings directly on the screen.

You "found no way to include color IFF in the output". We assume you mean IFF-ILBM bitmaps and you are correct; the current version of *ProVector* does not allow printing of those imported bitmaps. They are supported strictly for tracing at this time. You can, however, create IFF-ILBM files from *ProVector* drawings or print color IFF-DR2D drawings.

"The screen display seemed to exhibit a regular, if unpredictable, ability to screw up on me." This is actually a feature, not a shortcoming. *ProVector* uses a "smart" refresh method of redrawing only the rectangular portion of the screen affected by the current operation. In conjunction with another feature you did mention which allows you to interrupt screen refreshes by simply proceeding with another operation, it is often possible to have a partially refreshed screen. That is why we provide the spacebar as a quick method of refreshing the entire screen. Since speed is a major advantage of *ProVector*, we do not want to force the user to wait for screen refreshes unless they want to.

Relating to Pattern Fills: Again, in the interest of speed, *ProVector* allows you to turn Patterns on or off in the "Edit Prefs" requester. If Patterns is off, you get a quick, rough, non-scaled screen representation of your pattern. With Patterns on, you can see that the patterns are, in fact, properly scaled when you zoom in or out and that they will appear WYSIWYG on the screen. A similar gadget appears in the print requester, allowing you to print with or without patterns.

Printing: It sounds like your problem in printing from *Saxon Publisher* may have had to do with your density setting in the *Saxon* print requester. Page 107 of the *Saxon Publisher 1.1* manual details methods for getting the best grey-scales out of 300DPI (and lower) printers. Basically, you probably need to set the black density down to around 50. [Editor's note: We accidentally used a slightly older version of the printer drivers for the review; Stylus had sent us the revised ones, but they somehow got lost in the shuffle. We regret the screw-up.] In fact, *Saxon Publisher 1.1* works superbly with *ProVector* IFF-DR2D files. If the new drivers and the *Saxon* density settings don't solve all of your printing problems, we would be happy to help you or

any other registered user resolve this or any other problem.

Again, thanks for the nice review and for .info! We hope you will find *ProVector* to be a valuable tool in creating drawings for future issues.

- Chuck Baldwin, Stylus, Inc.

Thanks for taking the time to fill us in, Chuck. It's almost impossible to find all the tweaks, selections, and adjustments to make a program work 'just right' without a little help from the Home Office. And congratulations on creating a superlative Amiga product.

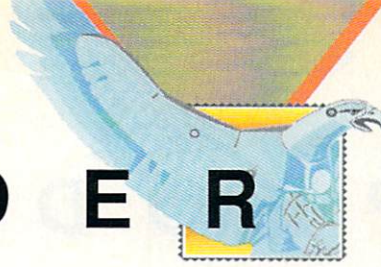
-Mark

The .info mailbox has been bursting at the seams lately. We've had more mail than ever before and it's all been about about our 'Greed' editorial on the A2000 price increase, and our comparison of CDTV and CD-I, both in the February issue. We thought you might like to see a few excerpts:

Reading your February editorial, I believe you made an innocent and understandable error in thinking regarding the price increase of the Amiga 2000. You are rational and reasonable people who want to see the Amiga make it in America and perhaps falsely assume CBM does too. Considering the current small percentage of total Amiga sales and profits that come from North America, it might be more correct to assume that CBM would just as soon kill off this market altogether. The one exception might be a few absurdly overpriced A2000s to drive Video Toasters. After all, in the mainstream (non-Amiga) video market, the machine could be priced at whatever the traffic would bear, CBM would never spend another cent on R&D, and they could try to live off their "cash cows" indefinitely.

On the other hand, CBM decision makers may be just plain, old-fashioned crazy. If irrational lunatics who consistently exhibit poor judgement and self-defeating behaviors can come to rule entire countries (and most of us could easily think of examples) is it not possible for some of the same

R E A D E R M A I L



to control a small computer company? Consider the A2000 price increase: absolutely silly, except in a larger context of Commodore decision-making, past and present. For example, someone decided to develop CDTV, which your reviewer finds wanting. Imagine if those resources had been spent on a series of innovative Amiga laptop/notebook computers as Apple has done for the Mac.

As a mental health practitioner, I know that no one really predicts or totally understands the truly irrational very well. I do not think it makes a great deal of sense to spend much of our time trying to outguess those who neither think nor act with forethought or any understandable direction. Hence, your editorial was interesting but probably doomed to fail before you set fingers to keyboard, due to no fault of your own.

I like your mag and, as an owner of three Amigas, I love the machine. But I never recommend it to friends who wish to grow with their computer into and through the 1990s. Unfortunately, I am afraid our computer of choice is an evolutionary dead end. The sad, yet aggravating part is that it need not have been that way!

- Barlow Soper, Ph.D., Ruston, LA

I just finished reading your February '92 article comparing CDTV to CD-I and quite frankly, the raw honesty of it was a little hard to take. On the other hand, your efforts to do justice to the term "journalism" deserve great praise. The bare truth is too rare in Amiga publications, so please don't ever change your standards.

- Kurt Scherer, Silver Spring, MD

I think someone should walk into CBM and give 'em a good kick in the a-- and tell them to get their act together or the Amiga and CDTV will most likely die.

I just read the comparison between CD-I and CDTV and I'm madder than hell. I think CBM should upgrade CDTV to make it at least equal with CD-I. They should make it laserdisc compatible so that it could play movies. I think that the Amiga will end up like my Vectrex game system; it was good but it died because the Atari 2600 and

7200 were easier to use. I don't want the same thing to happen to Amiga.

- Cliff Griffith

I just got through reading your February issue with the comparison of Philips' CD-I and Commodore's CDTV. This is the kind of article I have been looking for. They compare one machine against another. Now let's see you do Amiga versus Macintosh and IBM. These kinds of comparisons would be very useful.

- Ronald W. Swiatek, Beacon Falls, CT

Your editorial in the Feb. 92 *.info* needs some work, a little research, and an apology to us dealers and CBM. I'm tired of you guys setting Commodore's prices. In Oct., CBM had a sale! Do you know what that is? Prices are simply back to normal with another sale on the way. Get with it.

- Tim Hehr, Northfield, MN

I just wanted to offer my congratulations to Mark and Benn for their wonderful editorial in the February 1992 issue of *.info*. I loved it and cannot agree more. I just wonder exactly where Commodore thinks they exist, in the European market or in North America, or as it is supposed to be: BOTH. They can't seem to give one a push without cutting the other off at the knees, or is that just me? Well, I thank you for a good, honest editorial and not some middle-of-the-fence, wishy-washy blather.

- Philip Ware, Portal

Your comparison of CDTV and CD-I barely mentioned the flexibility and programmability of CDTV. It's a good thing that the developers of CDTV and the Toaster, and indeed the original Amiga team, didn't throw in the towel as easily as you seem to have. Well, maybe enough Amiga fans will be indignant enough at your article to do whatever it takes to prove you wrong. I look forward to that.

- Dave Spicer, Canton, NC

You couldn't have been more accurate in your "Greed" editorial. Like yourselves, I have always considered

myself a hardcore, die-hard, and loyal Commodore owner/user. However, in January when purchasing a new computer I did what I never thought I would do: I bought a "cheap 386 clone" which runs at 25MHz for \$1000. Now I know the Amiga is a great machine, but if Commodore wants non-loyalists to buy it, they're going to need a more enticing price incentive.

- Gary T. Certain, Washington, DC

Thank you so much for your comments in the February issue of *.info*. I'm glad you have finally brought to light CBM's tactics. I can't begin to explain the joy it gave me to see someone in the publication business finally stand up to CBM and write about it. This type of treatment is typical of CBM. To be quite frank with you, I'm growing pretty tired of this attitude and lack of appreciation of their users. Don't let up! Maybe someday they'll come around. But in the meantime, Macintosh and IBM machines are looking real nice.

- L. Jaime

I have to agree with your editorial "Greed". I am the proud owner of an Amiga 500 with a GVP A500-HD+ and a Release 2 upgrade. All for less than the 2000, so who are they selling to? I've long worried about the value of the 2000 and the Bridgeboard concept. You could buy an Amiga 500 and a Commodore Colt for less than the 2000 with the Bridgeboard and extra disk drive.

- CSM William Earl Dingey, APO AE

What is the point of an Amiga magazine totally trashing CDTV? The whole argument presented in the article could be used in an article entitled "Amiga Vs. IBM Compatibles." I think that the point should have been made that very few CD-I players have been sold and that every Amiga has the potential of being a CDTV machine. A CDTV machine is a CD-ROM based Amiga and by being expandable is a whole lot more useful than a CD-I machine.

- John Shannon Cave, Huntsville, AL

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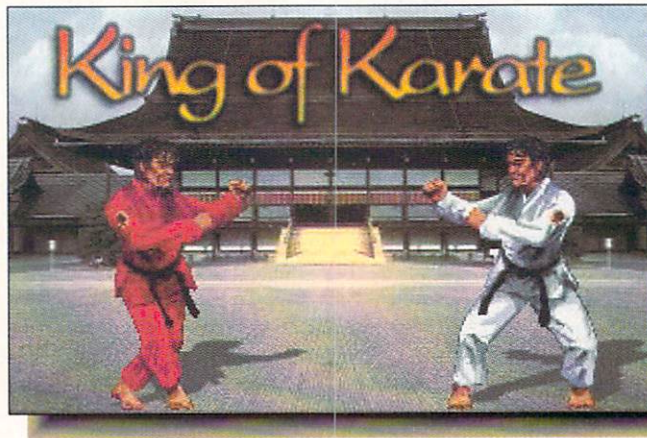
NEW PRODUCTS

DOWN UNDER DISPLAY

Centaur Software tells us they've launched a new division called *Centaur Development* to handle the manufacturing and distribution of hardware and other products. The first is **OpalVision** from Opal Technology, a company based in New South Wales, Australia. The specs on this new 24-bit display board are impressive. Its core operation is as a true 24-bit broadcast-quality display unit and it has 1.5 megabytes of on-board memory and twin framebuffers. The *OpalVision* has a custom on-board graphics processor and is expandable via hardware modules. The options include a de-interlacer and a 256-level alpha channel genlock/framebuffer combination with both RGB and SVHS output. The genlock is capable of real-time video effects, such as solarization, colorization, and negative, as well as gamma correction, contrast, and white balance.

OpalVision is available in both internal and external models and automatically configures itself to PAL or NTSC video. It comes with a 24-bit paint program called *OpalPaint* which, besides the usual paint features, also includes image-processing functions.

Now that we have all the boring specs out of the way, we can tell you what really impresses us about the *OpalVision*. The most important thing about it is the dual framebuffers. Two of them means smoother and faster animations. And it gets better yet: it's also possible to overlay Amiga graphics on top of the 24-bit display. Centaur has already realized the enormous potential of the system and are using it to produce the first 24-bit game. *King of Karate* is from the same team that did *Fantastic Voyage* (☆☆☆☆, January 1992 .info). The game uses the *OpalVision* display for all the backgrounds, leaving the Amiga free to animate the characters, which are large-scale and highly detailed. The effect is like nothing we've ever seen on the Amiga before. The game is essentially a demo of what the combination of *OpalVision* and the Amiga is capable of and is included with every unit. This has the potential to be one of the most important Amiga products ever released and we can



King of Karate ships with Centaur's new *OpalVision* 24-bit display board. It's the world's first 24-bit Amiga game.

only imagine what else we'll see done with it. *OpalVision* retails for \$995 and pricing hasn't been set for the add-on modules. For more information, contact Centaur at 4451-B Redondo Beach Blvd., Redondo Beach, CA 90260. 310-542-2226. RS #200.

NEW PRO PAGE

Gold Disk has completed a major upgrade for *Professional Page*, the page layout software we use to produce .info. While there are other more important new features in **Professional Page 3.0**, the one we've all been waiting for is now a reality: it has an Undo button. Hurray, hurrray! What Gold Disk is touting most is what they call 'Genies.' These operate something like templates, but are much more detailed and are created interactively. The end result is that you'll spend less time fiddling with margins, type, columns, and such. There is also a second type called Function Genies which operate like macros. Among the things you can do with them are automatic grid/table creation, mail merge, automatic drop caps, pushbutton envelope addressing, and so on. If you find that the built-in Genies aren't enough, you can also create your own with ARexx. We fully expect a cottage industry to spring up around *ProPage*'s new ARexx capability; over 300 commands are supported, and with some clever ARexx programming you'll be able to automate document creation as never before. The 3.0 release has improved the color separation and under color removal (UCR) functions and there's

a new auto-tiling feature that automatically breaks up large pages into pieces that can be output as hardcopy and then pasted together. Text from *ProWrite*, *excellence!*, and *QuickWrite* can now be directly imported, and there are five new Compu-graphic fonts, bringing the total to seven. Gold Disk also tells us that they've worked in a direct link to *Professional Draw* so you can edit a drawing and then pull it into *ProPage* with the click of a mouse. *Professional Draw* itself is also being redone and will be released later in the year in a 3.0 version. *Professional Page 3.0* retails for \$295. Contact Gold Disk for information on upgrading from previous versions. 5155 Spectrum Way, Unit 5, Mississauga, ON Canada L4W 5A1. 416-602-4000. RS #201.

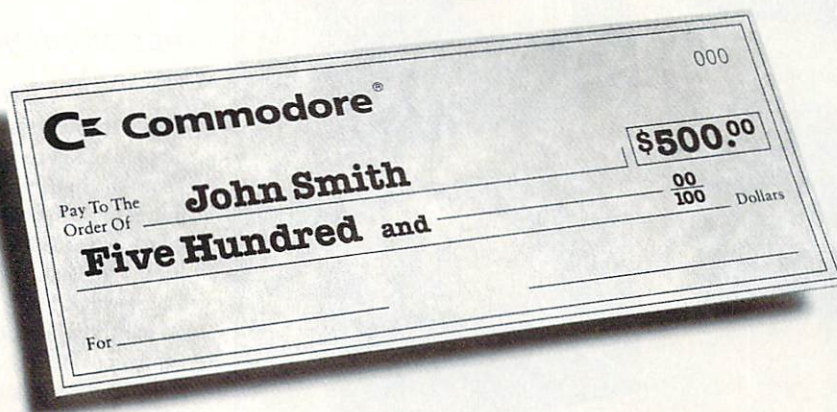
SWITCHING OVER

Boasting one of the all-time best company names, an outfit called *Luna Tech* is shipping an **A3000 PAL/NTSC Switch**. Basically, it's a little jumper on one end of a wire with a switch on the other and provides a quick and easy method of switching between the two video modes. If you've ever played an imported European game, you know how frustrating it is to not be able to see the bottom of the screen. The switch comes with installation instructions and costs a mere \$15.95. 3667 Lalani Way, Sarasota, FL 34232. 913-378-5477. RS #214.



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500 Reasons To Buy An Amiga[®] 3000 Before April 30th



A check for five hundred bucks.
That's what you can get direct from Commodore when you buy an Amiga[®] 3000-25/50, or 3000-25/100 before April 30th. Or, you can even use your \$500 immediately right in the store toward the purchase of your Amiga.

Amiga 3000 series computers set the standard for multimedia platforms, with true 32-bit architecture for demanding video and graphics applications. The A3000-25/100 features a 100M hard drive and 5M RAM.



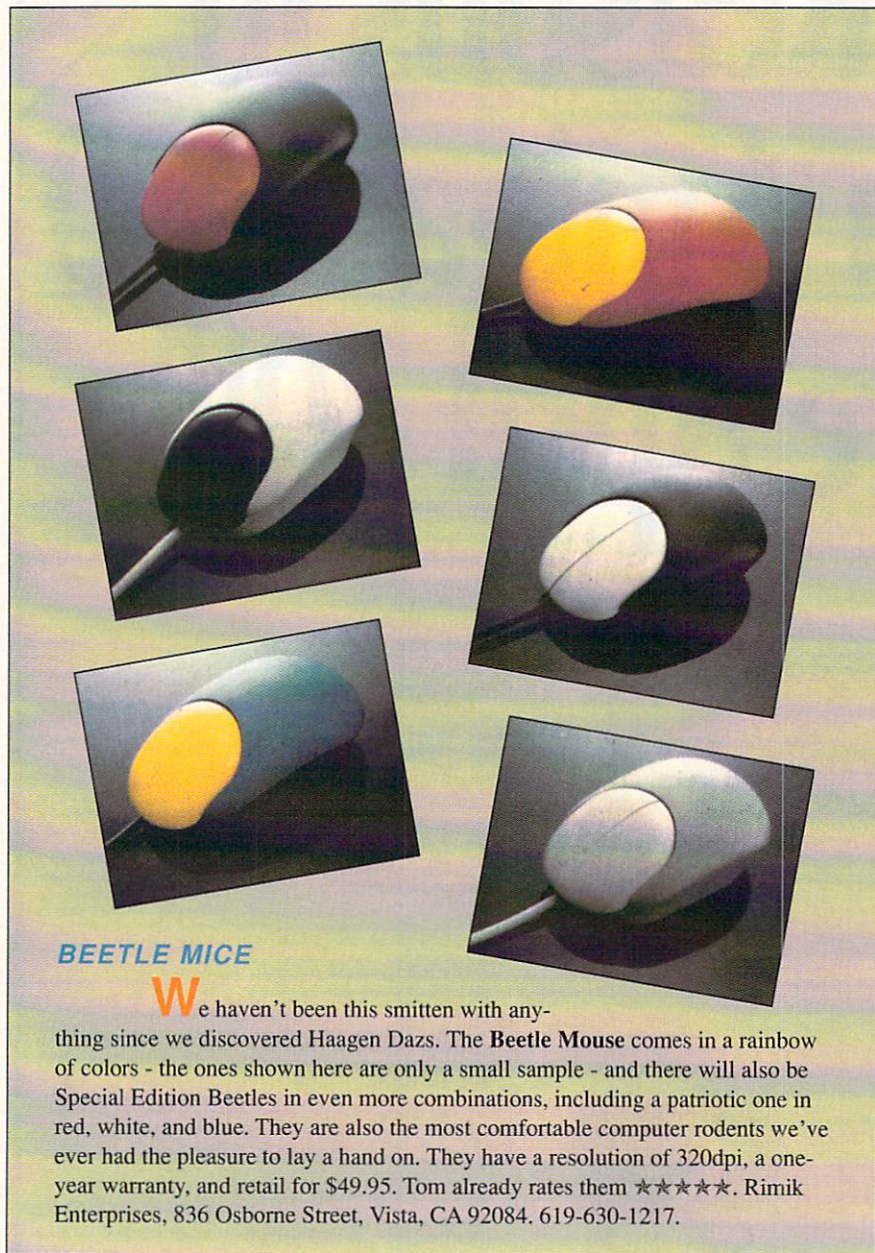
The A3000-25/50 has a 50M hard drive and 2M RAM.

All Amiga 3000's feature four-voice, two-channel sound, thousands of displayable colors, AmigaVision[™] (which lets you control graphics and video simultaneously), on-site service* and convenient leasing terms.

For more information, call 1-800-66-AMIGA. Or see your participating authorized Commodore-Amiga dealer before April 30th. (Terms may vary in Canada. Call 1-800-661-AMIGA.)

Commodore
AMIGA

NEW PRODUCTS



BEETLE MICE

We haven't been this smitten with anything since we discovered Haagen Dazs. The **Beetle Mouse** comes in a rainbow of colors - the ones shown here are only a small sample - and there will also be Special Edition Beetles in even more combinations, including a patriotic one in red, white, and blue. They are also the most comfortable computer rodents we've ever had the pleasure to lay a hand on. They have a resolution of 320dpi, a one-year warranty, and retail for \$49.95. Tom already rates them ★★★★★. Rimik Enterprises, 836 Osborne Street, Vista, CA 92084. 619-630-1217.

SCREAMER

You will almost be able to feel your cheeks pull back from your face when you plug **GVP's G-Force 030** into your Amiga. The board is a combination SCSI controller, memory expander, and 50MHz (that's right - 50) 68030 accelerator, all on one card. It comes standard with 4 megs of 60ns 32-bit RAM installed and is expandable to 16 MB. There's also an optional kit for installing a hard drive directly on the board, making it an all-in-one solution for storage, memory, and speed. Software is included to kick the thing back into standard 68000 mode if you ever need to. List price of the board is \$1699. 600 Clark Avenue, King of Prussia, PA 19406. 215-337-8770. RS #204.

RECONCILING GRAPHICS

We have been hearing great things about **Digital Micronics' Resolver** graphics coprocessor. The board uses the Texas Instruments TMS34010 graphics processor to speed up displays for applications such as animation, raytracing, image processing, and so on. The *Resolver* runs at a blistering 60MHz and can display up to 60 frames per second, making real-time animation a reality. What it comes down to is that this thing is so fast you'll be able to render and animate virtually on the fly. What we'll see come out of this will be extraordinary. DMI has established what they call SAGE, the Standard Amiga Graphics Environment, which has already been adopted by a number of other companies. Software that adheres to this standard can run as if the hardware were transparent; getting output through to the video display is no longer an issue. The *Resolver* can handle displays up to 1280 x 1024 in non-interlace, 2048 x 2048 interlaced, and NTSC RGB analog 2048 x 525. It is also possible to produce PAL and HDTV (High-Definition TV) via programmable resolution output. (Our minds are completely boggled.) The *Resolver* displays 8-bit color graphics (256 colors) chosen from a palette of 16 million and can also have an overlay of up to 16 colors. Incidentally, the board is

SCANNER-WARE

Related to the release of *Professional Page 3.0* is a new interface from *Metadigm*. **MetaScan** provides a way to bring a scanned image directly from an Epson ES-300C (or compatible) scanner into a *ProPage* document. One of the biggest nightmares in scanning is getting the image scaled correctly, but **MetaScan**

completely automates the process. All you have to do is create a box in *ProPage*, invoke the *MetaScan* Function Genie, and the image is automatically scaled to precisely fit the box. *MetaScan* also supports Black Belt's image processing series: *Image-master*, *Imagemaster F/c*, and *Image Professional*. Price hadn't been set at presstime. 3700 Campus Drive, Suite 200, Newport Beach, CA 92660. 714-253-2828. RS #202.

COMMODORE'S CDTV



PHILIP'S CD-I



CAN

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be expanded into a full 1mb Amiga 500® computer, with a selection of over 2500 titles.

CAN'T

CAN

become a home video editing system.

CAN'T

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be connected to a parallel printer for hard copy output.

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utilize a modem and existing software and become a home communications center.

CAN'T

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become a home music composition center through the built-in MIDI (in/out) interface.

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utilize a 64k and 256k personal memory card.

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offer your customers a 24-hour, 365 day toll-free "help" line for questions, plus a free pick-up/delivery replacement service for warranted repairs.

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give free with purchase: The New Groliers Electronic Encyclopedia and a hot new game called Lemmings (\$449.00 value)

CAN'T



CDTV is the unparalleled choice in interactive multimedia players. As you can see, no other multimedia player is as expandable. Or as flexible. Or as saleable. Or offers as large a selection of titles. And with a time-proven Amiga 500 computer at its heart, it benefits from technology enjoyed by 3 million people worldwide. CDTV multimedia can make your customers happy today — and grow with them tomorrow.

1-800-66 AMIGA

Comparison based on CDTV model 1000 and CD-I model 910 as of 12/2/91.

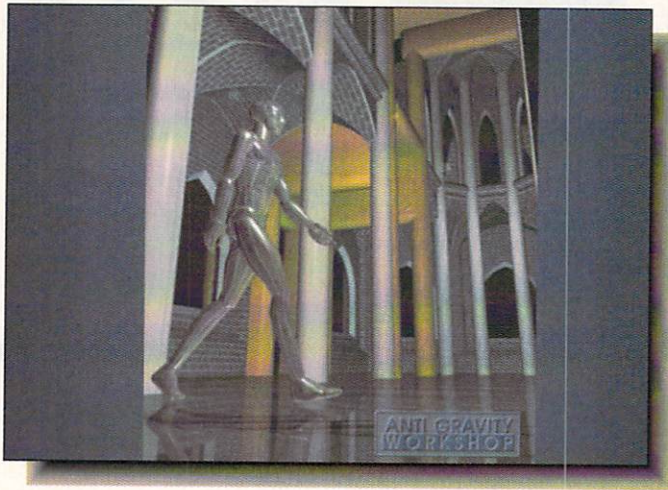
Commodore, the Commodore logo and CDTV are registered trademarks of Commodore Electronics Ltd. Amiga is a registered trademark of Commodore-Amiga, Inc. CD-I is a registered trademark of the Philips Consumer Electronics Company.

Circle #179 on the Reader Service Card

NEW PRODUCTS



You can make *CycleMan* go wherever you want and do your bidding. He's a new commercial object-group for *Imagine*.



fully compatible with Unix. It comes in three configurations with varying amounts of memory. The DMI-010-A (\$1295) comes with 1 meg of video display RAM, 1 meg of RAM for the overlay, and 2 megabytes of DRAM. The DMI-010-B (\$1749) ups the display memory to 2 MB, while the DMI-010-C (\$2195) has 4 MB for video display and 4 MB for program memory. All the models come with a *Resolver Workbench*, a paint program, and the TMS340 Graphics Library.

Digital Micronics is also shipping their *Floptical Disk Drive*. The \$649 device is compatible with any standard Amiga SCSI interface and uses disks that look like 3.5" floppies, but certainly don't act like them. Using a combination of optical track information and magnetic storage, each disk has a capacity of 20 megabytes. The disks themselves cost in the \$20 neighborhood, making flopticals an exceptional buy. DMI also tells us that several manufacturers are working on 40-meg flopticals and that their drive will work with those as well, with no need for hardware or software modifications. For more information on either of these products, contact Digital Micronics, Inc. at 5674 El Camino Real, Suite P, Carlsbad, CA 92008. 619-431-8301. RS #203.

CYCLING PERSON

A group of artists and animators dubbed the *Anti Gravity Workshop* (another all-time great company name) has released *CycleMan*, which is basically a

human-shaped object group in *Imagine* format along with pre-rolled motion paths to make him walk and run. Once rendered, *CycleMan* is as good as anything you've seen from Robert Abel & Associates, Cranston/Csuri, or Pacific Digital Images. Like all things of this nature, a picture is worth a million words (it used to be 1,000, but animation adds a high degree of inflation). The image shown here is only a taste of what it's like to see it moving. *CycleMan* sells for \$59.95 and is available directly from Anti Gravity Workshop, 456 Lincoln Blvd., Santa Monica, CA 90402. 310-393-9747. RS #207.

A NEW COMBINATION

In the past, it was impossible to install ICD's *AdSpeed* accelerator and *AdIDE* hard drive controller at the same time, but now they've sensibly combined the two products into one. The *AdSpeed/IDE*, as it's called, fits into your 68000 socket and gives you a two-fold speed increase (14MHz), along with a spot for an IDE-style hard drive. There are three models: the *AdSpeed/IDE-40* is for the A2000 and sells for \$359.96; the *AdSpeed/IDE-40 Kit* is for installing a 2.5-inch IDE drive inside an A500 and costs \$369.95; the *AdSpeed/IDE-40 Kit* is for replacing the floppy drive in an A500 with a hard drive and retails for \$389.96. ICD also tells us that they currently have the *Novia/Speed* drives available in four sizes: 20, 40, 60, and 80 megabytes. The *Prima*

drives come in 52, 105, 120, and 240 megabyte models. Hard drive prices have been fluctuating lately and it's uncertain whether they will be settling down any time soon, so contact ICD for current prices. They're at 1220 Rock Street, Rockford, IL 61101. 815-968-2228. RS #205.

TEXT ENGINE

The makers of the *Migraph Hand Scanner* are releasing the first OCR software we've seen for the Amiga. OCR stands for 'Optical Character Recognition' and it is method of getting text from a printed page into a computer without having to type it in by hand. The process goes like this: a page is scanned, which brings in into the computer as a bitmap, and the OCR software then processes the bitmap, translating the outlines of the characters into ASCII characters. On the surface, it sounds like a simple thing to do, but in reality, it is enormously complex. The software has to be trained to recognize the different characters, different fonts, and different point sizes. And then the problem of imperfect characters and variations adds another level of complexity. Teaching the OCR to recognize characters is referred to as 'training' and the Omnifont engine the *Migraph OCR* uses automates the process as much as possible with predefined definitions for more than 20 of the most commonly used typefaces. It recognizes both proportional and monospaced fonts from typeset, typewritten, laser printed, and NLQ dot-matrix output in point sizes from 10-18 (it will also work with smaller sizes if they're scanned at 400 dpi). You can also train it yourself manually for characters and fonts it doesn't recognize. The software has a preview mode with variable magnification levels and a function that allows you to box in irregularly shaped areas of text. It even supports foreign language characters for German, French, and Dutch. In order to make the software more intelligent it uses lexicons, which *Migraph* describes as linguistic databases used to analyze the content of the text, thus allowing it to make better decisions about characters it doesn't immediately recognize. The *Migraph OCR* directly supports, of course, the *Migraph Hand Scanner*, along with the Alpha Data

NEW PRODUCTS

and Golden Image scanners. It can also import other scanned IFF and TIFF files. Retail price is \$299. 32700 Pacific Highway South, Suite 12, Federal Way, WA 98003. 206-838-4677. RS #206.

SONY VIDEO DRIVE

Sony is once again at the forefront of the video revolution. The latest from them is their **Vdeck Hi8** computer video drive. According to Sony, it's the first 8mm video cassette recorder designed from the start as a computer peripheral. The **CVD-1000** uses Sony's platform-independent VISCA protocol for control, which means that any software that incorporates the necessary codes can have full control over every aspect of the deck's operation. The **CVD-1000** is +/- 0 frame-accurate and has all sorts of facilities for adding time-codes, index marks, and even naming specific video segments. Two audio tracks are supported, AFM stereo and a separately recordable PCM digital track. By default, the same audio is recorded onto both tracks, but the PCM track can also be recorded independently so you can add narration or other sound after the fact without disturbing the AFM track. One of the most interesting things about the deck, though, is that it eliminates the need for an A/V switcher; the **CVD-1000** supports three video and two audio sources. If ever there was a video deck born for making Amiga video, this is it. The 5.25-inch Vdeck drive retails for \$2295. Sony Corporation, Sony Drive, Park Ridge, NJ 07656. 201-930-6432. RS #217.

TOWERING 500

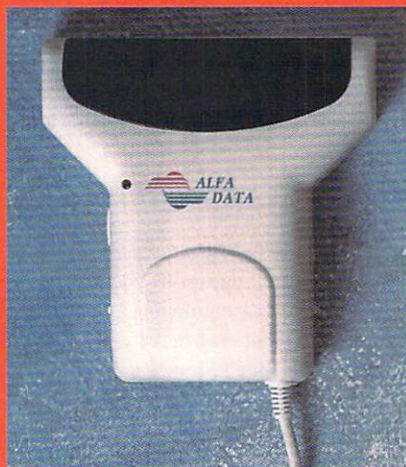
Just in the nick of time to give us an alternative to buying an A2000 at Commodore's recently raised price, *Inovatrionics* has announced their **HiQ A500 Tower** kit. You supply an A500 to provide the necessary parts and for \$699 the **HiQ** provides a place to put them and turn them into something the A2000 never dreamed it could be. The **HiQ** has a 250-watt power supply, space for 10 (!) half-height drives of whatever flavor you prefer, and seven expansion slots. The slots break down into three 100-pin standard Amiga slots, one 86-

pin accelerator slot, two PC-XT slots, and one video slot that can accommodate a flicker-fixer, 24-bit display card, or even a Video Toaster. The **HiQ** comes with a detached case for the A500's keyboard (it also occurs to us that you could also use one of Co-Tronics' **KB-Talker** adapters and plug in an AT keyboard). There are also

spots for two internal fans to keep everything cool. If you don't mind getting up to your elbows in computer guts (no soldering), it sounds like this could be a perfect solution for building your own killer Amiga workstation at a relatively low cost. 8499 Greenville Avenue, Suite 209B, Dallas, TX 75231. 214-340-4991. RS #209.



Crystal track ball w/ LED's



hand scanner

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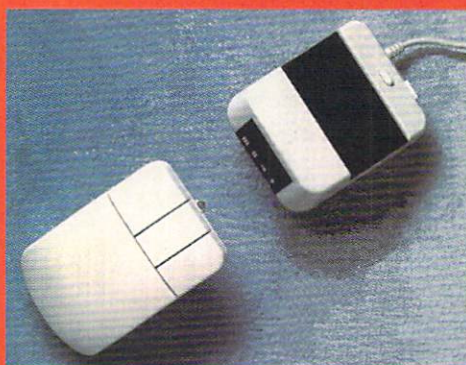
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opto-mechanical mouse



floppy disk drive

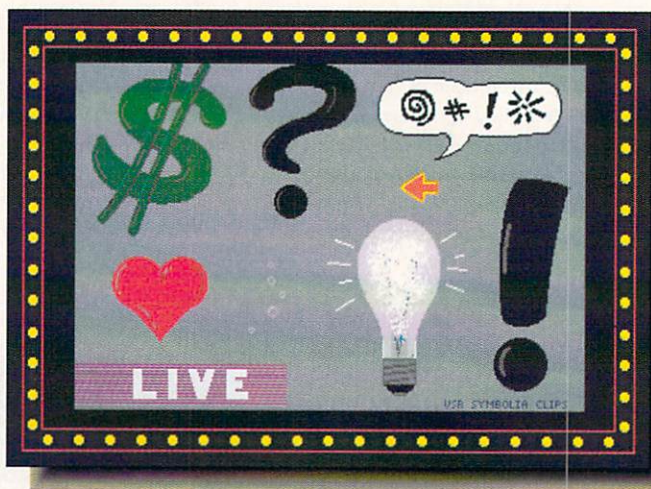


infra-red cordless mouse

NEW PRODUCTS



The *Video Spice Rack* can add a little seasoning to your otherwise boring home video productions.



NO COOKING REQUIRED

If you've been jealous of all those nifty wipes and transitions you've seen done with the Toaster, there's a new shareware product that may make you a little less green. The **Video Spice Rack** is a collection of screens that, when used with a genlock and VCR or camcorder, can give you some nifty effects. The screens fall into three categories: masks, animated wipes, and clip art. The masks are of such things as a keyhole, binoculars, camera viewfinder, crosshair, and so on. They're done with the appropriate areas in Color 0, so you could, for example, have a video eye peering through the keyhole. The wipes are cleverly done and two of our favorites are Burnanza (flames burning through the screen) and ooze running down the screen. The clip art includes things to overlay on your video, such as exclamation points, light bulbs, and speech balloons. The whole collection looks highly useful for adding some zip to your home videos. The suggested shareware donation is a mere \$5 and there are more disks in the works. You can get the *Video Spice Rack* directly from the author: James Rudy, 27 Rife Drive, Mechanicsburg, PA 17055. RS #212.

IMAGINE THAT

Probably the biggest complaint *Imagine* users have about the rendering program is its documentation. Steven Worley, an Amiga artist and an undisputed mas-

ter of *Imagine*, has written a book that is what the manual should have been in the first place. **Understanding Imagine 2.0** has over 200 pages of clearly written, understandable explanations that will take you through the intricacies of every aspect of the program. Worley takes the laudable approach of assuming the reader knows nothing about *Imagine* and works up from there. The book itself is bound so it will lay flat beside your computer, has reference appendices, an index, and it comes with a disk of examples. Cover price is \$29.95 and *Imagine 2.0* users will find it indispensable. *Apex Software Publishing*, 405 El Camino Real, Suite 121, Menlo Park, CA 94025. 415-322-7532. RS #210.

SUPER SUPRA

We are longtime fans of *Supra's* modems; they're high-quality, they're reliable, they get the job done without giving us any grief. In fact, we take them for granted, which is a high compliment for a modem. The only thing they didn't have was FAX capability. Now they do and we can't think of anything else we'd like a modem to do, except maybe pour us a cup of coffee and massage our poor, tired fingers. The three new modems are capable of both sending and receiving faxes and operate at varying speeds: the **SupraFAX-Modem Plus**, 9600 fax/2400 data, \$199.95; the **SupraFAXModem V.32**, 9600 FAX/9600 data, \$299.95; and the **SupraFAXModem V.32bis**, 14400

FAX/14400 data, \$399.95. All three are compatible with standard Group 3 fax machines and Class 1 & 2 FAX commands. 7101 Supra Drive SW, Albany, OR 97321. 503-967-2410. (Okay, in this case we suppose it's mandatory to give you their FAX number, too: 503-967-2401.) RS #211.

SPEAKING OF SPEAKERS

Our Amigas produce some of the best sounds ever heard from a computer, but unless you have it hooked up to a stereo, you can't hear just how good it really is. If there's some reason (like not enough inputs) you can't run the sound through your stereo, *Bose* has another option for you. They've just come out with a new model called the **Bose RoomMate Computer Monitor**. Bose makes some of the finest speakers ever heard and these promise to be no exception. They're definitely pricy at \$339 a pair, but if you've ever heard Bose speakers, you know they're worth it. They can accept any input from headphone or audio-out jack and an assortment of adapters is included. The platinum-colored speakers measure 6"x6"x9" and Bose has a variety of mounting hardware optionally available. The Bose Corporation, The Mountain, Framingham, MA 01701. 800-444-BOSE. RS #215.

WRITER'S CATALOG

We are not going to mention any names, but much of the documentation, many of the press releases, and far too much other written material that passes through the *.info* offices is appalling. The grammar is atrocious, the punctuation inappropriate, and the spelling incomprehensible. And that doesn't begin to get into the content. We continually rail at the decline of the English language and now find that we have an ally in its preservation. *The Communications Workshop* is offering **The Writer's Catalog**, a free listing of scores of booklets, reports, posters, tapes, and other aids to producing good writing. Just a few of the titles we'd most like people in the computer industry to read and use are *20 Questions to Ask Before Writing a User Manual* (\$8), *Achieving Conversational Tone: How to Write Plain English* (\$15),

NEW PRODUCTS

300 *Ridiculous Redundancies and Acceptable Substitutes* (\$12.50), *Punctuation and Grammar in the DP Environment* (\$6), and *How to Write a Dynamic Press Release* (\$12). Please, everyone, before you use your wordprocessor again, write for this catalog and then use it. It can be yours just by sending a self-addressed stamped envelope to The Communication Workshop, 217 East 85th Street, New York, NY 10028. 516-767-9590. RS #216.

SOFTCOVER HARDCOPY

Jay Gross, author of *The Amiga Desktop Video Workbook* among other things, has a new book called **The Amiga Multimedia Workbook**. The 200-page volume contains information on such topics as planning (the single most important element for any multimedia presentation), animation, production techniques, sound, CD-ROM, and even interactive kiosk applications. It also covers porting non-Amiga resources and laser lightshows. Cover price is \$34.95 and the book is from *Push*Button Publishing*, PO Box 2521, West Columbia, SC 29171. 803-957-1106. RS #213.

NEW CSA WEAPONRY

The latest in CSA's Amiga arsenal are the **Rocket Launcher** and **38 Special**. We figure it won't be long before they go ahead and nuke something. The *Rocket Launcher* is only for those people who have one of Commodore's A2630 25MHz '030 accelerators and it's a nifty solution for speeding the thing up. All you have to do is remove the original processor and co-processor chips from the A2630, plug the 6-layer *Rocket Launcher* board into the A2630's 68030 socket, and put everything back together. It's as simple as that; you don't need any software, there's no configuration, no nothing. Just plug and go at 50MHz - double the original speed. The *Rocket Launcher* retails for \$699.

The *38 Special* is a specialized edition of CSA's *Mega-Midget Racer* that replaces the 68000 processor in an A500 or A2000 with a 68030 CPU and 68882 math co-processor. The '030 is actually a 50MHz unit that has been timed back to 38MHz for

improved reliability. The 68882 still operates at the full 50MHz. The *38 Special* also sports a DRAM controller rated at 40MHz and supports 32-bit wide static RAM. It's optionally available with 4 or 8 megs of 32-bit DRAM with space for another 512K of SRAM. Just to give you some idea of how fast the thing is, CSA states that dropping one of these things into a stock A500 lets it

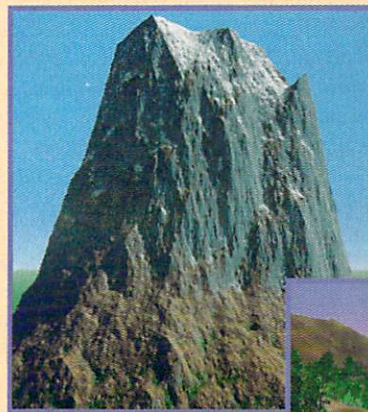
outrun a standard A3000 by 40%. The *38 Special* with 4 megs installed retails for \$1250 and with 8 megs for \$1595. The 512K Static RAM upgrade is \$200. 7564 Trade Street, San Diego, CA 92121. 619-566-3911. RS #208.

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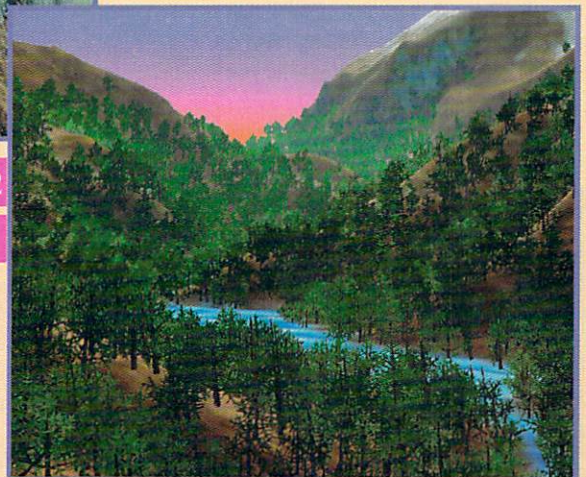
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Audio Gallery

by Tom Malcom

When I was about eight years old, I discovered, much to my amazement, that not everyone in the world spoke the same language I did. (Growing up in a small Midwestern town in the Fifties was nearly as insular as being on the moon.) It was a mindblowing revelation. Then in some murky leap of childhood logic, I came to believe translation was just a matter of changing the letters of the English word into those of the other language. I painstakingly looked up each Greek letter in our encyclopedia and covered page after page of notebook paper with my 'translations'. I soon after learned the error of my understanding, but the experience sparked a love of languages, both foreign and my own, that has never left me. I took all the Latin and Spanish courses my high school had to offer and then went on to major in English and Russian in college. I took classes in German and Italian, and then delved into more exotic languages like Arabic, Hebrew, and even Finnish. I only wish I'd had something like Fairbrothers' *Audio Gallery* series of talking dictionaries then. It would have made my life easier and my pronunciation better.

Audio Gallery is not a complete course in foreign language, rather it is a series of graphic-based talking dictionaries. It won't teach you grammar but it will teach you how to say things properly. I always hated the Language Lab. Listening to tapes to practice pronunciation was tedious, boring, and required endless rewinding to catch that one word I couldn't say correctly. The best thing about *Audio Gallery* is that it doesn't require any rewinding. You can click on a word as many times as you want and unlike a human teacher, it never gets tired of saying a word over and over until you get it right. There are versions



Visiting a Japanese supermarket. Wakarimasu?

available for Chinese, Japanese, Spanish, French, and German, with others nearing completion for Russian, Korean, Italian, English, and even Signing.

Each *Audio Gallery* is divided up into sections covering such things as geography, home, restaurants, body parts, clothing, travel, food, and so on. If you want to learn how to say "I find Sartre's existential philosophy far more interesting than dialectical materialism," you're out of luck. But if you need to know how to ask for the salt in a restaurant, *Audio Gallery* will give you the word and teach you to say it properly.

At the heart of *Audio Gallery* is crystal-clear digitized speech. Fairbrothers has employed native speakers with perfect diction and digitized each word with precision. The main screen contains a list of the available sections; clicking on one of them calls up a scene showing the individual items. The items themselves are numbered and clicking on a number calls up the spoken word. It's simple, intuitive, and far more memorable than merely seeing the written translation. A box at the bottom of the screen shows the written word and, if it's turned on, the translation as well. You can also have the program go through the scene automatically number by number, saying each word in turn. There are other menu selections for screens containing basic phrases like "Good Morning", "My Name Is...", and the all-important "I Don't Understand". As you learn the words, you can put the program into quiz mode to test your knowledge.

As much as I like the system, there are some things I'd like to see done differently and other things I'd like to see improved. There are online dictionaries going each direction, but they're text only; I'd like to be able to click on a word and hear the pronunciation. The dictionaries are also in sore need of some method of scrolling besides a menu selection. They should have cursor-key support at a minimum. While I can't come up with any better system, having to click on the numbers is difficult now and then; they're sometimes hard to find in the graphic. The graphics themselves are functional and recognizable for the most part, but could be much more artfully drawn. There are also too many objects in the scenes which don't have associated words. Digressing a little, if ever something cried out to be ported to CDTV, *Audio Gallery* is it. The packages contain at least seven disks and though they're hard drive installable, the amounts of storage on a CD, the quality and quantity of CD audio, and the hypermedia capabilities would let them expand into full-blown language courses.

If you're just starting to learn a foreign language, or only thinking about it, the *Audio Gallery* series is indispensable as a learning tool. It won't replace a teacher and coursework, but it can certainly make learning faster and more interesting. On the other hand, if you're planning a trip abroad, a good phrasebook and the appropriate *Audio Gallery* title will give you everything you need to survive in the language. I highly recommend the whole series.

Audio Gallery



European Languages \$89.95
Oriental Languages \$129.95

Fairbrothers

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Arlington, VA 22206
703-820-1954



NEWS & VIEWS

Commodore Financial

For the quarter ending December 31, 1991, Commodore reported earnings of 40.1 million on sales of \$371.6 million, which translates to \$1.18 per share. Compared to the same quarter from the previous year, \$36.5 million on sales of \$384.1 million, earnings were up slightly. The earnings-per-share figure of \$1.18 were figured on, according to the report we have, 'diluted average outstanding shares of 34 million vs. 32.4 million in the prior year.' What accounted for the increase in the number of shares is not stated. The report also says that net sales were down by 3% and gross profit down by 11%, 'due entirely to the adverse impact of foreign exchange rates.' Exchange rates among which currencies is also not stated. The 11% drop was more than compensated for by reducing operating expenses by 18% from the previous year. The company's cash position remained about the same as for the previous year, due to the repayment of a 100 million Deutsche Mark debenture issue. Sales of Amigas were up by a whopping 21%, while the C64's sales showed only 'nominal growth.' Commodore discontinued their low-end MS-DOS line, though that was offset by sales from CDTV and the Professional PC lines.

Commodore Rebate

Following in the wake of their price hike on the A2000, Commodore has announced a \$500 rebate on the purchase of an A3000-25/50 or A3000-25/100. Buyers can get the rebate either directly from Commodore or apply it immediately in the store toward the purchase. Suggested retail prices for the machines are \$4146 for the 25/100 and \$3498 for the 25/50.

CDTV in Motion

One of the first CDTV titles to use the CDXL quarter-screen 10 fps motion picture format is *NASA...The 25th Year*. The disc from Troika Multimedia is a 50-minute movie adapted from a NASA film and covers the high spots of the first 25 years of space flight. It's divided up into 12 indexed segments so you can jump easily from one

UNIX Price Reduction

Commodore has announced a price reduction effective with version 2.1 of Amiga UNIX System 5 release 4. With this release, UNIX for the Amiga becomes available as a stand-alone, user-installable software bundle for existing Amigas. UNIX requires an Amiga with at least a 100 meg hard drive, five megs of RAM, and an accelerator with MMU. Included in the bundle are user manuals, UNIX on magnetic tape, and installation disks. A two-user license is \$995, while an unlimited licence runs just \$1195. The Amiga UNIX computer has also undergone a price reduction. The A3000UX with nine megs of RAM, ULowell 8-bit color card, Ethernet board, 200 meg hard drive, and user's choice of either an A1950 hi-res monitor or A3070 tape drive, is \$4998, about \$3500 off the total list price of all the components. Not a bad deal.

to another. There are also text sections and additional still images. 3900 Fairfax Drive, Suite 404, Arlington, VA 22203. 703-841-5160.

CBC Amiga

Commodore tells us that the Canadian Broadcasting Corporation is installing an Amiga-based building directory in their new Canadian Broadcasting Center building in Toronto. The building itself covers 1.7 million square feet (that's 3 1/2 acres) on 14 floors, so it will need a good directory system. 40 Amiga 3000s are to be located in kiosks throughout the building and then networked together via an Ethernet AmigaLAN. The bilingual software is being done with *AmigaVision* and an array of other Amiga titles. Sounds like a terrific application.

New File Format

ASDG has once again seen a problem and solved it. The publisher of *Art Department Professional 2.1* has defined a

new IFF form called SPLT that makes it an easy matter to transfer large files between Amiga and IBM formats. One of the major oversights of the Amiga operating system is that it has no function for splitting large files into pieces that will fit on floppies and then reassembling them in the computer. That's precisely what the SPLT format accomplishes. ASDG is providing programs that perform the appropriate split and join functions for both Amiga and MS-DOS/Windows. The programs are included with ASDG's latest *ADPro* release and the file format has been registered with Commodore and is available for use by other developers. Thanks again to Perry Kivolowitz and the rest of ASDG for fixing something that needed fixing and doing it with a minimum of hoopla.

Distribution & Agreement

Dr. T's has announced a new agreement with Soft-Kat for distribution of their line of music products, including their multimedia extravaganza, *Composer Quest*.

Electronic Arts, never a company to sit around idly, has announced that they will be distributing Broderbund's disk-based product line in Europe. Broderbund isn't currently releasing any new Amiga titles, but the push into Europe, where the Amiga is the #2 platform, will probably put them back in the American Amiga market before long. As a corollary, EA will also be porting Broderbund's *Where in Time is Carmen Sandiego* to the Sega Genesis. This version will be playable in five languages and we find it interesting that it's being ported to the Genesis rather than the SuperNES. Finally, EA has added Millennium Software to their stable of affiliated labels. Millennium is a British entertainment publisher that evolved out of Logotron. They are responsible for such titles as *James Pond*, *Kid Gloves*, and *Robin Hood*. Unfortunately, the agreement doesn't cover the older titles and EA won't be releasing them here (perhaps a flood of letters will convince them to at least bring over *James Pond*, one of the better arcade games of the past couple of years). The first two titles to be released under the new agreement will be *Strike 2* and *Global Effect*.

.info UPDATE

Change

✓ Microillusions has been acquired by a newly-formed company called HollyWare (you have to love the name). HollyWare will continue supporting all of Microillusions' product line and continue to use the Microillusions name as a label under the broader HollyWare banner. A revised version of *Photon Paint* is currently in the works, as well as updates to several other Microillusions products. HollyWare will be primarily concerned with entertainment titles. The new HollyWare/Microillusions address is 13464 Washington Blvd., Marina Del Rey, CA 90291. 310-822-9200 voice, 310-930-0457 fax.

Versions and Availability

✓ New Horizons has concluded an agreement with Austin-based dealer The Station to produce a CD-ROM containing New Horizons' *ProWrite 3.2*, *ProFonts 1*, *DesignWorks 1.0*, and *Flow 3.0*. The system is aimed at CDTV buyers who have upgraded their machines with a keyboard, mouse, etc. (The Station has put together a \$1995 turnkey system they dub *Odyssey*, containing the CDTV unit, monitor, modem, keyboard, mouse, external drive, and the New Horizons software CD.) It's nice to see the more productive side of CDTV supported.

✓ SoftWood has fixed a few bugs, taken care of a couple of inconveniences, and released *Final Copy 1.2*. The new version of the graphic wordprocessor is being shipped automatically to all registered owners. PO Box 50178, Phoenix, AZ 85076. 602-431-1461.

✓ Of course by now you know that Oxxi has acquired all rights to the Amiga versions of *Superbase 4*, *Superbase Profes-*

sional, *Superbase Personal*, and *Superplan* from the Software Publishing Company. SPC bought Precision, the original developer of *Superbase*, last November and was much nail-biting and worry about how well a predominantly PC company would support Amiga products. But now we don't have to worry about that any more, as Oxxi is fully supporting the product line and has set up a 900 number (900-776-6994) for technical support (\$1 for the first minute, \$2 for each additional). Written questions can be faxed to them at 310-427-0971 or mailed to the Oxxi offices. Oxxi's acquisition of the *Superbase* line coincides particularly well with the release of their Novell Netware-compatible *Amiga Client Software*, for which they are preparing a multi-user version of *Superbase*.

In other Oxxi news, they have renamed *Aegis SoundMaster* digitizer as *Aegis SoundMagic*. It turns out there was a PC sound board with a similar name. The *Aegis SoundMagic* is now bundled with Oxxi's *AudioMaster IV* software and in a generous move, if you purchased *SoundMagic* after October 1, 1991, you can send in a copy of your sales receipt along with the registration card and get a free update. Owners of *AudioMaster III* can upgrade to the new version for \$29.95, those with earlier versions for \$34.95.

Finally, like a good bit of Southern California, Oxxi's area code has been changed to 310. The full data is: Oxxi, Inc., PO Box 90309, Long Beach, CA 90809. 310-427-1227 voice, 310-427-0971 fax.

✓ Since the preview of *VistaPro 2.0* in the February issue, we've learned of a few changes to the landscape generator. Two new types of trees, palm and cactus, have been added, bringing the total to four. IFF images can be mapped onto the landscape, which raises some very interesting possibilities, and *VistaPro* can now

render four different sizes/colors of rectangular buildings (!) so you can build whole towns. 2.0 supports image sizes from 80 x 50 pixels up to 2000 x 1500 pixels and, best of all, there's now an undo function for lakes and rivers. There's still no cloud function, but it is now possible to load in IFF24 images to use for backgrounds or foregrounds. We'd still like to have a direct cloud feature, but we'll settle for this in the meantime. As if all these new features weren't enough, VRL has lowered the price to \$99.95! 2341 Ganador Court, San Luis Obispo, CA 93104. 805-545-8515.

✓ Activa International had hardly shoved *Real3D 1.4* out the door when they did another update. *Real3D 1.4.1* fixes a bug or two and adds a few new features. An antialiasing function has been added, 24-bit IFF texture maps are supported, and morphing/keyframing has been included. There are some limitations to the latter; the primitives must contain the same number of points. Thus, you can morph ellipsoids into spheres, but not cubes into spheres. A new NOREFLECT gadget has been added so you can render quick prototypes of scenes; if a scene contains many reflective surfaces, turning of the reflections can cut rendering time by a factor of ten. *Real3D* can now import *Professional Draw* clips and convert them to curve objects which can then be made into 3D objects. Activa has also added a *Bars & Pipes Professional* accessory (to be loaded into *B&P* as a tool), which can be used to add sound precisely where you want it in your animation. Nifty. For more information on the new features, contact Activa International at PO Box 2360, 1101 DT Amsterdam Zuidoost, The Netherlands. 31-0-20-691-19-14 voice, 31-0-20-691-54-03 fax.

✓ Centaur has released Version 4 of their *B.A.D.* disk optimizer. Besides making your hard or floppy disks work faster, it

.info UPDATE

... continued

doing, how long it thinks it's going to take, and an analysis of disk structure and information on anything corrupt it happens to find. Price is \$49.95. PO Box 4400, Redondo Beach, CA 90260.

✓ *QuickWrite*, New Horizons' entry-level wordprocessor, has been updated to version 1.1. The niftiest new feature is *QuickWrite's* ability to open itself on any AmigaDOS 2.0-declared public screen. What that means is that you could have it open on your telecommunications screen, *DPaint* screen, or any other screen that supports the standard. The 1.1 release also allows saving and loading of work environments so you don't have to set everything up from scratch, ARexx and macro support have been enhanced as well. The price remains at \$75 and registered owners of 1.0 can upgrade for \$10. PO Box 43167, Austin, TX 78745. 512-328-6650.

✓ *PageStream* is currently at version 2.2. Besides supporting Soft-Logik's new HotLinks inter-process communication standard, there is a wider selection of import modules and printer drivers, including HPGL plotters support. That means you could use *PageStream 2.2* to create and cut signs with a plotter equipped with a cutting blade. One of the most welcome enhancements, though, is a faster requester for displaying font directories. If you're like most of us, your font directory has grown completely out of control (there are things in my font directory that date back to around the time of Rameses II). Registered owners of 2.1 and 2.0 will be updated for free. Owners of previous versions can upgrade for \$100. PO Box 290070, St. Louis, MO 63129. 314-894-8608.

✓ *AmiKit*, the AmigaDOS training system from International Technologies, has been updated to version 2.0 to cover, appropriately enough, Workbench 2.04. *AmiKit 2.0* sells for \$49.95 and registered owners of the previous version can upgrade for \$19.95. PO Box 2746, National City, CA 91950. 619-477-2024.

✓ There are a couple of new versions of Inovatronics products. *Directory OPUS*, their directory management utility that's been getting rave reviews (*****, February .info), has been upgraded to version 3.41. Most of the enhancements have to do with Workbench 2.0 and among the new features are unlimited custom gadget banks, swappable mouse buttons, and *PowerPacker* support. Multiple fonts can be used in the display and if you happen to have a 3-button mouse, you can use the middle button as a hotkey. Owners of *Opus 3.22* can upgrade for \$7.50 and owners of earlier versions for \$29.95.

✓ Inovatronics' premier product, *CanDo*, has been released in version 1.6. The most significant improvement is the addition of a gameport, which means applications done with *CanDo* can now be controlled with mice, trackballs, or digital joysticks. Proportional sliders are no longer limited to just text files, but can be added to any program window. Non-text binary data is recognized, and there's also support for hex file in/out. The ARexx support has been added to and additional commands added to the script language. *CanDo's* online help has been significantly reworked, making access faster and more extensive. The cost of the upgrade depends on when you bought an earlier version and which version you have. Contact Inovatronics for details. 8499 Greenville Avenue, #209B, Dallas, TX 75231. 214-340-4991. ▼

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Circle #133 on the Reader Service Card

The .info File

by Mark R. Brown

Long-time .info readers deluge us with letters (a couple of postcards, at least...) every month asking us when we're going to bring back our two most popular defunct columns, *Magazine Index* and *Real World*. The *Magazine Index* was devoted to telling you about must-read Commodore-related articles that had appeared in other magazines, including our competitors. *Real World* discussed interesting books, newsletters, and magazines on cyberpunk science fiction, cartoons and comic books, mathematics, and other non-computer-related topics of interest to your average Amiga user (if there is such a thing).

Well, if you've been anxiously awaiting the return of these past triumphs of magazine journalism, here you are. The .info file will be a new monthly column devoted to interesting and intriguing sources of information, be they books, newsletters, catalogs, magazines, disks,

online services, videos, or what have you. I'll mostly cover the Amiga, of course, but I'll also make side trips into strange and unusual areas of knowledge. I suspect fractals, SF, comix, and TV, among others, will all sneak into this column from time to time. Basically, you're bound to find anything here that interests us.

So if you've got some favorite source of Serious Amiga Information or Zany High Weirdness that you'd like to share with other .info readers, I'd encourage you to write and tell me

about it. Better yet, send me a

sample. And if you publish, distribute, or promote an informative Amiga resource, weird catalog, or off-the-wall publication, by all means let me know. The address is: the .info file, 705 Hwy. One West, Iowa City, IA 52246.

Let's start off with a rundown of the basic Amiga information sources online, on the newsstand, and in the bookstore.

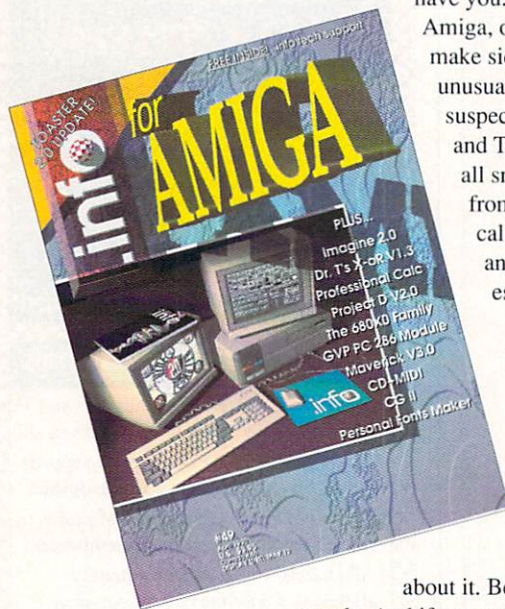
Online Services

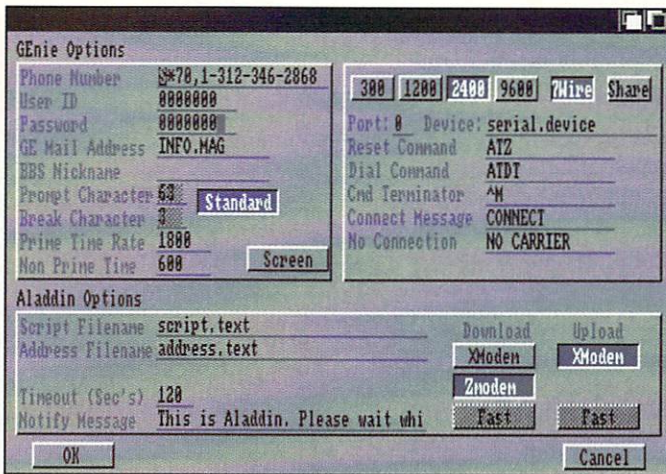
There are four major pay-for-play online services which provide copious piles of Amiga information. These are (in order of size) CompuServe, GENie, BIX, and Portal. In addition, Amiga support is available on the freely accessible InterNet and UseNet networks, as well

as a plethora of Electronic Bulletin Board Systems. (For our purposes, a 'plethora' is at least a thousand.) To access any of these services, you'll need a modem (1200 baud at least, and preferably 2400 baud), appropriate terminal software (commercial or PD), and, for the pay services, a valid charge card. It also helps if you're located in a city with SprintNet or TymNet access. For a flat monthly fee or an hourly surcharge, these two services provide local phone number connection to national information providers. Without TymNet or SprintNet access, you'll find yourself racking up horrendous long-distance phone bills in addition to your online connect charges. Unfortunately, this means that access to online services is financially prohibitive for most of those who live in really small towns or rural areas, since TymNet and SprintNet seldom have nodes in cities of less than 50,000 or so population. Any of the information numbers for the online services listed below can fill you in on whether or not your area has SprintNet or TymNet access. No matter where you live, the pay-for-play nets will be *much* cheaper to access during 'off-prime' hours, usually on weekends and holidays, or weekdays after 6 p.m.

CompuServe is the oldest online information provider. They have also historically been the most expensive, though they have recently followed the crowd by adding a flat monthly rate service. For \$7.95 a month (plus \$2/hr. off-prime connect time surcharges if you're connected through TymNet or SprintNet) you get access to basic news services, email, travel info, an encyclopedia, shopping, etc. Connection to the Amiga forums entails an additional hourly fee, which currently runs \$12.80 an hour for 1200/2400 baud access. The Amiga forums have message areas, PD software to download, and online conferences. But if Amiga information is all you want, there are definitely less expensive routes to go. The main reason for signing up here is if you are interested in all the *other* services CompuServe offers, and they are a truly awesome array. You can find everything from medical databases to professional forums to the full text of prestigious newspapers. All for a price, of course. For CompuServe sign-up information, call 800-848-8199.

GENie is unique in that it does not offer access via TymNet or SprintNet, but only through locations that contain a direct link to General Electric's own computer system. This means that you might be able to connect to GENie via a local call even if you don't have a TymNet or SprintNet node in your city. It also means GENie might be a long distance call even though *do* you have a node in town. The only way to know is to call GENie and find out where your nearest access number is. Anyway, like CompuServe, GENie also offers a basic service, at a rate of \$4.95 a month. The basic services provided are similar, and do not include access to the Amiga area. That costs an additional \$6 an hour (1200/2400 baud,





GEIE's proprietary *Aladin* terminal software for the Amiga free for the downloading.

off-prime). But the Starship*Amiga section of GEIE is a friendly place, with tons of accessible software and even more accessible personnel. GEIE is a hotbed of Amiga activity, and is staffed with knowledgeable Amiga people - Deb Christianson is the Amiga area Sysop, Peggy Herrington edits the monthly GEIE paper magazine, and Jim Meyer produces an online Amiga newsletter. If your town doesn't have a TymNet or SprintNet node and GEIE access is a local call, it is definitely the best online Amiga service for you. Call 800-638-9636 for signup info.

BIX is run by *Byte* magazine and McGraw-Hill information services, and is tuned to deliver computer information, almost exclusively. You might think that there'd be a heavy MS/DOS and Macintosh bias, and there is. With the exception that BIX is also the official developer support service for the Amiga. Therefore, there is a huge Amiga support section, including a few areas For Developers Only. BIX is available for a flat fee of \$39 per quarter, or \$156 a year, and is accessible via TymNet for a \$3/hr. surcharge (off-prime) or for an additional flat fee of \$25/month. For all of this, you get email and message access to almost all the Amiga developers, as well as most Commodore staff. There are message forums for users and developers, and online PD libraries. Commodore regularly posts OS updates to the library area. Online conferencing is also available. BIX is highly recommended for developers and technical types, though it can be quite dry for those who are into the more fun aspects of the Amiga. Call 800-227-2983 to sign on.

Portal is without doubt the best deal for Amiga users who live in an area with SprintNet access. For a flat fee of \$13.95/month (plus \$2.50/hr. SprintNet surcharge, off-peak, or a flat 30-hour-per-month SprintNet access charge of \$30) you get email services that include access

to Bitnet and InterNet mail addresses (this means universities, government agencies, and corporations - including Commodore). Portal also includes a feed of the Usenet discussion groups, including those pertaining to the Amiga. So you can hear what's hot and what's not from the movers and shakers in the Amiga community, including the CBM engineers themselves. The Amiga Zone SIG is on Portal, moved lock, stock, and barrel from the now-defunct American People/Link, along with resident Sysop and curmudgeon Harv Laser. The Amiga Zone message bases are loaded with useful info, and the PD software libraries are full of great Amiga games, utilities, ANIMs, music, and graphics, including the entire Fred Fish library. There are interesting conferences online every night. And the Amiga area is included in the flat monthly fee! It's definitely the best deal in online Amiga information,

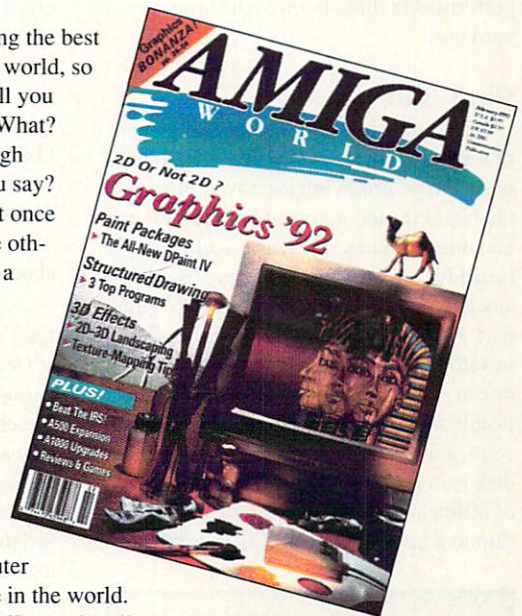
especially if you are near a SprintNet node. Call 408-973-9111 for sign-on information.

Magazines

You're already holding the best Amiga magazine in the world, so I don't really need to tell you about the others, do I? What? You can *never* get enough Amiga information, you say? Okay, if you insist... but once you're used to *.info*, the others are bound to be just a disappointment!

AmigaWorld is the 'other' major monthly Amiga magazine in the U.S. You can find it on most newsstands for \$3.95 a copy. It's slick, professional, and published by IDG, the biggest computer magazine conglomerate in the world.

Despite that fact, the staff occasionally manages to muddle through and publish a pretty good article or two. Senior Editor Lou Wallace is responsible for more than a few of the best, and a regular graphics column by noted Amiga artist Joel Hagen is also a don't-miss feature. (But you'll probably want to skip Doug Barney's editorial...) Where *.info* has dedicated sections on creativity, games, and technical support in every issue, *AmigaWorld* is more prone to printing 'special' issues, running the



continued on page 63 . . .

GVP PC286

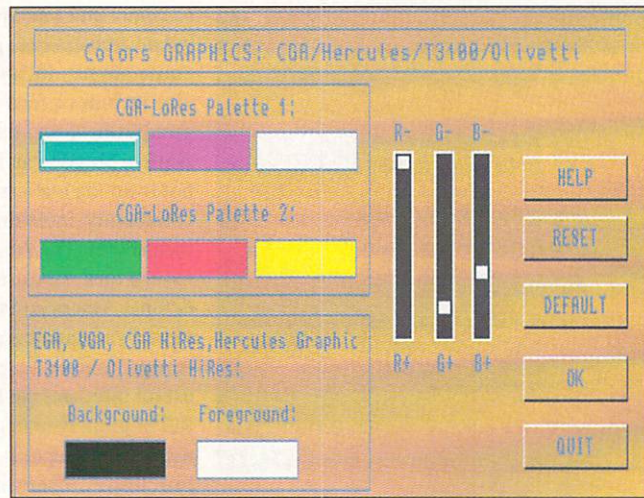
by Tom Malcom

IBM. It's a fact of life like death, taxes, and the inevitability of inertia. We hate it, we try to avoid it, but like a black hole, sooner or later we have to deal with it. If you never need IBM compatibility, count yourself among the fortunate few and enjoy your Amiga. However, if you're like most of us and find that you do need to run some IBM software, produce files in IBM format, or satisfy some masochistic urge, then Great Valley Products has a solution for you. Their *PC286* is a tiny card that plugs into the expansion slot of their Series II hard drives and provides you with an AT clone that runs as a task on your A500.

Before I go any further, you should be aware that it will *only* work with the GVP Series II A500HD8+ hard drive expansion boxes; there's nothing else you can plug it into. If you don't have one, don't buy the *PC286*. If you're shopping for a hard drive for your A500, though, it's certainly a point in favor of the GVP unit. I bought one at the same time I bought my A500 and it has performed faultlessly through some very hard use.

Plug It In

Installing the PC board is a simple matter of removing three screws from the bottom of the drive, removing the cover, plugging the board in, and reassembling. It took me about ten minutes. There is a socket on the board for an 80C287 math coprocessor, but since I didn't have one, I got to skip that part. After that, it's a simple matter of installing the software. There are two disks, one in Amiga format with the hard drive installation program, configuration software, and the PC emulator itself. The other disk is in IBM format and has a collection of utilities for video display, hard drive partitioning and assignment, file transfer, and



The screens for configuring the PC286 run on the Amiga side.

so on. The software installation is painless, though I think the manual could have been a little more detailed on some aspects of the configuration. It was at this point that I found out that the *PC286* wouldn't work under Kickstart 2.0. It worked just fine under 1.3, but all I got with 2.0 was a yellow screen and a locked up computer. A call to GVP (whose tech support is, by the way, among the best in the industry) revealed that I needed a later BIOS version. I had it within a few days and now I'm getting the dreaded 'A>' prompt under 2.0. This new BIOS version is now shipping with all units, so you won't have to worry about it.

Set It Up

Configuring the 286 is done on the Amiga side and you're given choices for screen display, what floppy drives should be used, the hard drive partition you want to use as the C: drive (other partitioning is also supported), keyboard adjustment, serial/parallel/mouse assignment, and memory configuration. The process is simple, but very confusing if you're not intimate with the ways of MS/DOS. The board supports Hercules, Olivetti, Toshiba 3100, CGA, and, most important EGA & VGA. However, EGA and VGA are supported only in monochrome, so if you're planning to run any graphics applications, you may want to consider other options. The other resolutions are adequate for most things, though I've been encountering some weird-

ness here and there with some MS/DOS programs. It's mostly a combination of ignorance on my part and the terminal stupidity of much IBM software. Most of the trouble has to do with invisible text or inappropriate color combinations. Fortunately, the GVP configuration program will let you change the default palettes easily. Amiga flicker-fixers are supported and that's really the only viable way to use VGA.

I have five megabytes of memory on my A500, and I've configured it as one megabyte for the Amiga side, with the other four given over to the PC. That leaves me enough room to manipulate files on the Amiga side and lets me have a good-sized RAM disk on the IBM side. (MS/DOS will make you pull out your hair without big RAM disk.) The memory can be divided up between extended and expanded in any combination, depending on your needs. One of the things I like best about the *PC286* is the way it handles the floppy drives. It's invisible, transparent, and I don't have to worry about it. With the click of a mouse, you can specify which Amiga drive corresponds to which DOS drive. On the DOS side, the floppies function as IBM drives; if you flip back to the Amiga side, they're Amiga drives. All without having to do a thing. Automation is wonderful. Hard drive configuration is a little more complex, and comparatively more aggravating. It's not any fault of the GVP stuff, but just the preparation involved. You can use your existing partitions and set up a large

GVP PC286

☆☆☆☆☆

\$469.00

Great Valley Products

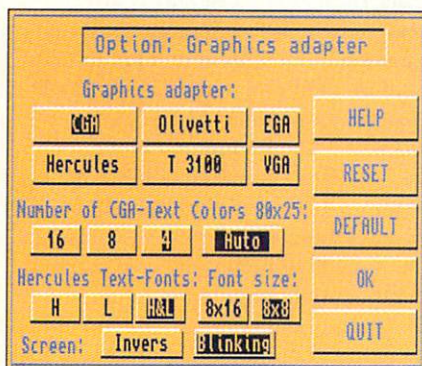
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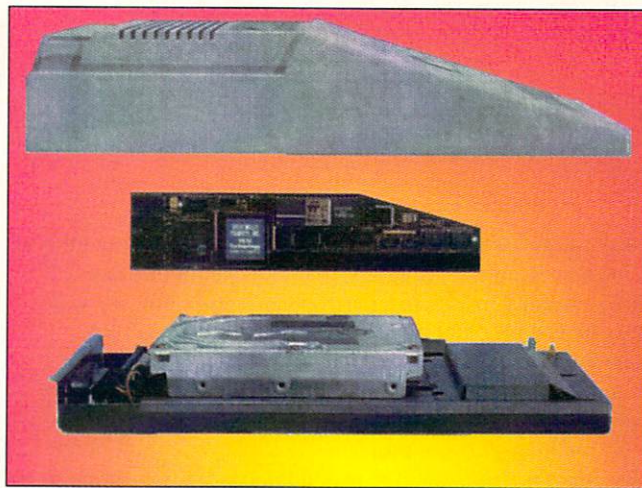
215-337-8770

AmigaDOS file to hold the MS/DOS stuff, but it's much faster and better in the long run to use dedicated MS/DOS partitions. In my case, I had to back up the entire hard drive, repartition it the way I wanted, restore everything, boot the 286, fdisk the DOS partition, format it, and then install DOS on it. It's a major pain, but it's unavoidable. Once you have DOS installed, you can tell the configuration program to boot DOS from the hard drive. And booting from the hard drive is what shocked me most about the *GVP/PC286*: once you have the thing running, doing a CTRL-ALT-DEL warm boot takes about two seconds. I only wish the Amiga booted that fast.

Not being of the MS/DOS persuasion, I don't have a collection of MS/DOS software. I did round up a few titles and downloaded some more. Most of it worked fine, though there were a few PD things that either wouldn't run at all or hung up after a couple of minutes. I'm not on an intimate enough basis with DOS to know exactly why. The *PC286* runs at 16MHz, making it very quick, particularly at the lower graphics resolutions. The packaging boasts a Norton Utilities SI of 15, though I'm told by GVP that they've actually gotten better marks. What that means is that this 286 is as fast or faster than some 386 machines! The more colors you use, of course, the slower it gets. The GVP software has a setting for automatically determining the number of colors required by the DOS program you're running. Most of the time it works very well, though as I mentioned above,



Selecting a graphics mode.



Installation is as simple as plugging the card into the GVP Series II hard drive.

occasionally there will be invisible characters. It's easy enough to fix when there's a problem. Overall, software compatibility doesn't seem to be an issue.

Chinese Puzzle Box

You can drive yourself crazy thinking about the paradoxes of emulation. Consider this: you're running a single-tasking IBM-compatible on a multitasking Amiga and you can install *Windows* multitasking-emulation software on the IBM-compatible to make it emulate the multitasking Amiga it's running on. Pardon me, I'm getting a little dizzy.

Windows is the big issue, of course, and kicking the *PC286* into protected mode lets it run just fine, though if you're planning to do much, I would strongly urge you to install an 80287 math coprocessor and have at least five megs of RAM available. *Windows* and *Windows* applications are notoriously memory-hungry.

The Heresy Factor

I feel a little like a heretic, but I find that I'm actually using the *PC286* for some things. IBM business software is, sad to say, better and often more reliable than on the Amiga. I used a DOS program to do my taxes and I've found several PD DOS utilities, especially text filtering/manipulation and financial stuff, that I like better than comparable Amiga ones. They may not be as pretty to look at, but when it comes right

down to functionality, they're hard to beat. I've also noticed that I have spent inordinate amounts of time fiddling with the *PC286* just to be fiddling. I think it's the challenge of getting the system to work, but I'm also afraid it's bringing out some deep, dark sado-masochistic streak in me. There's something fascinating about bending the thing to my will while subjecting myself to the endless frustration of MS/DOS. I'm not going to abandon my Amiga, but I like having the *PC286* there if and when I need it.

Value

At a list price of \$469, GVP's *PC286* provides a reasonably-priced way to add IBM compatibility to your system, especially if you already have one of their *Series II* hard drives. If you're planning to run high-powered, high-speed IBM software with VGA or super-VGA graphics, you'll be much better off buying yourself a cheap 386 clone. If your needs are more modest, though, the *GVP/PC286* will do the job for you reliably. The only real fault I see with the *PC286* is that it can only work with GVP's *Series II* hard drive. They've sold enough of the things to make the PC board viable, but I'd like to see them come out with a version that could work with any A500. I like the thing so much I'm going to buy it. That's the best compliment I can pay it.

The Renaissance of Amiga Games



This may not be 15th Century Italy, but there is a definite Renaissance going on in the realm of computer gaming in general and Amiga gaming in particular. There are treasures from the past, portents of the future, and some of the best games I've seen in years. I can't remember the last time I reviewed four 5-star games in a single issue. Since the beginning of 1992, what had been a trickle of Amiga games has become a flood. Where a few months ago I had to scramble to dig up enough games to fill the space, now I'm sitting here with my shelves overflowing. Next time, I promise I'm going to play catch-up with those titles I've had to neglect this time. Stay tuned, it's a great time to own an Amiga.

THE LOST TREASURES OF INFOCOM



Activision

11440 San Vicente Blvd.
Los Angeles, CA 90049
310-207-4500

Some of the finest hours I've ever frittered away in front of a computer screen were frittered with Infocom's text adventures back in the early Eighties. In fact, I've been hunting unsuccessfully for a copy of the *Zork* trilogy for the past year or so and if I hadn't been so eager to get it booted up, I would have been turning cartwheels down the hall when this box showed up. Mediagenic, the parent company of Activision and Infocom has been tied up in bankruptcy and litigation for the past couple of years, but have once again begun shipping a few titles. The first I've seen is this amazing collection of Infocom classics. The package consists of six disks containing twenty games. That's right, twenty of them, along with a comprehensive manual, a fat hint book, and maps. Text adventures are a rar-

ity these days, but even with the addition of graphics, sound, and fancy interfaces of modern adventures, these Infocom works have never been topped. In my book, they're the best interactive fiction ever done and having them all together in one package is better than a thousand Christmases.

The reason Infocom adventures are so good is the writing. I would revise the description of them from interactive fiction to interactive literature. It's been long enough since they were first published to provide a little perspective and they have held up far better than I would have expected when I first played them. They're not in the same category as the *Iliad* or *Hamlet*, but they can certainly hold their own against *Alice in Wonderland*, *Peter Pan*, or *The Big Sleep*. The writing takes advantage of the medium and does it with great style, wit, and a sure grasp of what it takes to involve the player in the story. And most of them are laugh-out-loud funny.

The games fall into three basic categories, though there are a few strays. The fantasies are my favorites and include *Zork I*, *Zork II*, *Zork III*, *Beyond Zork*, *Zork Zero*, *Enchanter*, *Sorcerer*, and *Spellbreaker*. The science fiction category has *Suspended*, *Starcross*, *Planetfall*, *Stationfall*, and the sublimely loony *Hitchhiker's Guide to the Galaxy*. The five mysteries are *Deadline*, *Witness*, *Suspect*, *Ballyhoo*, and *Moonmist*. Rounding out the twenty titles are *Infidel*, an Indiana Jones-type Egyptian adventure, and *The Lurking Horror*, which would do H. P. Lovecraft proud. I also want to give credit to the authors here. The original *Zork* trilogy was written by Dave Lebling and Marc Blanc, who are at the top

of my list for the computer game Hall of Fame. *Beyond Zork* was written by Brian Moriarty and *Zork Zero* by Steve Meretzky, both of whom are also on my Hall of Fame list. I'm really kind of surprised at how small the group of Infocom authors is. Besides those already named, I only need to mention Stu Galley (*Witness*), Jeff O'Neill (*Ballyhoo*), Jim Lawrence (*Moonmist* co-author), Michael Berlyn (*Suspended*, *Infidel*). Douglas Adams collaborated with Steve Meretzky in bringing his very successful *Hitchhiker's Guide to the Galaxy* to the interactive format. The contributions they've made to computer gaming are inestimable.

I suppose I like the fantasies best because *Zork* was the first computer game I ever played. It's partly a nostalgia trip for me, but it's also the game that popularized the adventure genre. The trilogy, consisting of *Zork I*, *II*, and *III*, is a cohesive whole, filled with puzzles, strange places, even stranger goings-on. The basic premise is to find your way around The Great Underground Empire and collect treasures. The catch is figuring out how to do it. I long ago found all the treasures, solved all the puzzles, and explored all the nooks and crannies, but I returned to it over and over again. The reason is that *Zork* is such a great read and there's so much satisfaction in making things work in it. It has never bored me and I go through it in slightly different ways each time I play it. I treasure *Zork* above all other games. *Beyond Zork* and *Zork Zero* aren't quite as successful as the trilogy, but I would have been disappointed if they hadn't been included in the collection. They're later additions to the series and while they are well worth

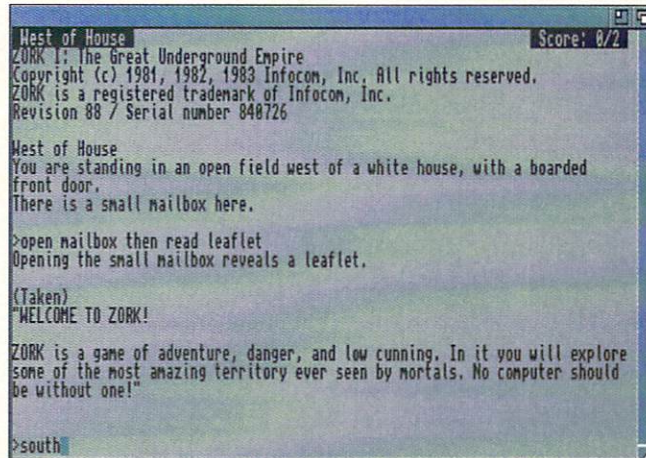
Incredible	Very Good	Average	Poor	Drek
★★★★★	★★★★★	★★★	★★	★

playing again, they don't hold quite the same fascination; they expand on already-discovered territory and ideas. Like most sequels, they don't break much new ground, though they do make some technical improvements.

Enchanter, *Sorcerer*, and *Spellbreaker* form another trilogy and set the stage for many of the swords and sorcery games being published today. After spending some time with *Enchanter* again, I found myself wishing that the designers of current S&S games would take another look at this trio. The games don't take themselves seriously, spells consist of a single word instead of needlessly complex formulas, and there's a terrific sense of fun in playing. The emphasis is on exploration, interesting images, and clever puzzles rather than on endless, meaningless combat with trite monsters and villains. How refreshing these games are and how sad to have to go back nearly a decade to find some originality.

I spent nearly as much time with the science fiction games as I did with *Zork*. *Starcross* was always a particular favorite, though *Planetfall* and *Stationfall* are actually better games. They also introduced Floyd, a robot companion I'd love to have around in real life. *Suspended* took a little different approach. The plot has you waking from cryogenic suspension unable to move. The planet you're on has gone terribly wrong and it's up to you to save it by directing six robots, each of which has a different ability. *Hitchhiker's Guide to the Galaxy*, though, is the best of the sci-fi adventures. I had, of course, read Douglas Adams' lunatic books long before I played the game, but that didn't spoil anything at all. If anything, I appreciated the game more for having read them. Adams was a Monty Python collaborator and that type of humor pervades the game. Logic is skewed (and skewered), things are seldom what they seem, Earth is about to be destroyed to make way for an intergalactic bypass, and no one seems terribly concerned about it except you. Even so, *Hitchhiker's Guide* tells us, "Don't Panic."

I regret to say I never played the mysteries all the way through. Some strange personality quirk makes me prefer being told a mystery rather than figuring it out on my own. That doesn't stop *Deadline*, *Witness*, and *Suspect* from being terrific games and classic mysteries in the tradition of Raymond Chandler and Agatha Christie. They add time limitations to the Infocom formula



The classic opening of *Zork*, one of the twenty adventures in Activision's *Lost Treasures of Infocom*.

and also introduced us to Sgt. Duffy, who is still referred to occasionally by old-timers in adventuring. *Deadline* is in the classic locked room genre and places a time limit on finding the murderer. *Witness* is set in 1938 Los Angeles, and is my favorite of the trio. (Not too surprising, considering my all-time favorite movie is *Chinatown*.) It, too, allows you only twelve hours to solve the crime. *Suspect* takes place at an upper-crust estate, where a costume ball turns deadly. *Ballyhoo* puts you behind the scenes in a circus where the owner's daughter has been kidnapped. *Moonmist* covers yet another genre, the gothic romance. Set in a prototypical English castle that may or may not be haunted, it rounds out the collection of mysteries nicely.

In some fit of obsession, I played through all of *Infidel* in a single weekend. I think I may have slept for a couple of hours, but I can't remember for certain. I do remember being utterly exhausted after finishing, though. Set in an Egyptian pyramid, *Infidel* offers Indiana Jones-type thrills, exotic scenes, and fine puzzles. It also makes a great companion piece for *The Lurking Horror*, which is set on (and under) a college campus, where there are some scary things going on. The game pays homage to H. P. Lovecraft and the horrors in it are horrible indeed.

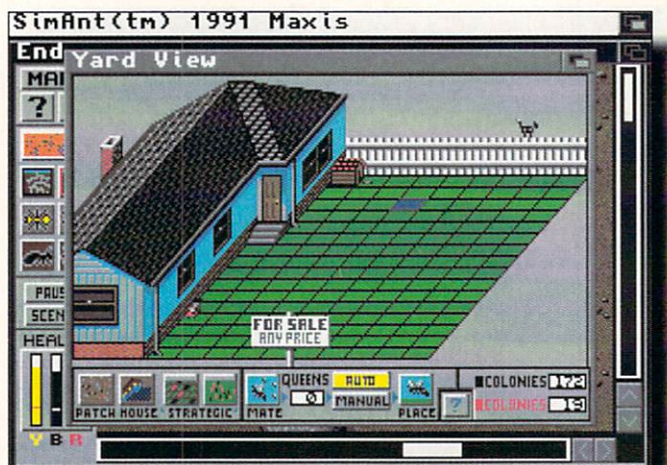
Infocom text adventures fell out of fashion as computers became more graphically oriented. They require constant typing and many people just plain hate to type. (Although it is an entertaining way to improve typing skills.) The Infocom parser was, and still is, the best text interpreter I've ever seen. The vocabulary of the games and the range of things they can

understand is a tribute to the skill of the programmers and writers. *The Lost Treasures* isn't all of the Infocom games. I can remember the titles of nine more that aren't included - *Wishbringer*, *Trinity*, *Bureaucracy* (another wickedly funny Douglas Adams work), *Leather Goddesses of Phobos*, *Border Zone*, *Seastalker*, *Cutthroats*, *Journey*, and *Shogun* - and I believe there were 33 Infocom adventures in all. Activision doesn't have any immediate plans for rereleasing the remaining 13, but I hope they will. I'm sure the fact that 10,000 copies of *Lost Treasures* were sold within 48 hours will help them in their decision. (They're also planning on doing graphic versions of some of the Infocom titles, but I believe I'll stick with the all-text ones.)

What makes these games so special is that they leave so much to the player's imagination. The scenes, characters, locations, and objects are can be visualized as you wish, not how a graphic artist renders them for you. The wit, cleverness, and storytelling have never been equalled. *Lost Treasures* is a bargain at \$69.95. Where else can you get twenty games of this calibre for so little? The only thing I miss is the original packaging; Infocom was known for all the trinkets, doodads, and paraphernalia they included in the box. Kevin Cheung (remastering engineer), Kelly Zmak (manual & hint book), and Pat Zmak (manual & hint book) have done an outstanding job in recreating the flavor of it while making the whole package compact enough to be easily manageable.

Thanks, Activision, for giving us this piece of history. And thanks even more, Infocom, for giving us these legendary games.

I've just driven the humans out of their house in the lo-res version of *SimAnt*. Note the For Sale sign.



SIM ANT



Maxis

Two Theatre Square, Suite 230
Orinda, CA 94563
510-254-9700

When I was seven or eight years old, I wanted an ant farm so badly that the pages where they were shown in every Sears, Penneys, and Wards catalog were worn thin and smeared with my kid-greasy fingerprints. My mother, however, would never consent to letting me have one - the ants might get out. (I'm sure it left a serious emotional scar, too, leading me into a life of software reviewing and similar crimes.) There's something intrinsically mesmerizing about watching small creatures under glass and having complete god-like control over their lives. Now that Maxis has released *SimAnt*, I have more than satisfied my childhood longings and I'll never crisp them with a magnifying glass again.

I've been anticipating this game since I first saw the unfinished Mac version last summer. Like other Maxis simulations, *SimAnt* can be taken on several levels; it is both a game and a serious simulation, highly playable and painlessly educational. In fact, I'm starting to fear that if I play it much longer, I'm going to sprout four more legs and a pair of antennae. I've learned more about the behavior of ants than I ever could just by observation. By actually controlling them and learning to behave as an ant, I have a much better understanding of what the little things are doing to my front yard.

Life in an ant colony is no picnic. You have to constantly forage for food, look out for spiders, enemy red ants, and worst of all, the dreaded lawnmower. To succeed

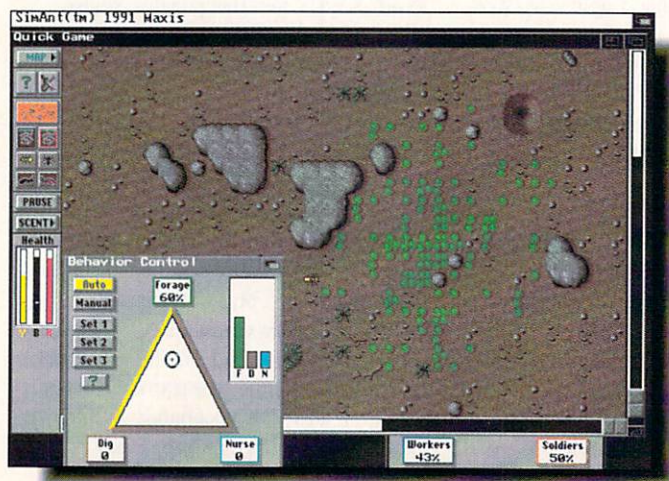
requires perseverance, daring, and some luck. *SimAnt* is the only game I've ever seen where getting killed is only a minor setback. Ants are, after all, ants and your ant is easily replaced with another. About all you lose is a some time. Individuals are unimportant, the survival and prosperity of the colony is everything.

Mechanically, *SimAnt* uses a multi-window system with different displays for different locations and actions. There are two types of windows, one shows different locations and the other provides information and parameter settings. The main play windows are at two levels of magnification. One shows a suburban home and its lawn and this is where you plan broad strategy. The object of the game is to take over the entire yard, eliminating any red ants in the process, and then infiltrate and take over the house itself. When the homeowner comes out and plants a For Sale sign in the yard, you've won. The rest of the game takes place on ant-level. There are two

main windows for this, one showing the underground nest and the other showing a closeup overhead view of the lawn. The remainder of the windows are used for showing pheromone trails, colony status, and setting such things as caste (worker, soldier, etc.) and the percentage of ants devoted to certain tasks. It sounds complicated, but it takes a surprisingly short time to learn.

There are two versions of *SimAnt*, one in lo-res and the other hi-res. The hi-res version requires one meg of chip RAM and another meg of fast RAM. Both versions are sluggish in changing windows, though an accelerator brings everything up to speed. Just to set your mind at ease, the slowness isn't bad enough to be more than a minor annoyance. Given the enormous number of things going on, it's all perfectly understandable and acceptable. The graphics are very good in lo-res, but hi-res really brings them to life. The sound effects are disgustingly wonderful; ants frequently feed by regurgitation and the sound when they do is vile enough to delight any junior high kid. The manual is beyond thorough; its 176 pages not only take you through the game step by step, but also has the most information on ants this side of an entomological textbook. It's witty, well-written, and almost as entertaining as the game.

Maxis has done a bang-up job with *SimAnt*. It's their first major Amiga release since *SimCity* over three years ago. Actually, I don't care. I'm having such a good time with *SimAnt* I'd rather not be distracted with anything else just yet. My colony is growing, the red ants are on the ropes, and the local homeowner has a worried look. I'm going to make him rue the day he ran his lawnmower over my nest.



It's worth upgrading your machine just to be able to play the hi-res version shown here.

POPULOUS II

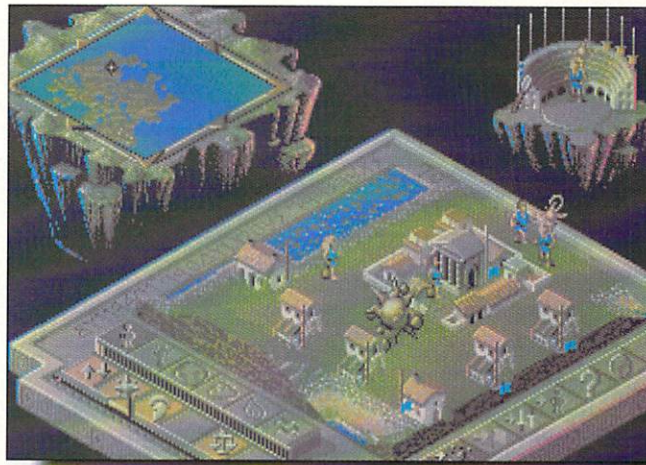


Electronic Arts

1450 Fashion Island Blvd.
San Mateo, CA 94404

Being an Olympian god is bliss. I'd always suspected that's what I was, but I just couldn't seem to get my powers to work. Bullfrog fixed that and now I'm raining fire and blowing tornados at those poor mortals below like nobody's business. So far, I can only seem to do it on a computer, but I fully expect Peter Molyneux and the other Bullfrog wizards to come up with something to let me do it for real. Their programming is THAT good.

The original *Populous* was one of the best games ever done, making it a tough act to follow. Somehow, though, *Populous II* pulls it off. It's mostly a matter of setting it in the realm of classic Greek myth, simplifying and streamlining the game where it was needed, and adding more god-like powers. On the surface, *Populous II* doesn't look much different from the original. A closer look shows it to be almost entirely reworked. The primary close-up view is about the only thing that's the same, though even that has been enhanced. The graphics are more detailed and there are many more types of buildings, monsters, and animations. It's a mindboggling world, and the view of it can be expanded to a full screen. Besides the main landscape and its adjacent control bars, the upper left area shows macro-view of the current landmass and has arrows for movement. The upper right area shows a coliseum, which is used for displaying information about population, the level of development for settlements, and other information every god needs to



Toying with the mortals in Bullfrog's heavenly *Populous II: Trials of the Olympian Gods*.

know in order to best promote his worshippers.

I must admit that after playing *Populous II*, I'll never go back to the original. *Populous II* rethinks how the game is played, eliminates the few awkwardnesses of its predecessor, and adds many new elements to the mix. Basically, you do battle against another deity, guiding and motivating your own worshippers while wreaking disaster on the devotees of your enemy. The Greek gods were known for that sort of thing. Among the particularly wonderful new disasters are volcanos, firestorms, whirlpools, tidal waves, and, my special favorite, plague. The strategies from the original *Populous* still work here, but there are so many new elements that you'll spend weeks learning to use them all. You'll also want to pit your godhood against another one via modem.

Games just don't get much better than *Populous II*. It taps into those deep, primitive urges we humans have to become gods ourselves and be all-powerful over lesser

mortals. Give yourself the gift of godhood: buy a copy of *Populous II*.

OUT OF THIS WORLD



Interplay

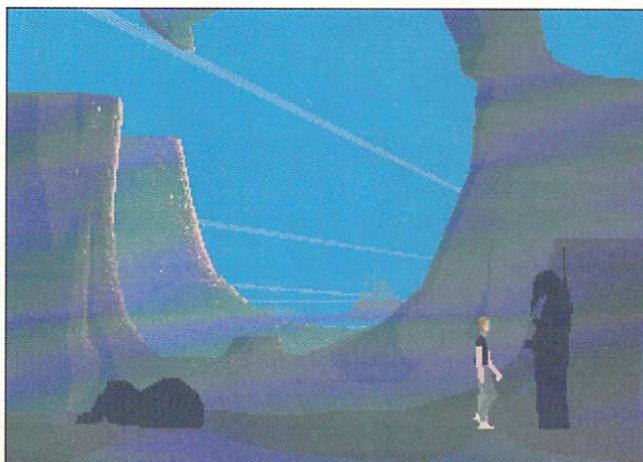
3710 S. Susan
Santa Ana, CA 92704
714-549-2411

When I previewed this game for the February issue, all I'd seen was a non-interactive demo. Now that I've been able to play the game for real, I'm even more impressed. Actually, I'm more than impressed - my jaw is hanging open, my feet are cold from continually having my socks blown off, and my hand looks like some sort of alien claw from clenching a joystick so hard. *Out of this World* is the most movie-like game I've seen. It is composed of short scenes, quick cuts, close-ups, far shots, and other cinematic techniques that make it both involving and exciting. Being good-looking is only a part of *OOTW's* charm; it's also a highly playable action adventure that should be added to the list of dangerously addictive substances.

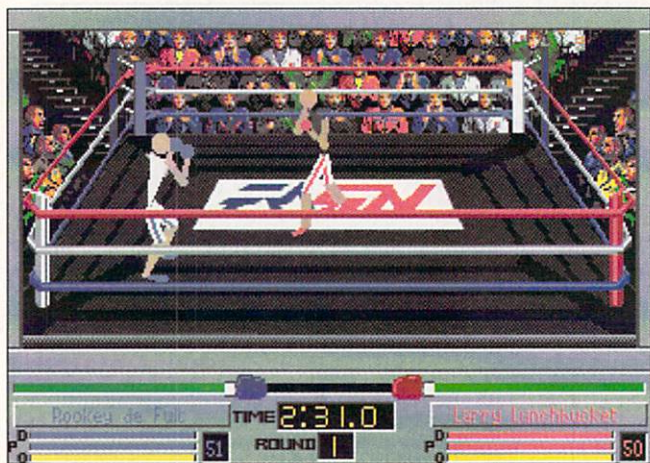
Although it's light-years beyond, the nearest thing I can compare *Out of this World* to is Broderbund's *Prince of Persia*. The animation is realistic, fluidly smooth, and consistent with the pace of the game. Control is by joystick and the response is just about perfect (I only wish my response were as good). As I said in the preview, *OOTW's* polygon graphics are so well done that it comes across as more of an artistic style than as a limitation of the medium.

The plot puts you in the role of a scientist conducting experiments with a particle

Interplay's extraordinarily cinematic *Out of this World* sets new standards for polygon graphic games.



The graphics may not be much, but *4D Boxing's* motion is some of the best I've seen.



accelerator. About the time you start the thing going, a bolt of lightning hits and propels you into another dimension. The introductory scenes are among the best I've ever seen, dramatically setting out the story without overdoing it. Once you're through the tear in space, you're on your own. And that's something else I like very much about the game: it has enough confidence in itself and enough respect for the player that it can dump the player in the midst of this alien world and expect him to find a way through it. It's not easy to do, either, and it will take many tries and much effort. Fortunately for us, the designers and programmers understand that and getting back into the play after getting killed off is fast enough that you'll barely have time to draw a couple of deep breaths before you're back at it again. This cross-dimensional world is a very dangerous one and it will take all your wits to survive. (Watch out for the poisonous slug-things that drop down on you right at the beginning - the nasty, slimy things give me the creeps so bad I've even had nightmares about them.)

Out of this World is a milestone in computer entertainment. If I hadn't seen it for myself, I wouldn't have believed polygon graphics, animation, and cinematic ideas could be used so effectively. *Out of this World* certainly is.

4D BOXING



DSI/EA

1450 Fashion Island Blvd.
San Mateo, CA 94404
415-571-7171

4D Boxing is a technological breakthrough. Distinctive Software, Inc., was

responsible for Accolade's *Test Drive*, among many other games and they've obviously been caught up in the push to make virtual reality a reality. *4D Boxing* uses what they call Tru-Motion, a technique that starts with videotaped human motion, in this case a boxer, and then derives stick figures that move in the same way as the human. Polygons are then superimposed on these stick figures with the result that the motion has the same fluidity and subtlety as a real boxer. The effect is extraordinary.

As if the motion of the boxers weren't enough, DSI has also added exceptional view controls. Using the metaphor of ring-side cameras and cameramen, there are eight cameras which can be switched among with the press of a function key. Each camera can be adjusted, changed from a stationary view to a mobile one, and will automatically zoom and pan on the action in the ring. It's an incredible system that must be seen to be appreciated.

As a boxing simulation, this is one of the

best. It doesn't take itself seriously in the slightest (how could it when the boxers have names like Ugotabe Kidding, Sadie Mazo-Chisolm, and Ivan Orrible Attitude) and offers more options for training, configuring, and fighting than I can begin to fathom. Wonderful as the motion and view control are, the overall look of the game is a little crude. However, now that DSI has developed the Tru-Motion engine, I'm sure we'll see them do wonderful things with it in future releases. I have to admit that I've never been, nor will I ever be, a boxing fan and I think that's the only limitation for *4D Boxing*: its rather limited appeal to non-boxing fans. Still, whether you're a boxing fan or not, the technical innovations make *4D Boxing* a must-see.

THE ADVENTURES OF WILLY BEAMISH

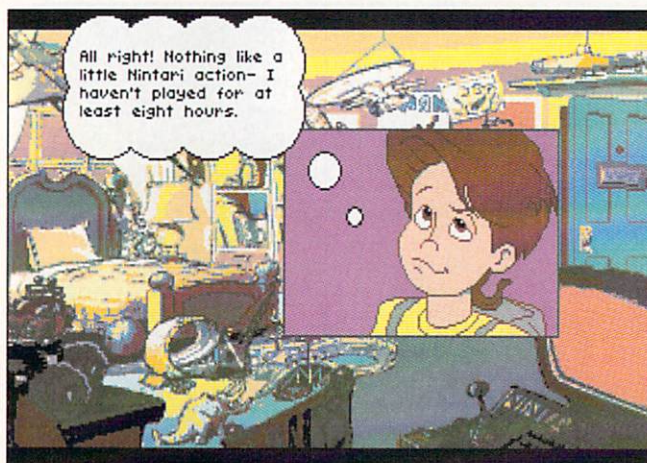


Dynamix

99 West 10th
Eugene, OR 97401
503-343-0772

Willy Beamish makes me feel like I'm nine years old again. He's a terminally cute, terminally obnoxious little dude whose primary reason for living is computer games. He's who I would have been if there had even been computers when I was nine years old. That thought scares me deeply.

As far as I know, *Willy Beamish* sets a new record for size: it comes on twelve floppies. It's possible to play it from the floppies, but I wouldn't even consider it. The game has a problem with speed anyway, and playing from floppies not only takes proportionally longer anyway, but even with two drives it takes about a



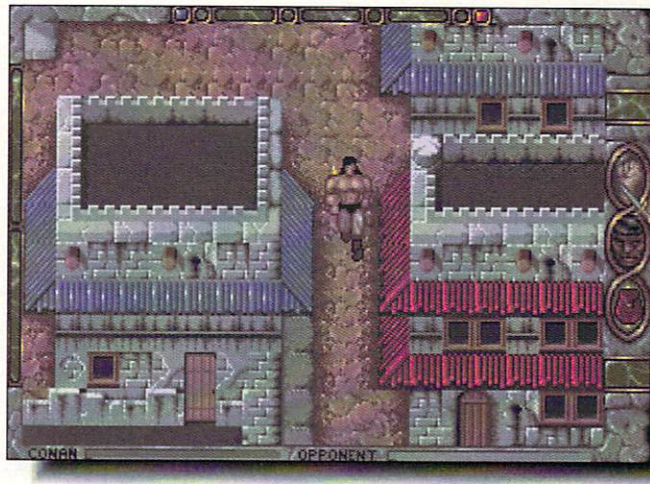
I loved being a snotty 9-year-old again in Dynamix's *The Adventures of Willy Beamish*.

bazillion disk swaps to get anywhere. The packaging and manual are perfect, the manual being a reproduction of one of Willy's school notebooks, replete with doodlings and juvenile insults. It's terrific.

There have been many attempts at bringing cartoons and comic books to game format and *Willy* is one of the most successful. The artwork is particularly good, rendered in 32 colors and not looking like the IBM conversion that it is. The animation, however, is far slower than it should be. I wish Dynamix, along with Sierra, would discover and use the blitter; animation is the weakest part of all their games. The mechanics of the game are all mouse-controlled and easy to manage.

The premise of the game is to help Willy through the trials of getting to the Nintari video game championship. He's a killer gamer and already holds the regional title, but getting his parents to send him to the nationals is another matter entirely. Starting off at the last day of school where Willy is, inevitably, in the last detention period of the year, you have to make the right choices in dealing with teachers, bullies, principals, dogs, parents, friends, and a host of others (including Willy's pet frog, Horny). Be sure to save the game and then smart off to both the teacher and the principal. In fact, one of the things I like most about *Willy Beamish* is what happens when you do make wrong choices.

Speed problems aside, *Willy Beamish* is a delightful game. It improves on the idea of interactive comics and develops it in more player-oriented ways than Don Bluth's games and more artfully than Sierra's games. Besides, it's great fun being nine again.



Grunting and hacking through Virgin Games' *Conan the Cimmerian*. The only thing missing is an Austrian accent.

CONAN THE CIMMERIAN



Virgin Games

18061 Fitch Avenue
Irvine, CA 92714
714-833-8710

If I could judge a game by graphics alone, I would have given *Conan* a much higher rating. The game takes elements from Virgin's earlier *Camelot* series (*Conquests of Camelot* and *Vengeance of Camelot*), combines them with the overhead perspective view of *Faery Tale Adventure*, and then stirs in horizontal combat a la Innerprise's *Sword of Sodan*.

It would all have worked if the animation hadn't been jerky and the play even jerkier. There are other problems as well: you can install the game on hard disk, but the only way to get it to work from there is by turning off workbench and anything else except for a small CLI window, something I found

out only after an hour's worth of frustration and experimentation. Fine as the graphics are, the graphics programming is sloppy. Clicking on a character or object flashes the square section of screen surrounding it and sometimes the entire sprite bar running the height of the screen. I suppose it could be deliberate, but it looks more like video errors. Because the areas affected are so big, it is difficult to position a character accurately without accidentally bringing up an action requester for that character or object. It's also a big problem in fights. Aside from that complaint, the controls are easily mastered. Nearly the entire game can be played with only the mouse.

The big, dumb lummock is a favorite swords & sorcery character and the adaptation isn't bad. It's true to the character and it works pretty well as an adventure. *Conan the Cimmerian* is well worth playing if only for the graphics; I just wish the programming were better. I would have bumped the rating a full star if it had been up to par.

CHUCK ROCK

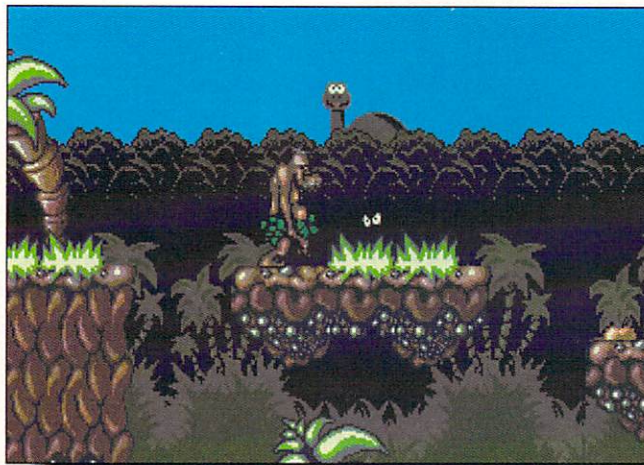


Virgin Games

18061 Fitch Avenue
Irvine, CA 92714
714-833-8710

Dress Homer Simpson or Al Bundy in caveman skins and you have *Chuck Rock*. He's the thoroughly, and delightfully, disgusting star in this typically British nintendo-esque arcade game. The play is the usual running around, jumping from platform to platform, and trying to avoid creatures bent on doing you harm. As in all games of this type, there aren't many new ideas so they must rely on superior

Fred Flintstone via Homer Simpson. *Chuck Rock* may not be one of the more cultured characters around, but he stars in a good game.



Elf is gorgeous to look at, frantic to play, and one of the best arcade games so far this year.



execution to set them apart from the pack. *Chuck Rock* does that admirably.

Chuck Rock takes a small-scale cartoon-y approach with a style that reminds me of nothing so much as Don Martin's cartoons in *Mad* magazine. Chuck himself is a lumbering oaf with a walk that will make you laugh out loud, and then double over helplessly when you see how he defends himself. Chuck doesn't need weapons, he has his belly to bash his assailants with. It's gross, crude, and very funny. The attackers are imaginative and animated with glee. My favorite so far is a tiny clam-like critter that hoists itself up on long, skinny legs and scurries around, with beady little eyes peering out from its shell. The sound effects and music are just as well done. The play isn't easy, but it isn't impossible, either. I'd rate it somewhere in the middle, making it a good choice if you're easily frustrated.

We're seeing more of this type of game as the Super NES penetrates the market ever deeper. I'm glad of it. The quality keeps getting better and better. *Chuck Rock* won't win any awards, but it will reward you with plenty of laughs and some pleasantly wasted hours.

Elf



Ocean/EA

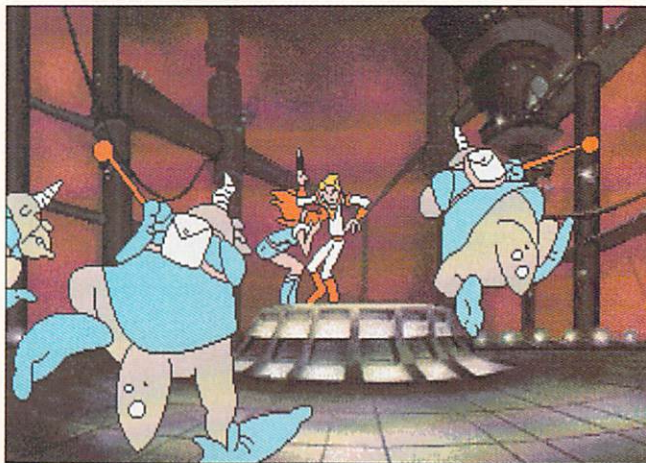
1450 Fashion Island Blvd.
San Mateo, CA 94404
415-571-7171

Arcade games with fairy tale settings are ubiquitous, but *Elf* is the first one I've played since Hewson's *Stormlord* that I've been this taken with. It's the artwork that makes me keep coming back to it. Parallax scrolling, shaded backgrounds, and a huge

population of strange and wonderful characters make the game endlessly fascinating to watch. I find myself pausing it often to get a better look at all the things that are going on. Pausing also gives my poor, tired joystick hand a much-needed rest.

The detail, fast pace, and endless stream of creatures is *Elf*'s greatest strength, but also its greatest weakness. The play is so frantic that I'm sure many players will give it up after a level or two. It takes the typically European approach of wearing you down with enemies and then having at you with an end-of-level super-baddie. There are eight levels all together. That's fine if you're a seasoned joystick-jerker, but it will probably be too much for beginners. To its credit, *Elf* adds some interesting twists to the standard mix, like collecting plants and Pets to use to buy enhancements in the shops you'll come across, and conversation with some of the characters.

If you appreciate fine graphics and frantic gameplay, you'll love *Elf*.



SPACE ACE II: BORF'S REVENGE



ReadySoft

30 Wertheim Court
Richmond Hill, ON Canada L4B 1B9
416-731-4175

Don Bluth is a great animator. ReadySoft is one of the best game publishers. So why can't the two of them come up with a playable game? *Space Ace II* is an excellent Amiga demo, but as a game it's as unplayable as all the previous Bluth titles. I've tried the first scene twelve times and each time I've been killed off within the first three seconds. It's frustrating, it's unfair to the player, and it's unlikely that I'll ever make another attempt at it. While it really has no bearing on the game itself, I'm also a little torqued off that the *Space Ace II* is hard drive installable on Mac and IBM, but not on Amiga.

ReadySoft tells me that their next Bluth-style release, *Guy Spy*, addresses the problems and adds a measure of playability to the game. I hope so. Interactive cartoons are rapidly becoming one of the main types of computer entertainment and I want nothing more than to see the Bluth/ReadySoft games at the forefront. The artwork is exemplary and the animation sets the standard by which other animation is judged, but without gameplay, they're inaccessible. Skip *Space Ace II* and wait for *Guy Spy*.

Space Ace II continues the series of more-demo-than-game titles from Don Bluth and ReadySoft.

Walk An Inch In My Shoes



This Universe Is Yours For The Taking.

Each Of These Squares Is A Battle Ground – A Step Toward Universal Conquest.



What Ant's Life Would Be Complete Without A Kitchen To Invade?



Drive Out Those Yucky Humans And Win!

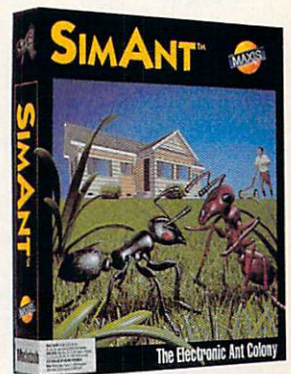
Beware The Red Ant Menace – And That Spider's Ready For Breakfast.

The Yellow Ant Is Your Insect Alter Ego.

I'm an ant. You've stepped on me, poisoned me, cursed me—even held a magnifying glass over me. But do you know what it's like to be me?

SIMANT™ The Electronic Ant Colony puts you in my place. This new game from the creators of SimCity® and SimEarth™ lets you experience life as an ant. Fight for queen and colony. Face hungry spiders and menacing hordes of enemy ants. Endure abuse from those merciless humans. So easy to play even a human can do it — but, based on real ant biology and behavior, **SimAnt** has the depth of play and serious gaming challenge to really drive you buggo. So, before you step on another ant, walk an inch in my shoes. All six of them. **SimAnt** is available now at your favorite software retailer, or call MAXIS direct at 1-800-33-MAXIS.

Macintosh and VGA screens shown. Available for DOS, Macintosh, and Amiga computers. **SimAnt**, **SimCity** and **SimEarth** are trademarks of MAXIS. ©1991, MAXIS. All rights reserved worldwide. And then some. INF492



Circle #152 on the Reader Service Card



Video Toaster 2.0

by Benn Dunnington

On February 10, 1992, an unusually large number of UPS trucks were summoned to an address in Topeka, Kansas where local residents have, over the last couple of years, come to expect strange goings-on. On this particular occasion, personal computer history was being made as NewTek, Inc., began shipping the long awaited 2.0 software upgrade for their *Video Toaster*. Rarely does a software upgrade cause (or merit) the level of interest which has surrounded this release, but then there has never been a software upgrade quite like this before.

The 2.0 upgrade ships on 14 diskettes which decompress to occupy over 30 Megs of space on your hard drive. This is thought to be the single largest piece of software ever distributed for a personal computer (*Toaster* lore holds that NewTek tapped the entire U.S. supply of available white 3.5" diskettes for the initial shipment). And, while necessarily lengthy, the installation procedure is a simple matter of feeding the numbered floppies into your floppy drive as directed by screen prompts.

Documentation

Before I get started describing the software itself, I want to mention the documentation. The original manual was incomplete, poorly illustrated, and arguably the weakest element of the initial *Video Toaster* product. All of that has changed. 2.0 ships with a brand new manual which has been totally overhauled. It is professionally executed with excellent illustrations, an index, a 'tips & tricks' section, and 138 pages of well-conceived tutorials (27 in all) covering all aspects of Toasting. Hats off to James Hebert for the manual and to Lee and Kathy Stranahan for the tutorials.

General

Almost every aspect of the *Toaster* software has been expanded and improved for version 2.0. The first thing you will notice is how almost every operation is noticeably faster... even downright snappy! A lot of operational streamlining is also evident- LightWave requesters now have a 'parent' button; applications may be unloaded and effects can be launched by dou-

ble clicking their icons; and frames can be passed more easily between applications than before. Files are automatically compressed for faster loading and smaller disk use, and, finally, the band of noise along the right edge of the video frame (known as the 'zipper') is gone.

Switcher

The switcher now has six banks of effects instead of four, and these are not just 'more of the same' effects; they break new ground with eye-poppers like ActionFX, which use animated human silhouettes (with assorted sports and cheesecake themes) as the alpha channel to bring in the second source. Then there are WarpFX, which takes the image and actually wraps it onto moving cubes, panels, and spheres (one of which spins, then explodes!) Or how about those natural-looking OrganicFX, like pouring liquid, smoke, spray paint, windshield wiper, and more. And there are some just plain coolFX like one that gives your output the look of old scratchy film, and another that starts your video with a film-style countdown timer. One of my favorite effects is 'Skyline,' which flies a multi-plane silhouette of black office buildings up and toward you with the alternate image becoming visible (David Letterman-style) through one of the upper windows. There are also new effects which allow some degree of customization, including positioner effects which allow you to set your own straight-line paths for four types of transitions, and four ChromaF/X buttons which let you apply pre-rendered ChromaF/X filters to your transitions.

ToasterCG

The Character Generator (CG) has also been much improved in release 2.0. Most of the new features drastically improve the speed and convenience of operations: ToasterPaint images may now be used as backgrounds directly from within the CG (this is a huge time-saver), ASCII text files can be loaded directly into CG pages, pre-rendered pages can be framerstored for quick retrieval, and page rendering itself is nearly double the old speed. There are now some 34 distinct type styles as part of the CG package, including some great new Chroma fonts.

ToasterPaint

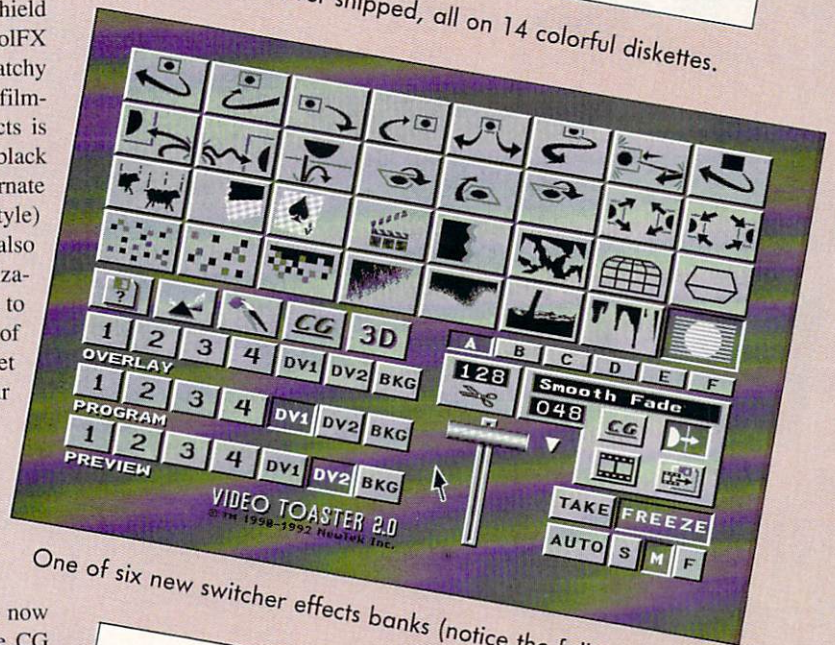
ToasterPaint has probably seen the least amount of change in the upgrade. Besides the above-mentioned integration with the Character Generator, there are just two noticeable improvements. First, the auto-scrolling (which used to be severely over-responsive) is now very well-behaved and effective. Second, you may now load one or four fields directly from either frame-buffer and save screens directly back to the framebuffers. Short list, but much appreciated.

LightWave3D

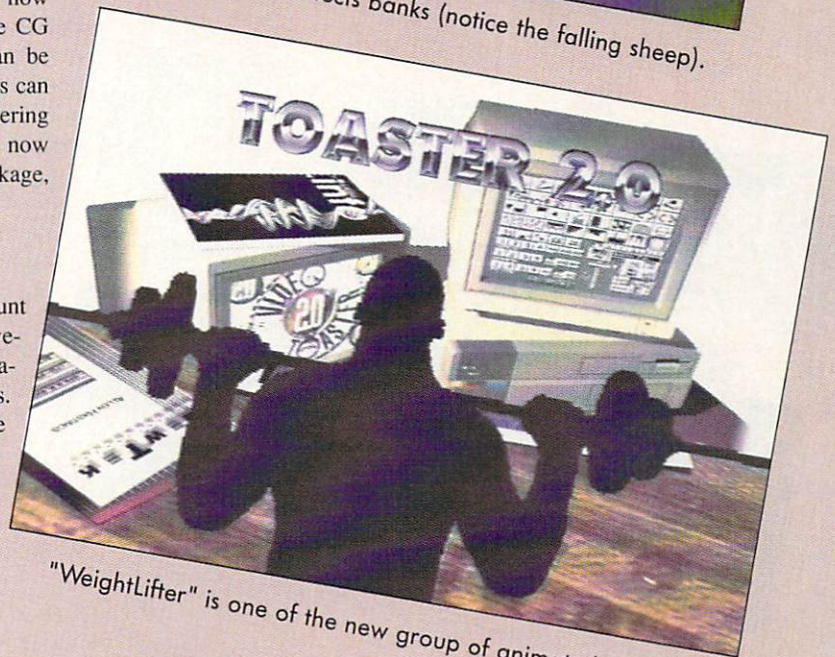
Since LightWave 3D is a personal obsession of



The largest PC program ever shipped, all on 14 colorful diskettes.



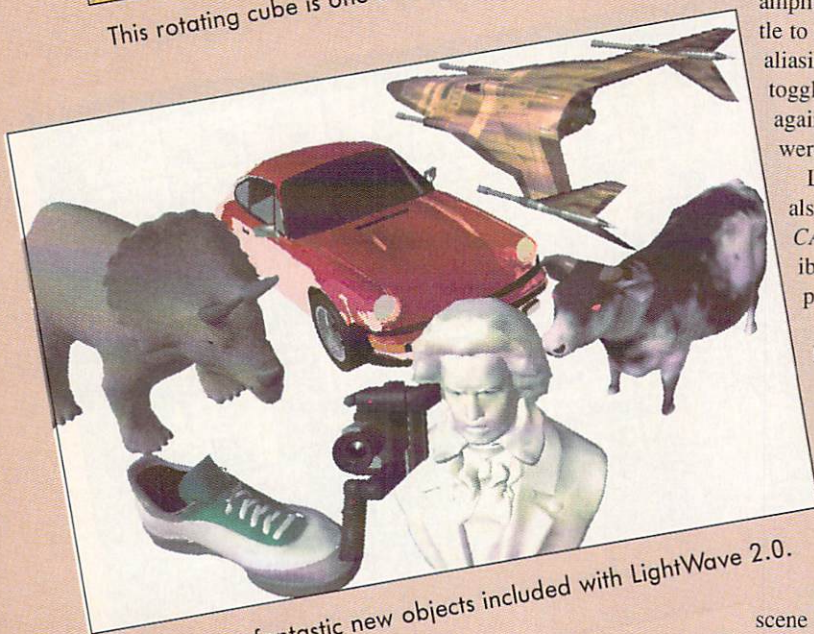
One of six new switcher effects banks (notice the falling sheep).



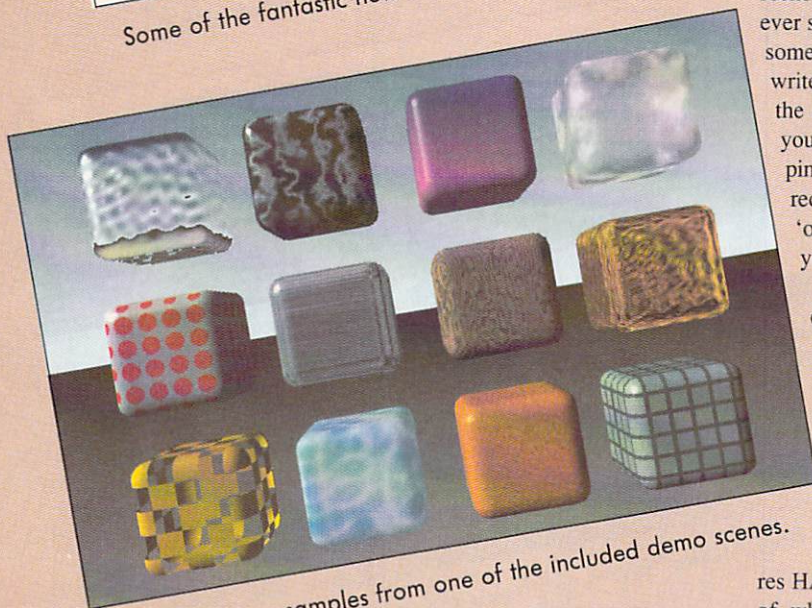
"WeightLifter" is one of the new group of animated ActionFX



This rotating cube is one of several great new WarpFX transitions.



Some of the fantastic new objects included with LightWave 2.0.



Twelve texture samples from one of the included demo scenes.

mine (and should carry the warning: 'Danger! Using this software may result in divorce and permanent changes in time perception!'), I was delighted to see the amount of attention NewTek lavished on this centerpiece of the *Toaster* lineup. Again, performance, capacity, and convenience have all been markedly improved, including greatly reduced rendering times and double the number of polygons which can be used in a scene.

New features? Taking a deep breath, he begins...

The big one is *raytracing!* Now you can create not only realistic shadows, but honest-to-goodness reflection and refraction as well. While these operations add a considerable time penalty to complex renderings, the absolute realism obtained by raytracing is often well worth the wait.

Surface mapping functions have been given a very useful new 'auto sizing' option that perfectly fits your images when doing planar, cylindrical, or spherical mapping, and bump mapping now has an amplitude setting so that your bumps may range from subtle to radical. Also new in the mapping windows is an anti-aliasing toggle which, along with the old pixel blending toggle, helps smooth out even the grainiest bitmaps. Here again, a framestore can be loaded for mapping just as if it were an IFF image.

LightWave can now load not only *Sculpt* objects, but also industry-standard *Wavefront*, *Swivel 3D*, and *Auto-CAD DXF* objects as well. This cross-platform compatibility should help NewTek even more in its efforts to penetrate high end and non-Amiga 3D camps.

2.0 features two new rendering resolutions- 'Print Resolution' (which *.info* uses now for our covers) is 3008x1920 pixels, producing files anywhere from five to ten megabytes in size, and the speedy 'Super Low Res' which is only 188x120 pixels, ideal for quickly testing raytracing and other time-hungry effects.

Object and surface handling are much more comprehensive in 2.0. Individual objects may now be deleted (hallelujah!), and every object in a scene may be saved with a single mouse click. Did you ever spend hours developing the perfect surface settings for something like an avocado, then wince because you had to write down 37 different parameters so you could duplicate the effect next time you needed it? Never again! 2.0 lets you save all the attributes of a surface, including mapping and image data, as a single file which may be recalled for use anytime. Fifteen sample surfaces from 'orange peel' to 'rippling gold' are even included to get you started.

Speaking of objects, there are quite a few new objects included in the LightWave phonebook - everything from a bust of Beethoven to the entire detailed *Toaster* workstation used in this issue for the cover and title illustrations. There is also a complete demo scene including objects, images, and motion paths provided by Ron Thornton (*Terminator 2*, *The Addams Family*). This demo generates a breathtaking 200-frame animation of two spacecraft flying by and on to a distant planet. (I rendered it to lo-

res HAM and it still blew my socks off! If this is a glimpse of what we can expect from Thornton's upcoming TV series *Babylon V*, then I sure don't want to miss an

episode!) Sadly, the manual alludes to a second Thornton scene with seven spaceships, but this did not make it onto the final release.

LightWave Modeler is much more approachable now that it has decent documentation, and a number of new features make it considerably more powerful. New tools include Magnet, Shear, Twist, Taper, Bend, Skin, Morph, Add/Remove points, Split, Merge, Triple, and Align. Polygons and points may now be selected from the perspective view, which now offers a hidden line option.

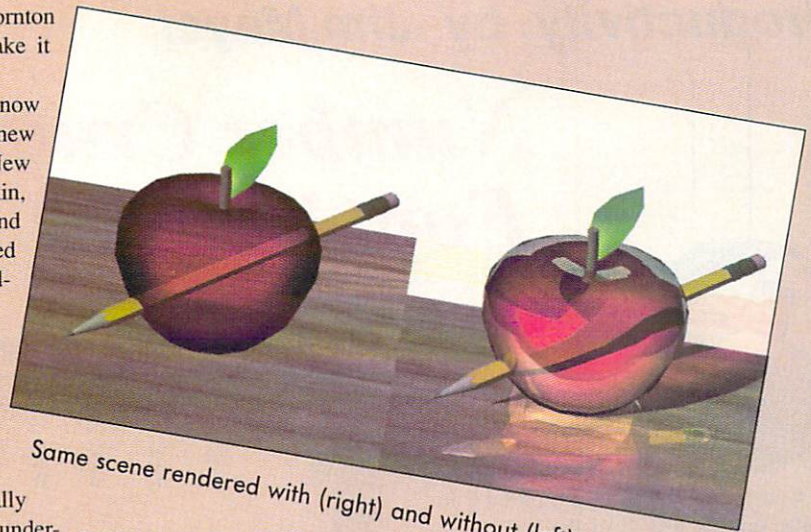
ChromaF/X

ChromaF/X is another facet of the Toaster that I know is going to get a lot more use now that the documentation is improved and a tutorial is included. There are 55 pre-set effects which really show off the potential of this previously under-appreciated tool, and users have another 45 slots for their own cunning ChromaCreations. Some of the more impressive presets are Gold (which makes people on camera look like liquid metal), Red Chrome, Green Neon, Nuke, and Line Art, Charcoal, and Pastel (which produce convincing real-time art effects). The filters can be applied to live video, or to framebuffer DV2.

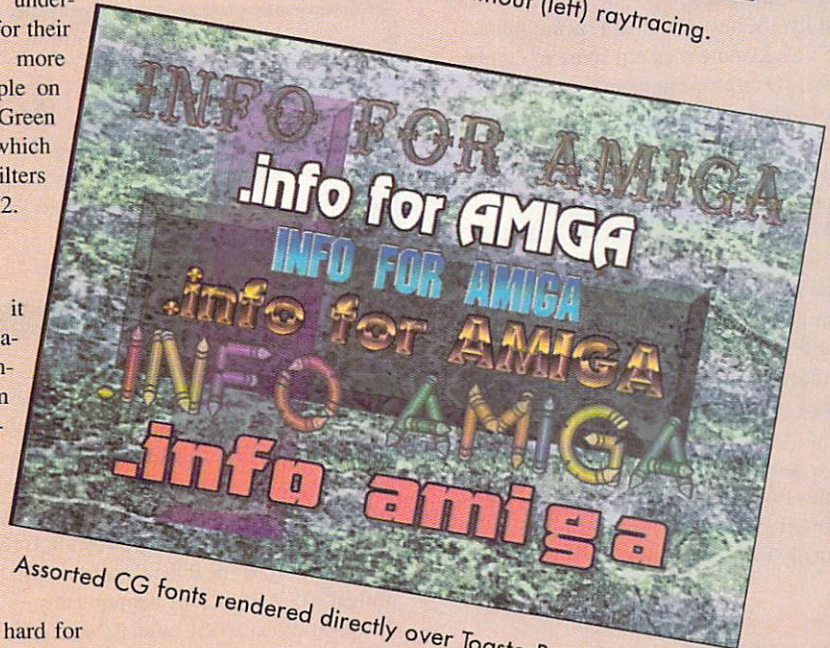
What's Not to Like?

The *Toaster* 2.0 upgrade is a triumph, and it offers so much power to so many for such a reasonable price that it seems almost perverse to mention its few shortcomings, but then that's what I'm paid for. One minor complaint I have with LightWave is that surfaces remain in the surface list even after the objects they belonged to have been deleted. This can cause some real confusion in a complex scene. I would also like some way to mix different fonts and attributes on the same line in the CG. My only big complaint, however, is with the file requesters - why is this so hard for NewTek? The file handling schemes are entirely different from one application to the next, and none of them are very good (LightWave's being the least offensive) In a product as sophisticated as the *Toaster*, this is inexcusable. What the *Toaster* needs and needs badly is a consistent file requester across all the applications. It should have scrolling windows, access to all devices, full path control, allow wild card matching, text filters, etc. Good examples are everywhere: *Art Department*, *Professional Page*, and *TransWrite* are just a few of the role models NewTek could look to for inspiration on this detail.

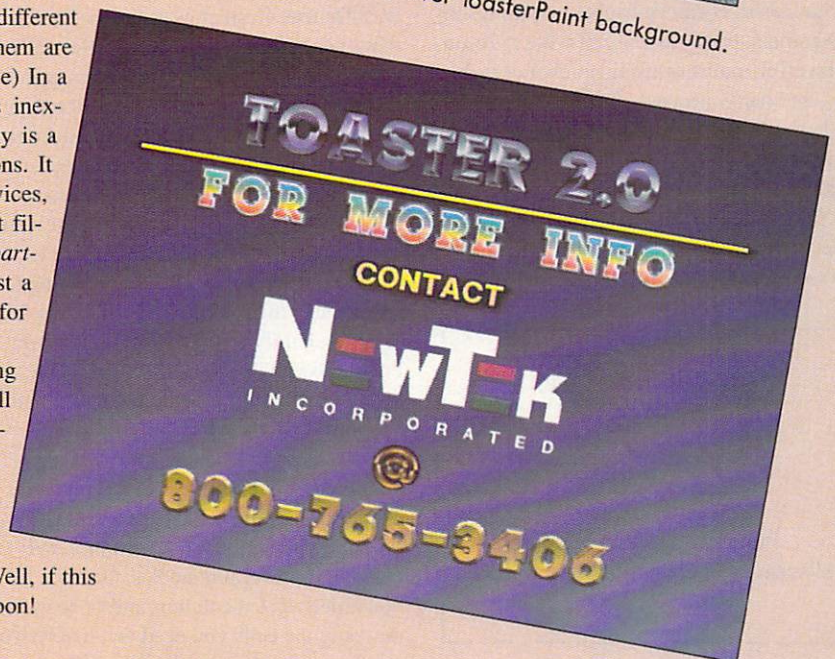
With that off my chest, let me close by saying this is one hell of a software update, and well worth the \$395.00 pricetag. NewTek has delivered on everything promised and much more. What may be most astounding is that NewTek says that this is just the beginning of the evolution of the *Toaster*! (Remember all those mysterious unused connectors on the *Toaster* board?) Well, if this is the dawn of Toasting, I can't wait to see high noon!



Same scene rendered with (right) and without (left) raytracing.



Assorted CG fonts rendered directly over ToasterPaint background.



Number Crunching and Font Wrangling

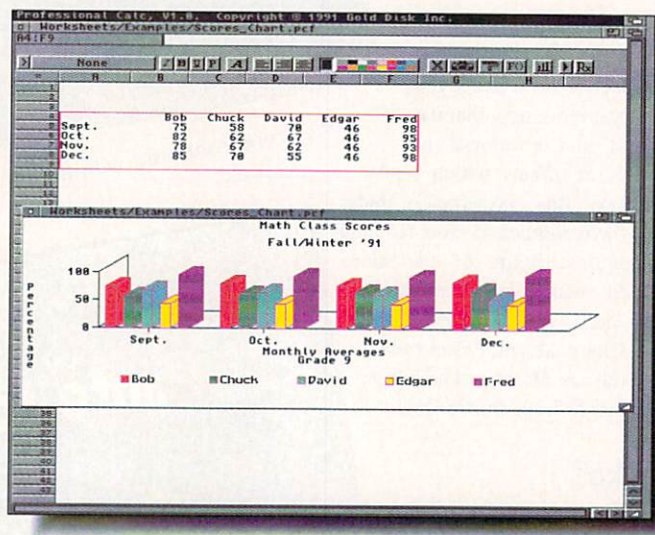


It has been said, I think, that the road to financial success is paved with broken spreadsheets. If so, the Amiga community can be assured of a secure future. We've had more than our share of cumbersome, crash-prone number crunchers, while our brethren in the Macintosh community had the slick, mouse-oriented *Excel*. Well, salivate no more. Gold Disk has come to the rescue with *Professional Calc*.

ProCalc, written by Michal Todorovic, is the successor to *Advantage*. It comes on three floppies (Program, Utilities, and Examples) and is not copy-protected. You'll need at least one megabyte of memory to run *ProCalc*, and a second floppy or hard drive is highly recommended. Hard drive installation is quick, easy, and painless. The manual that accompanies *ProCalc* is superb. It's easy to read, is fully indexed, and provides tutorials for virtually every function.

Down to Brass Tax

Spreadsheets can be frightening things to newcomers, partly because of what they are - powerful, math-intensive number crunchers - and partly because of what they were. In days gone by, spreadsheets were murky beasts, filled with mysterious language and requiring specialized knowledge. Once you got the hang of them, they were indispensable, but they were downright hard to use. No more. *ProCalc* is as easy to use as your



Plotting a bar chart with data from a *Professional Calc* spreadsheet.

favorite wordprocessor. You'll still need to know something about math, but *ProCalc* takes just about all the pain out of the process.

ProCalc has that 'brand new' look and feel to it from the moment you run it. It not only features the 'new look' windows of AmigaDOS 2.04, it fully supports the screen modes available with 2.04 and the ECS Denise. Cosmetics aside, the first thing you're likely to notice is how well this spreadsheet is integrated into a point-and-click environment. Gone are the days when everything was accomplished from the keyboard. *ProCalc* draws heavily upon the heritage of mouse-based wordprocessors, and makes most operations accessible from gadgets and menus. The mouse is used to full advantage, from navigating the spreadsheet to defining ranges of cells. In fact, you hardly have to use the keyboard. Functions can be selected from a menu, and cells or ranges of cells can be inserted into formulas with the sweep of a mouse.

You can open as many spreadsheets as your memory can accommodate, and you can cut, copy, and paste between them. If you find yourself losing your place, *ProCalc* offers several remedies. Outlines let you hide selected columns and/or rows, so that only the cells you need are visible. You

can also use this feature to keep sensitive data private, or - as the name suggests - to create outlines. You can also open View windows, enabling you to keep tabs on regions of the spreadsheet that might otherwise be out of view.

The ARexx Connection

There are 129 built-in functions, in addition to the standard math operators. If that's not enough, *ProCalc* features an ARexx port. In fact, there are *two* ports: the main port allows standard ARexx interaction between *ProCalc* and an external program. The second port is available from within the program via the REXX function, and is intended to allow external programs to gather data or to perform calculations unavailable to *ProCalc*. The possibilities are intriguing. In an example given in the manual, the ARexx port is used to call a telecommunications program which, in turn, contacts a stockbroker network for the latest highs and lows for selected stocks. This information is then used to automatically update the spreadsheet.

ProCalc offers a limited set of database functions. While they're not as extensive as those provided by a dedicated database program, they provide a useful adjunct to the spreadsheet functions. The database com-

Professional Calc



\$395.00

Gold Disk
PO Box 789, Streetsville
Mississauga ON Canada L5M 2C2
416-602-4000

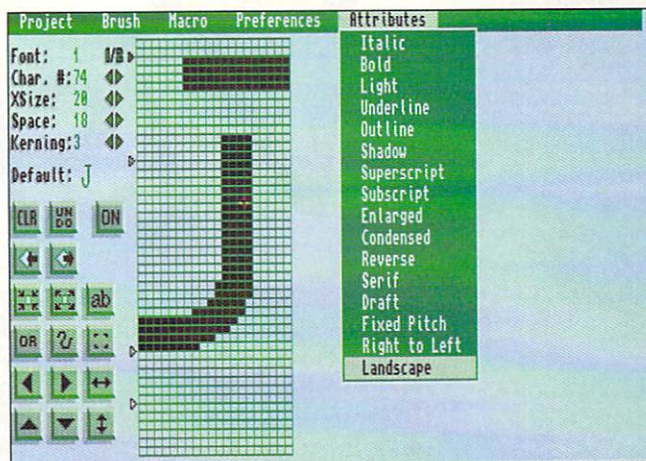
mands allow you to sort, select, extract, and delete data according to the criteria you provide. These functions allow you to quickly narrow the scope of the data you're dealing with. As an example, you might select all the employees in your company who are under 40 and sort their names alphabetically.

Say it With Graphs

The rows and columns of numbers in a spreadsheet offer one way to view the data, but it's not terribly exciting. If you'll be using the data for presentations, you'll need more pizzazz. *ProCalc* is happy to oblige with a smorgasbord of available charts and graphs - bar, pie, line, column, x-y, and area, in either two or three dimensions. Setting up a chart or graph is a simple, two-step operation. First, you click-and-drag across the data to be graphed. Then you click on the Chart gadget, set your options, and watch it go. The process is almost instantaneous. Once you've created a chart, it can be saved as an IFF, CAD (*Aegis Draw Plus*) or *ProDraw* file.

The look of a spreadsheet can be important, especially if you intend to print it out. *ProCalc* lets you assign the font of your choice to a cell, in any size, and you can choose from as many as 16 colors. If you want to standardize your layout, using one font for titles, one for labels, and one for data, *ProCalc* offers Style Tags. This option allows you to instantly assign a font and all its characteristics to any cell or range of cells. When you're ready to print your spreadsheet or chart, you'll find that *ProCalc* offers full support for all Preferences printers, direct PostScript output, and EPS output to disk. Sideways printing is supported, as well as headers, footers, page numbers, and date and time insertion.

ProCalc provides the answer for those who ask if there's a truly professional spreadsheet for the Amiga. It's fast, powerful, easy to use, and it has provisions for



Personal Fonts Maker at work on a highly stylized letter 'J'.

additional capabilities. The few rough edges I found are being polished even as I write this. I give *ProCalc* two thumbs up.

Personal Fonts Maker

The medium is the message, according to McLuhan, and when the medium is the printed word, it's the font that conveys the message. But which font? If you don't like what's available, you'll have to roll your own. In the past, this has meant using *Calligrapher*, which is now old as well as quirky. *Personal Fonts Maker (PFM)* from Cloanto is a new alternative. This Italian import sports the 'new look' interface, is fast and sleek, and is very easy to use. It doesn't stop at fonts, either. *PFM* also comes with a printer driver modifier program that lets you patch your printer driver so that it will work smarter, not harder.

Fonts, Italian Style

PFM may be an import, but you'd never know it from the manual. This is one of the most beautifully written manuals I've seen. The introduction guides the novice through most phases of Amiga operation and makes sure that you understand the computer before you dive into the program. Unfortunately, there's no index. Fortunately, the Table of Contents is comprehensive.

I should mention what *PFM* won't do: It won't create color fonts, although it can read them, and it won't create outline fonts. It's strictly a bitmap font editor, which you can use to create either screen fonts or downloadable printer fonts.

a drawing grid with adjustable reference points (cap line, mean line, baseline, and underline point) and a number of tools. The grid is automatically sized to accommodate the point size. You could, if you wanted, create an entire character set from within *PFM*. You don't have to, though. *PFM* will gladly accept IFF brushes, so you can create or digitize characters externally and use *PFM* to touch them up and assemble them into a font. *PFM* fonts, by the way, can be as large as 255 by 255 dots.

PFM lets you work with two fonts at a time, and brushes are common to both fonts. Cutting and pasting between fonts is a breeze. Although the drawing tools of *PFM* aren't extensive, they are adequate to the job. Brushes can be flipped horizontally and vertically, halved, doubled, and stretched, and the image can be reversed. Characters can be moved in any direction within a grid, and the space characteristics - x-size, space, and kern - are adjustable for each character. *PFM*'s macro capabilities allow you to perform repetitive operations, such as the creation of shadowed characters, with the touch of a key. Finally, *PFM* doesn't stop at fonts. The printer driver modifier program lets you patch your driver so that the printing of certain characters, such as those with grave accents, can be accomplished in a single pass rather than two.

PFM is a fully capable font program with few bells and whistles. It does what it does simply and well. If you don't need color fonts, take a look at *PFM*. It just might fit the ticket.

Personal Fonts Maker



\$99.95

Centaur Software
PO Box 4400
Redondo Beach CA 90278
213-542-2226

Keep It Simple

PFM is the model of simplicity. There's



ProVisions

ProVisions Contents

- ◆ **MultiMedia** . 40 Harv shuffles a stack of CDTV titles.
- ▲ **Graphics** . . . 43 Brad renders an opinion on *Imagine 2.0*.
- **Audio** 45 Bob takes a logical look at *X-oR v.1.3*.
- **Video** 48 OJ says *Pro Video CG II* takes the title.

MULTIMEDIA by Harv Laser

◆ said we'd return to Amiga stuff this month, but we'll have to postpone one more time while I bat cleanup on a few more CDTV products: another great one from Xiphias, the very first CD+MIDI disc, and some less-than-wonderful titles about gardening.

American Heritage

If you have a dictionary in your home you know what a pain it can be to lug it out and plow through it looking for spellings or definitions. There's the old saw that goes something like "Well, if I knew how to spell the word I wouldn't need the dictionary!" And for kids, a dictionary has to be about the most boring book in the world: the print is tiny, and the illustrations are few and far between. It almost begs *not* to be used. Of course, a dictionary on paper has its advantages. You can haul it around with you and search it with relative speed. But a dictionary on two ounces of CD has its own blessings.

Xiphias' *American Heritage Illustrated Encyclopedic Dictionary* contains over 80,000 word definitions which are searched with an interface built atop Houghton Mifflin's 'Lexical Database' engine. The disc boots up to present the


English alphabet's letters in 26 large tiles, easily viewed from across the room. Xiphias titles all use the Amiga's high resolution mode, and this makes their appearance

crystal clear on a television. The muted colors are distinct yet easy on the eyes, giving this title a professional and quality look. It's obvious the Xiphias programming team knows video and what color schemes work the best.


Click the letters to spell a word or part of a word, click 'search' and the database engine revs to work, presenting a look-up list of all the words in the dictionary it finds that contain your choice. For example, punching in 'moon' finds 'full moon,' 'harvest moon,' 'man in the moon,' 'moonbeam,' 'moon dog,' 'moonlight' - 29 entries in all. Select one of those to go to its definition. At each definition screen, *every* word on the screen is selectable and is hypertext hot-linked to every other dictionary entry containing that word. A word can be pronounced through your speakers using CDTV's Amiga Narrator voice synthesizer, and thousands of word entries have crisp and clean linked images whose displays are another button click away.

This dictionary remembers your last twenty word requests and will recall them into a scrolling list on demand. A demo mode with articulate narration presents all of the title's available features, so very little in the way of a paper manual is needed or provided.

This title would have deserved a five star rating except for three factors: 1) It won't recognize a connected keyboard so all your input is by controller pad buttons only. 2) All the images are non-overscan with a black border. 3) There's no provision to hook up a printer and get hard copy from it. My call to Xiphias revealed these deficiencies will all be cured in a future upgrade version for a nominal cost. I'd also like to see a mode in which one could view every picture on the CD automatically, alpha-



For kids, a dictionary has to be about the most boring book in the world.



betically, or even randomized. These complaints aside, the Xiphias *American Heritage Illustrated Encyclopedic Dictionary* is full-featured, easy to use, fun to just browse around, and probably entertaining enough that the kids will even like it.

CD+MIDI

This is the first commercially-released music CD encoded with both graphics and MIDI data ever made available to the public. It's the product of those talented folks from Burbank, Warner New Media, whose ingenious CD+G(raphics) discs have been discussed here before.

Remember back in the bad old days when Amiga owners were chided by Atari ST owners (whatever happened to them anyway?) because the ST had built-in MIDI ports and the Amiga didn't? Well in case you didn't know already, CDTV (an Amiga) has built-in industry-standard MIDI in and out ports. This fact leads us to some rather interesting possibilities, which are now fully realized with the release of this new Warner CD.

Gershwin's timeless concoction of jazzy melodies and classical elements, 'Rhapsody in Blue,' is presented on the CD in different versions: both solo and four-part piano and orchestral arrangements, and split-stereo versions with the full presentation on one channel and accompaniment only on the other. Each of these can be played as CD audio-only on any CD player. But take a CDTV and hook up a MIDI synthesizer (any will do), or a keyboardless sound module (such as a Roland MT-32 or CML-32, or Yamaha FB-01) and this disc really comes into its own. MIDI data in the four presentations will drive the synthesizers' own built-in instruments, which you can change and reassign any which way you please.

Preceding each of the music tracks is a narration track which uses a simple color diagram, displayed in CD+G graphics mode, to explain what you're about to hear. The graphics remain on-screen while the MIDI encoded music track plays, thus providing CD+G+MIDI all on





The input screen for the *American Heritage Illustrated Encyclopedic Dictionary* from Xiphias.

one disc. There are even special channels on the disk to drive a Yamaha DisKlavier - basically a MIDI-controlled piano - if you're fortunate enough to own one.

The performances of the 'Rhapsody' were recorded by The Hambro Quartet and they've done a great job of scoring here. 'Rhapsody in Blue' is one of the most respected, recorded, performed, and written-about works of pure American musical genius ever composed. For the CDTV owner who also owns a MIDI synthesizer, it can now be heard in a whole new way, thanks to this CD. I wonder what George Gershwin would think of all this?

Garden Fax

I'm a sucker for those Saturday afternoon PBS "how to" programs. I love to watch experts on shows like 'This Old House' and 'Home Time' and 'Square Foot Gardening' work their wonders with their hands and tools, doing remodelling and construction and gardening jobs, always with perfect results. Apartment living pretty much keeps me from actually trying any of these things, but the shows provide good, clean vicarious fun. And who knows... maybe someday I'll have a house. Plants don't seem to like me much and those I have tried to grow usually rebel against me by turning into small brown ghosts which crumble to dust under my touch. My 'black thumb' aside, I was happy to see some 'how to' titles released for CDTV.


**CDTV has
built-in
industry-standard
MIDI in and
out ports.**


**American Heritage Illustrated
Encyclopedic Dictionary**
 ★★☆☆
\$69.95 w/caddy
Xiphias
Helms Hall
8758 Venice Blvd.,
Los Angeles, CA 90034
213-841-2790



CDTV Publishing's unimpressive *Garden Fax*.

The concept behind the *Garden Fax* series is that each disk contains a number of plants in a given category. *Fruits, Vegetables & Herbs* has 172. You determine where you want to grow the plants (shade or sun) then choose a planting and harvest time. As each choice is punched in, the number of plants which meet your criteria lessens, until you've narrowed down the range to just a few. You can then view mini or full screen pictures of them, read tips on how best to sow their seeds and care for them, and see and hear narrated slideshows in those cases where a text explanation isn't enough.

It was with anticipation that I fired up CDTV to check out this quartet of *Garden Fax* titles. The discs' packages are very attractive and seemed to indicate quality software inside. I was genuinely disappointed by these presentations. Perhaps titles of the quality produced by Xiphias and others have just spoiled me. Perhaps I expect too much. I hoped to gain some horticultural enlightenment but these titles are

just too lackluster to be conducive to extended viewing and use.

The pictures and text are in various fonts, and it's all just too low resolution. Nothing on the disc looks as crisp and clean as the photos on the package covers. The information is housed on-screen in a kind of Rolodex affair which has a goofy, sluggish feel to it. The software works slowly and as you wait for the next section to load, a graphic which is supposed to represent a spinning CD appears. It looks like a peppermint candy, not a CD.

Presenting CD+MIDI, Featuring
Music From George Gershwin's
Rhapsody in Blue
\$39.99



Warner New Media
3500 W. Olive Blvd.
Burbank, CA 91505
818-955-9999

Sometimes it spins, sometimes it doesn't. Hey, how hard can it be to hire an artist to draw a convincing looking CD?

When you ask to see a 'film' (one of those narrated slideshows I mentioned earlier), the pictures and the text don't always agree with each other. Rather than smooth transitions, the screen goes black as the next frame loads, and often the screen stays black between pictures longer than the pictures themselves are displayed. Sometimes it's difficult to tell exactly what it is you're looking at. More than once, as the software was loading a film, it crashed and caused my CDTV to reboot.

These four *Garden Fax* titles certainly contain useful information, but getting to it and learning it is not an enjoyable experience. There's no printing option so you'll be jotting down a lot of notes unless you have a photographic memory for many details. Unless you can find these titles at a bargain basement price, avoid them.



Garden Fax - Fruits, Vegetables & Herbs

Garden Fax - Garden Plants

Garden Fax - Indoor Plants

Garden Fax - Trees, Shrubs, Roses & Conifers

\$49.95 each w/o caddy



CDTV Publishing
1200 Wilson Dr.
West Chester PA 90305
215-431-9100

The discs' packages are very attractive and seemed to indicate quality software inside.

Last year we had a look at version 1.0 of Impulse's *Imagine*, a 3D modelling and animation system (see *info* #39 and 40). Since that review, Impulse has released version 1.1 and, now, version 2.0 of the program. In v1.1, there were minor enhancements and a couple of bug fixes. The announcement that *Imagine* 2.0 was about to be released created quite a lot of speculation among users.

So what's new? Well, quite a lot. Enough to justify skipping ahead to a whole new version number and asking \$100 for the upgrade from existing users? Let's see.

On starting the program we find the now-familiar 3D button and panel look under both AmigaDOS 1.3 and 2.0. The bar chart-like Action Editor now stands on its own instead of being a subset of the Stage Editor. There's an integrated - if awkward - Preferences Editor for changing some program-wide settings like hot keys, screen colors, antialiasing levels, and so on; also there are some new algorithmic Textures and Special Effects for animation.

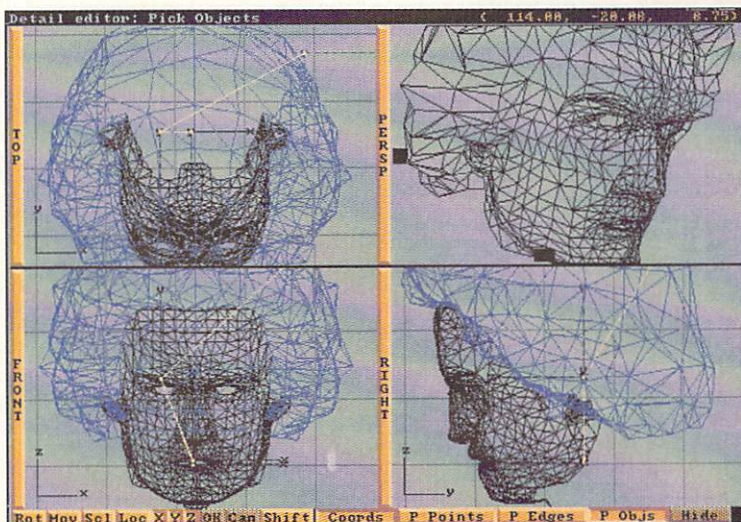
In fact, there are many other changes and additions, but they're a bit less obvious. Surely we could browse through the manual for a quick overview, couldn't we? Well we won't, not just yet.

The Forms Editor isn't new but is finally useful. This object editing tool allows the artist to work on an object as a series of linked cross-sections in a unique and powerful way. Irregular objects and objects made up of complex curves are a natural here, and this editor has been heavily modified from previous versions. The new Forms Editor is well worth exploring even if you've been disappointed with it in the past.

The Cycle Editor - which allows groups of objects to be animated in a repeating loop - has been slowly enhanced. Its revision here isn't as dramatic as the Forms Editor, but it has been improving steadily with each update.

The Detail Editor, the more precise tool for object creation, has also been revamped slightly. An object's defining points may now be scaled and rotated interactively with the mouse - they could only be 'dragged' with the mouse in earlier versions. A set of new functions control phong shading of objects, so that some areas can be rendered as faceted or flat and others smoothly shaded. There were ways to do this before, but the new features are much better. Paths created in the Detail Editor are now spline curves rather than point and line paths as they were before. Imported IFF pictures are now automatically solid rather than just outlines, and font objects can be created, as well.

In earlier versions, the size values entered for textures did not change as an object was scaled up or down, so that scaling an object changed the appearance of these textures. Now the size parameters scale with the object, a great relief.



Imagine 2.0's Detail Editor, with configurable buttons (at the bottom) and beveled 3D look.

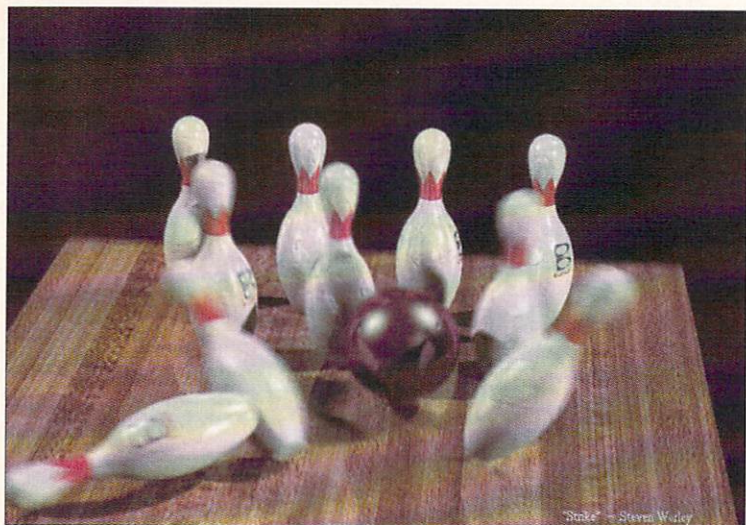
A new object Attribute called 'Fog' makes an object render as, well, fog. Other objects passing through this fog become less distinct as they pass deeper into it. A similar Fog attribute for the World allows these haze effects to be rendered on an entire scene.

At any time from the Editors it's possible to do a 'Quick Render' of the scene. This means that the artist can adjust texture and other attributes and see them rendered without exiting the Detail or Stage Editors. Also on the rendering side, a 'Backdrop Image' can be specified to appear behind the scene. This can even be a succession of animation frames; unfortunately the resolutions of the backdrop image and the final rendering must be the same, so it's not possible to use this feature when doing quick, low-resolution versions of an image prior to a final rendering. Both Impulse's *Firecracker 24* and Digital Creations' *DCTV* are directly supported when rendering from the Project Editor, but there's apparently no way to use *DCTV* directly for Quick Render images.

On the animation side, two special effects may now be used on the same object at the same time, and objects in Stage may be set to 'Quickdraw,' in which they're drawn simply as rectangles for speed. That was available before in the Detail Editor, but Stage is where I always seemed to want it.

Among the many controls available in the Preferences Editor, it's now possible to define buttons to appear on each of *Imagine*'s Editor screens.

The new
Forms Editor
 is well worth
 exploring.



Steve Worley's 'Strike' illustrates a homebrew motion-blur technique he explains in his book *Understanding Imagine 2.0*.

Documentation

In the 'mixed blessings' department we find, as usual, the manual. There is at least an index, though it's a bit incomplete and not at the actual back of the 270 page book, which puts the reader in the odd position of searching first for the index, then for the information. There are at least two references in the manual to Appendices that don't exist.

The manual attempts a conversational and relaxed style (especially relaxed in spelling and grammar). Many descriptions of features arouse more new questions than answers; what passes for a tutorial is a quick walk-through that instructs the user to do several things without explaining their relationship, and then congratulates the user on now having mastered what hasn't been explained.

Throughout the book appears Impulse's credo that experimentation is the best teacher. I certainly agree with that; a program like *Imagine* has many advanced features that act on one another in so many ways that only experience can demonstrate them.

This does *not* mean, however, that the developer doesn't have the responsibility to explain clearly how each of those features works, so that users don't have to experiment for weeks just to *understand* the basic features of the program.

There is nowhere a simple and concise technical refer-

ence section, nor a list - for the benefit of the many upgrading users - of exactly what's changed from version 1.1. Users will have to stumble over the new features, or plow through the massive and poorly-organized manual. Fortunately, there is an alternative, which I'll get to in a moment.

I've rated the program with four (out of five) stars because of its capability. Had the documentation been as useful as *Imagine* itself, it would have rated higher.

Imagine 2.0 is not as complete an update as one would assume from its name. It's just possible that the version number has more to do with the version numbers of competing programs than with changes to *Imagine* itself. That said, it is a significant advancement over earlier versions, and *Imagine* users should definitely upgrade to 2.0. New users will find it one of the most powerful 3D graphic systems for any personal computer (despite its poor manual) and, working through the steep learning curve, will eventually realize that it was well worth the effort.

An Alternative

Steven Worley's book, *Understanding Imagine 2.0*, is about as different from Impulse's *Imagine 2.0* manual as you could, uh, imagine. It's informative, well organized, and thoroughly indexed, and has hundreds of cross-references in the form of marginal notes.

The body of the book is devoted to separate chapters on each of *Imagine*'s Editors; Appendices give valuable techniques, a complete command reference, solutions to common problems, and descriptions of other software and hardware products that can be used effectively with *Imagine*.

Mr. Worley is the organizer of the 'Imagine Mailing List', a message network operating within UseNet. His extensive experience with the program and his moderation of that question-and-answer forum have given him an excellent background for this book - a sort of 'alternative manual' which will be invaluable for the beginner and very useful for experienced users, too.

Physically, the book is an 8.5"x11" spiral-bound manual of 225 pages. I was pleasantly impressed by the page layout, a traditional book design with wide outer margins



**Imagine 2.0
is not as
complete an
update as
one would
assume from
its name.**



Imagine v2.0



\$450.00

Impulse

8416 Xerxes Ave. N

Brooklyn Park MN 55444

612-425-0557

for the marginal notes. A disk is also included in the package; it contains some IFF images for brush mapping, an outstanding example of motion blur in JPEG format, some public domain programs, objects and Attribute files.

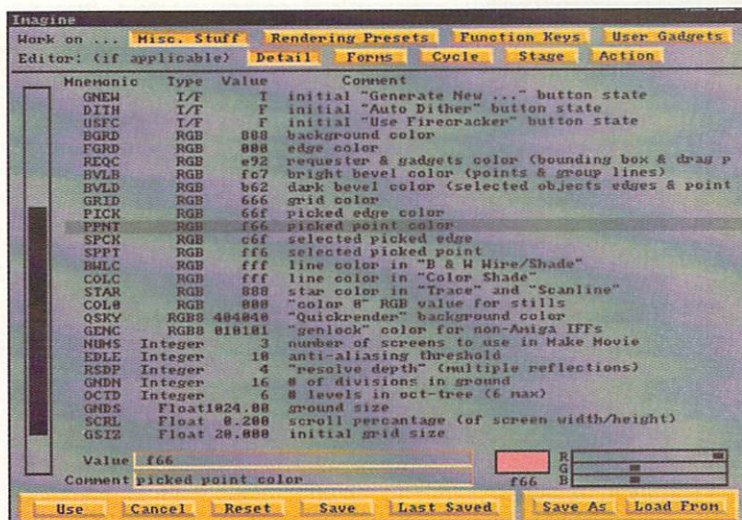
I recommend this book very highly to *Imagine* users regardless of their experience. It's very complete, easily navigated, and a pleasure to read.

Understanding Imagine 2.0



\$29.95

Apex Software Publishing
405 El Camino Real, Ste. 121
Menlo Park CA 94025
415-322-7532



The Preferences Editor allows users to alter the program's default hot keys, colors, recursion, antialiasing, and other features.

ProVisions AUDIO

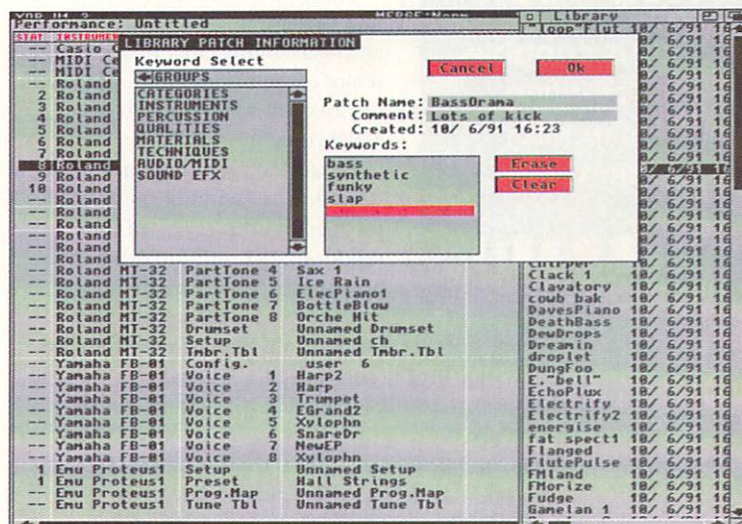
by Bob Lindstrom

Okay. Already, you're beginning to doubt my credibility this month. And you haven't even gotten to the third paragraph. But seriously, despite the fact that you see very few tear-stained four-figure paychecks being negotiated at the local drive-in teller, big bucks can be bothersome.

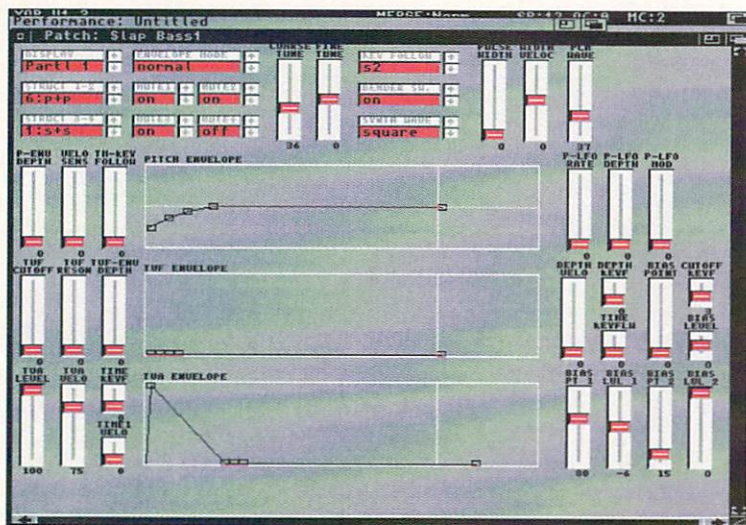
For instance, remember how easy life was when you only owned one synthesizer? Programming patches from the front panel wasn't *that* much of a drag and, when you needed more flexibility, a single computer-based patch editor was a pretty affordable proposition. What's more, keeping mental notes on one patch library was something even your substance-compromised grey cells could handle.

Still, you weren't happy. The more you programmed that lonely synth, the more your ears 'expanded' and the more you wanted two synths, three synths, heck, a whole home MIDI studio. Yeah, that's the ticket!

Then the fateful day arrived when you had the moolah to match your imagination. That rack began to fill up. A briar patch of MIDI cables appeared behind your workspace. The time-consuming process of front-panel



Patches may be assigned keywords from user-definable menus for later reference in database searches.



Patches for Roland's popular MT-32 synth may be edited from within the edit screen in this X-oR instrument profile.

programming became more irritating. And where the heck is that string patch we used last month on a spot for the used toothbrush factory outlet?

Jeez. This thing is getting out of control. Let's get some patch librarians for the Amiga! Sorry, synth king, we can't afford to pop for another four pieces of expensive software. We blew the budget on instruments.

||||| ● |||||

X-oR is capable of creating entire MIDI studio setups.

||||| ● |||||

Patching It Up

X-oR, the Universal System Exclusive Orchestrator from Dr. T's, attempts to bring order to the MIDI setups of the rich and (not-so) famous or anyone else who has a growing MIDI zoo.

Robert Melvin, creator of Dr.T's 'Caged Artist' series of single-synth patch editors, has designed X-oR as a single piece of software that will be patch editor and librarian for a wide range of synthesizers. One software

size and one cost outlay fits all. With nearly 100 instruments supported in Amiga X-oR v.1.3, chances are good that most, if not all, of your MIDI instruments will be represented.

On the macro level, X-oR is capable of creating, editing, and saving entire MIDI studio setups as Performance Patches. After tweaking your MIDI instruments for a particular song, you simply save the entire configuration as a performance patch. Then X-oR can restore the same channel settings, patches, volume levels, etc., etc., at any time.

Finally, X-oR goes the final yard by permitting you to create a detailed patch database, including comments and descriptions, for all the X-oR supported synths in your system. When you want a string sound, just search the database for all the string sounds you have available, regardless of synth.

By integrating these three functions in a way impossible with single-synth patch editors, X-oR effectively turns your multi-synth setup into one huge, flexible sound generator.

If, that is, you have the perseverance to get it to work.

Patching It Together

So here comes more of that rich kid agony we were talking about earlier. The first few hours you spend with X-oR are likely to be frustrating.

First, don't even *think* of using X-oR without an automated MIDI switching box or a hard disk.

Like any patch editor, X-oR requires direct, two-way communication between synth and computer to work properly. Without a switcher, you could endure the tedious process of pulling and plugging MIDI cables. But why bother? With a MIDI-programmable switcher, X-oR will make all the cabling changes for you. Hey, it's the way the program was made to work. Don't fight it. Buy a switcher when you buy X-oR. At present, X-oR supports switchers from J.L. Cooper, KMX, and 360 Systems among others.

With X-oR's ability to search a patch database according to user-defined keywords, a hard disk is essential. Swapping floppies is for musicians with lots of patience and time to kill. That probably doesn't include you. I know it doesn't include me.

Second, because each synth defines its system-exclusive info a little differently, you'll find yourself poring over synth manuals written in obscure Japlish to figure out these critical but arcane facts before you can get started. Dr.T's should provide hints about these facts in the documentation, but doesn't. Go figure. If they knew enough to program patch editors for each of these things, why couldn't they tip us off on the sysex info? Oh well, just have plenty of your favorite artificial tranquilizer handy when starting X-oR for the first time.

The key to X-oR's versatility is its wide selection of instrument Profiles: data files that turn X-oR into synth-specific editors. Profiles for the most popular synths are included with the program. If you don't find what you want, new profiles are being created or updated regularly by Dr.T employees and X-oR users everywhere. A Profile programming editor, E-oR, can be used to create new profiles, but it currently is available only for the Atari ST. Fortunately, X-oR instrument profiles are system independent and may be swapped among Amiga, Mac, ST, and IBM-PC. New profiles are available to registered

owners direct from Dr.T or at no charge on Dr.T's GENie-based support BBS.

With switcher and synths correctly configured, choose Get Performance Patches from the the menu bar. Miraculously (at least I thought so the first time I did it), *X-or* automatically changes the switcher, polls each instrument, and generates a performance patch screen that identifies all the instruments available across your entire MIDI system.

When you want to change a patch or a patch bank, Edit the appropriate patch and *X-or* summons an on-screen editor that allows you to fine tune a patch, create it from scratch, or randomize a new patch bank from existing patches. You may also edit MIDI channels, relative volume levels, instrument banks, whatever you want. Dedicated patch editors may have a few more bells and whistles, but nothing beats the integration and capability of *X-or*.

When you have the entire system the way you want it, save the whole thing as a performance patch. I recommend saving a performance patch for each song. Then, when you return to the studio to resume work, restoring your original setup is as easy as loading and transmitting a single performance patch.

Patching the Pieces

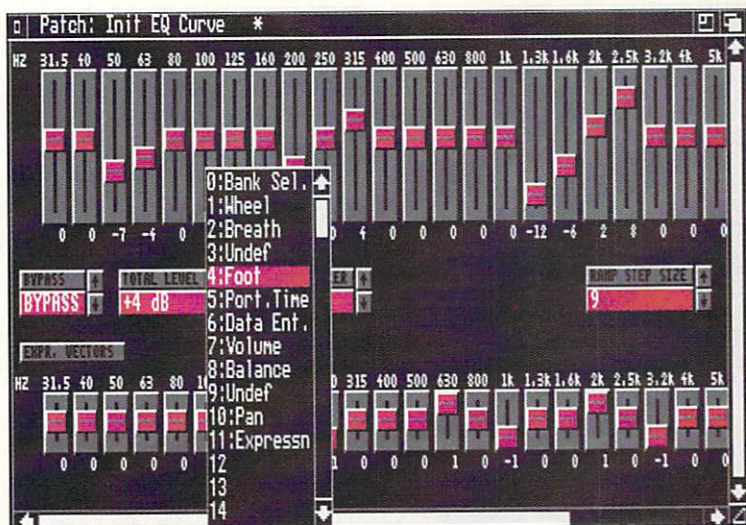
X-or's librarian may be its most potent feature. Individual instrument patches or entire patch banks may be added to the patch library for each instrument. Each patch can be categorized according to several built-in or user-defined criteria such as Percussion, Strings, or Sound EFX. Each category is also broken down into timbral qualities: soft, mellow, electric, etc. Therefore, you could identify a single patch by the keywords electric, mellow, soothing, NewAge. Since setting up keywords can be a time eater, you may save patches in a library, then add or edit keyword classification at a later date.

Patches are transferred to outboard synths by opening the patch library for a particular synth, then mouse-dragging the library patch to the proper location in the performance setup list. Just that easy. Just that quick.

When you need to locate a patch, *X-or* searches all synth patch libraries by keyword. Therefore, the next time you need a mellow, lowpass, string sound, a quick search will display all available choices for all instruments in your MIDI setup. Say goodbye to endless hours of flipping through floppy disks (if you bought that hard disk I warned you about) and trying to remember what patch sounded like.

Frayed Patches

All is not copacetic in the land of *X-or*, however. For reasons I cannot understand, *X-or* temporarily freezes your Amiga whenever it is polling a MIDI synth. Fur-



Picking a controller from within the *X-or* patch editor.

thermore, sysex file transfer is unusually slow (even on an '030-based Amiga), slower than normal MIDI rates and slower than the PC-compatible version of *X-or*. Although the program is compatible with Dr.T's MPE (multi-program environment), its bad neighbor behavior doesn't make much of MPE's power.

I also detected some little, shall we say, peculiarities: patches that wouldn't save, patch banks that refused to open, and other unpredictable eccentricities. In short, the *X-or* Amiga version is not quite as stable as it might be. Dr.T tends to be fairly diligent about upgrades, though, and the program remains highly usable in spite of its foibles.

Instrument profiles generally provide all the editing controls you'll need, but in standard medium-resolution the screens occasionally are crowded and must be scrolled to display all editing options. In high-res, screens generally are cleaner with more options on-screen at once. The drawback is that hi-res data slider bars can be more difficult to 'grab' with the mouse than med-res sliders. On the upside, you easily can switch between resolutions from within the program.

It may not yet be perfect but, warts and all, *X-or* is remarkable, a model of the convenience, power, and functionality that computers can bring to a MIDI studio. Integrate your MIDI studio with *X-or* and you'll never patch into the past again.

||||| ● |||||

X-or v. 1.3
☆☆☆+

\$229.00

**Dr.T's Music
Software**

**100 Crescent Rd.
Ste. 1B
Needham MA
02194
617-455-1454**

||||| ● |||||



A closeup of the two-level anti-aliasing used in *CG II* fonts.

Shereff Systems has long been known among video professionals for 'pushing the envelope' with their character generator programs. Shereff's *CG I* has undergone continuous evolution, finally arriving at *Pro Video Post*. So after seven years of *CG I*-related products, they've introduced its successor, *CG II*.

CG II builds *Pro Video Post* but adds features that many users kept asking for, mostly enhanced font features and mouse control. Since font handling has been changed the most, we'll examine that in detail first.

Font-tastic features!

Whereas earlier products used Shereff System's proprietary font format, *CG II* can make use of any Amiga font you desire. By use of a supplied conversion program, you can convert standard Amiga fonts, color-

fonts, Toaster fonts, *Broadcast Titrer 1.0* fonts, and PCL printer fonts to the format that *CG II* uses. Fonts for *CG II* reside within a separate directory so they won't get confused with your regular fonts. The fonts that are supplied with the package feature two (2) levels of anti-aliasing giving them that '35 nanosecond look' being touted by everyone these days. The converted fonts are also anti-aliased with two levels of anti-aliasing to improve their screen appearance. The converter even allows you to create your own font sets from scratch, so foreign font sets are easily built. And you can create your

own colorfonts for *CG II*. This means logos, commonly used clip art, etc. *CG II* supports the ALT character set for each font, too.

Using fonts within *CG II* is also improved. Where you were once limited to four sizes of four timesteps, you can now load in a single font or as many as 255! The default font files can easily be specified. You may select only the sizes and timesteps you need, enabling you to use your fonts more efficiently. Colorfonts are supported and several are supplied with the program. These fonts are some of the cleanest I've ever seen, designed specifically for hi-res use. One of the provided colorfonts has all the usual credit cards as characters. Another has arrows, lines, and other commonly needed graphics characters; several sizes are included.

Mousing around

The mouse has never been a functional part of Shereff Systems products until now, due to their desire to keep the user's hands on the keyboard for speed of entry. (Shereff didn't make use of Intuition until *Pro Video Post*.) Using the Amiga mouse and menu system has made the program more accessible to those video users not coming from a traditional broadcast background. Every menu selection maintains a keyboard equivalent for those who prefer that method, though. The main selections are found by moving the mouse to the top or bottom of the screen, where two rows of buttons appear. Clicking on these buttons activates a real menu where the user can select further features and options. Mouse users will find the selection buttons in all the menus a bit touchy; a light touch of the mouse button suffices to make the selection. Prior *Pro Video* product users will find the keyboard commands similar, but changed enough to warrant caution at first. Another unexpected feature is the ability to use the mouse to instantly place the cursor where you want it... much faster than wearing out the cursor keys!

Other new features

Line sizes are now variable, line-by-line. The text on a line may be larger or smaller than the line and if smaller, may be positioned anywhere within the line. Once text is on the line, the timestep and size may be changed globally; no need to delete and then retype. Character spacing is now adjustable, from letters actually touching to being spaced w a y out. The spacing between words is also adjustable, which lets you fine tune the layout of the text. Text shadows are cast, extruded, and transparent too! If you haven't tried a transparent shadow over an image or video you haven't seen what a subtle and exquisite effect it makes.

The number of pages in a 'job' is changed from 100 to 26 groups of 99, making for a potential display of 2574



pages of text and images (memory permitting) of course!). All fonts, pictures, and jobs are now saved and loaded from separate directories to cut down on search time. Jobs are now saved with a 'job' suffix, which may sound like a minor thing, but can really help when searching through mounds of data. Icons are also saved with the job, so you can start the program *and* load the job by clicking on one icon.

IFF images from programs such as *Deluxe Paint* are still usable as backgrounds, but there are some new background options. One is to tile the background with an IFF brush. This saves a ton of memory. Another feature is the ability to create an opaque background from any color in the palette other than color 0. The background is created from side to side, top to bottom, effectively covering any video that might otherwise leak thru when genlocking. It takes no extra memory to use this feature. The new 'Hide' feature allows you to put an image behind a page of text, making it available to 'leak through' wherever the text appears. You could put a texture into a font or reveal a portion of an upcoming background through the text. All images for *CG II* must be at least 640x400 in size with the maximum of 736x480 (the default size). Images smaller than the default are automatically centered. Selecting images is easier thanks to a small 'pre-view' screen built into the requester.

Underlining is still adjustable with a new option of generating only a highlight line from the text out to the right and left margins on a line. Page transitions have been increased in number from *Pro Video Post*, but the DVE transitions aren't included. *CG II* does, however, include the ability to intermix regularly transitioning pages with 'roll' pages; i.e., for credits and other normally scrolling text.

Easy to Use

Using *CG II* is straightforward and simple. Nothing is 'etched in stone' until you decide it is. The ability to duplicate pages speeds up production and maintains a consistent display of text. You can even replace pages and insert pages from elsewhere, should the need arise. The installation of *CG II* on your hard drive is simple; just click on an icon and follow the few instructions. The program is a bit of a hog for chip RAM (it requires one meg of chip RAM, three megs total RAM) because of the hi-res operation, but this is helped by the program's fonts, images, etc., being kept in fast RAM. Operating *CG II* after a fresh warm boot is the safest way to maintain the maximum amount of chip RAM.

The manual for *CG II* is easy to read (you *do* read the manual, don't you?) and has separate sections on advanced usage which contains numerous tips on operation and the special effects that are possible with the program.



A selection of interesting font styles from *CG II*.

CG II is a great program in its own right but will obviously be compared to *Pro Video Post*. In that light, it has much to offer that is new, but several features of *Post* didn't make it into *CG II*. Genlock control via the software is no longer available. This wasn't used by many, but will be missed by some. I particularly miss the DVE style transitions which have become a favorite of my clients. Since *CG II* is a brand new program and not a direct descendant of *CG I*, one-line jobs created with the former products won't load into *CG II*.

The price of *CG II* is \$199.95 for first time buyers, while the upgrade policy for Shereff System product owners is half off the list price. For that price, having *CG II* is not just a good idea but a great value. *CG II*'s ability to use fonts sings a siren song to those of us with many megabytes of fonts burning a hole in our hard drives. Being able to design and use your own font sets is unbelievably tempting as well. Add that to Shereff's almost legendary customer support and upgrade policies, and you'll not go wrong purchasing *CG II*. I'm not going to get rid of *Pro Video Post*, but I'm certainly going to find a lot of uses for *CG II*, and I believe that you will too!



CG II
 ★★☆☆
\$199.95
Shereff Systems
15075 SW Koll
Pkwy. Ste. G
Beaverton OR
97006
503-626-2022



for **AMIGA** **USERS!**
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BACK ISSUES

#17 INFO Nov/Dec 1987

ANNUAL GAMES ISSUE! GEOS Update, 16/32 bit comparison, C128 ROM upgrades, B.E.S.T. Accounting, Word Writer 3, DIGA!

#18 INFO Jan/Feb 1988

Desktop Publishing & wordprocessors (part I), Virus diagnosed, Geos Update, C64 Power Cartridges, C128 Superpak II.

#19 INFO Mar/Apr 1988

Desktop Publishing & wordprocessors (part 2), Leo Schwab interview, GEOS Update, ICT hard drive, Digital SuperPak2, Thoughtform.

#20 INFO May/June 1988

Desktop Video: Titlers, genlocks, converters, C64 slide show programs, GeoStuff, AmigaDOS 1.2 Bugs, Joel Hagen tutorial.

#22 INFO Sep/Oct 1988

Digitizing, Mac VS. Amiga, GeoStuff, Over 50 reviews for C64, C128, and Amiga computers, INFOmania Game Tips! BRYCE debut!

#23 INFO Nov/Dec 1988

ANNUAL GAMES ISSUE!! INFO Mania Game Tips, New Products, News & Views,

#24 INFO Jan/Feb 1989

Amiga 3D Graphics Round Up, Reichart Von Wolfsheild interview, GeoStuff, SuperBase Pro, Spectrascan, Sky Travel.

#25 INFO Mar/Apr 1989

Amiga Animation Round Up, Rodney Chang interview, C128 T.H.I.S., GeoCalc 128, Dr. Term Pro, AC/BASIC, Microfiche Filer Plus.

#26 INFO May/June 1989

Paint Program Round Up, Loren Lovhaug interview, Removable Mass Storage, 1581 Toolkit, MicroLawyer, WillMaker, Pen Pal.

#27 INFO Jul/Aug 1989

3rd Annual C.H.U.M.P. Magazine! Dale Luck interview, Sound & Music, Fractals, GeoProgrammer, Silentwriter LC890, Transcript.

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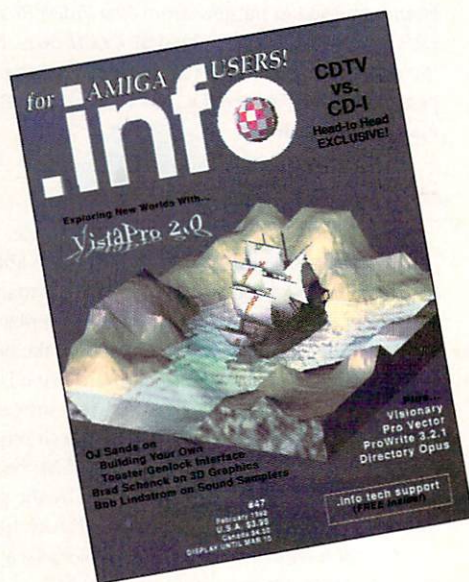
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What You Should Know About the 680x0 Processor Family

by Dave Haynie

There was a time, not all that long ago, when you simply went out and bought a computer. You knew which computer you wanted, or figured it out after a little reading, and that was about it. Each manufacturer made a model or two, distinguished mainly by different extras. There wasn't all that much difference in speed or architecture. And when there was, it was directly related to brand and/or processor type.

But relatively recent advances in technology have made processor type

and speed things that the average computer buyer needs to know a little bit about in order to make an intelligent purchase. In the Amiga market alone the various combinations of computer models, accelerator boards, and other options can be very confusing to the novice. Let's try to clear away some of the smoke.

In the Beginning

When microcomputers became available to the average person in the mid-70s, there were only a few meaningful speed variations from computer to computer, and every one of them was an 8-bit machine. You might not have known what '8-bit' meant, but since all computers were '8-bit,' it didn't matter. Microprocessor types varied very little, though some other computer features really *were* different, as companies tried to figure out what should go into a personal computer. From the introduction of the Apple I in the mid-70s to the introduction of the Commodore 128 in the mid-80s, 6502-based machines only varied in speed by around a factor of two, for the most part. On the other hand, since the Amiga was released in 1985 Amiga processor clock speeds alone have increased by a factor of nearly seven, and system speeds have increased by a factor of maybe 50 or more, depending on your hardware.

To understand the changes wrought in the Amiga lineup, you need to understand a little about how a computer works. The main purpose of a computer is to take data from a main store somewhere, do something to that data, and then put the changed data back into main storage. The smallest unit of storage on a computer is a 'bit,' which is short for 'Binary digiT,' a simple on or off condition. Eight bits grouped together is a single unit called a 'byte,' and normal computers treat bytes as the smallest individual unit for most purposes.

The 8-bit computers of the 70s were called so because of the fact that they typically operated on 8-bit bytes as a single unit, but none larger. The 6502, which was used in the Apple and the

Commodore 64, is a popular example of an 8-bit processor. It could add or subtract two 8-bit numbers, and it could access its memory eight bits at a time. However, even the 6502 wasn't a purely 8-bit processor. Memory in most microprocessor systems is represented as a sequence of numbered locations. The number of any location is called its 'address;' the contents of that location is called 'data.' A microprocessor sends out an address on its address bus (the term 'bus,' strangely enough, means 'collection of related signals'), and then exchanges data with the location that the address references. While the 6502 data bus was sufficient for the time, it was only eight bits wide. Having only eight bits for an address would not have been too useful, since it would have limited memory to a total of only 256 locations. So the 6502, like most other 8-bit microprocessors, had a 16-bit address bus, allowing a total of 64K (256 x 256 bytes) of memory to be attached. The more modern 6502 machines, like the C128, found even this 64K to be insufficient for their needs. They used 'bank switching' techniques to get around this. But it took a totally new architecture to correctly solve the addressing problem.

Enter the 68000

Microprocessor manufacturers gradually realized that 64K of memory wasn't going to be enough for very long, so there were various attempts to build improved microprocessors. The next logical step was to create 16-bit devices. Intel, for example, built a real 16-bit processor, the 8086. It could fetch 16 bits of data from memory at once, and it could do arithmetic on 16-bit numbers. However, it only really had a 16-bit address, which didn't get it beyond the 64K RAM limit. In order to support more than 64K, the folks at Intel built in what they called 'Segment Registers.' These registers basically provided a number to be added to the 16-bit address, resulting in an effective 20-bit address. So the 8086 could address a total of one megabyte of memory, though only 64K at a time. And it was still very similar to its

predecessors, the 8080 and 8085.

Motorola, on the other hand, decided to completely break with the past, and created the 68000 from scratch. Like the 8086, it could move around 16 bits at a time, via its 16-bit data bus. However, it solved the addressing problem by using 32-bit values for addresses. So the 68000 could operate on not only 16-bit numbers, but in many cases 32-bit numbers as well. All of its internal registers, as well as its address, was 32 bits long. Since a 32-bit address bus gives you four gigabytes of address space (considered really radical in the mid-70s!) the 68000 was actually implemented with only 24 bits worth of real address lines, yielding the 16 megabyte address space of today's A500 and A2000. Figure 1 shows the memory organization of the 68000, based on a small chunk of memory starting at address \$00001000.

What Motorola created in the 68000 is really kind of a hybrid. Since it only transacts with memory 16 bits at a time, and only does internal operations 16 bits at a time, you could call it a 16-bit processor, especially if you're a hardware person who deals with the physical 16-bit data bus. However, since it deals with 32-bit numbers and addresses (it teams up two 16-bit math units for a 32-bit operation), you could call it a 32-bit processor, especially if you're a programmer who deals with the internal 32-bit programming model.

Some time after the 68000 was introduced, Motorola built a second 68000 family member, the 68010. The 68010 is exactly the same, in hardware terms, as the 68000. Internally, however, it has a few new features. It has a special 'loop mode,' which speeds up some very specific operations, such as a memory to memory copy (often called 'block move'). Basically, loop mode lets the 68010 remember a specific small instruction sequence, so that this small instruction loop doesn't have to be read in from main memory during each pass through the loop. When you're not reading in instructions, you can get many more data movement operations done to main memory in the same period of time. The other feature (of no immediate importance to Amiga systems) is called 'instruction continuation,' which allows an operating system to

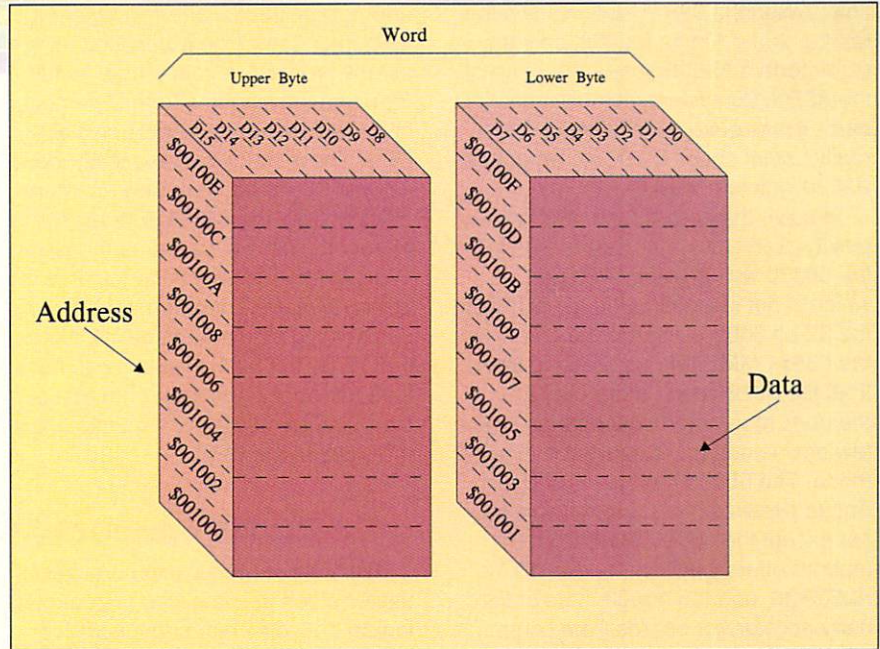


Figure 1 - 68000 Memory Layout

support a feature called virtual memory in conjunction with memory management units. (We'll get to memory management later on). Incidentally, no Amiga system was ever shipped from the factory with a 68010. But some third party companies have sold them for use in Amigas, since they are electrically interchangeable with the 68000 and the Amiga OS will adjust for it.

Real 32-Bit Family

The next logical step in the Motorola processor evolution was to move to a real 32-bit processor. The first of these was called the 68020. This processor has a full 32 bits for its address bus, and another 32 bits for its data bus. Since all the 68000 code out there has logically been 32-bit code from the beginning, all code ran without modifications (in most cases) on the 68020, and took advantage of many new features. With full 32-bit arithmetic, all the 32-bit math instructions of the 68000 run faster. And with a full 32-bit data bus, the 68020 often gets things to and from memory twice as fast as the 16-bit 68000, all other things being equal. But things are rarely equal; Motorola made a few more improvements in the 68020. They made the 'bus cycle' more effi-

cient, so a 68020 at the same speed as a 68000 can actually take advantage of 25% faster memory. And the processors themselves became available in faster speed ratings. All 68020s also got a small internal instruction cache. This cache is kind of a generalized version of the 68010 loop mode, that'll be explained soon.

The 68020 did well for quite some time. However, it became apparent that some systems had a need for memory management; many early 68020 systems were made with rather expensive 'hand made' memory management circuits. A memory management unit, or MMU, lets an operating system play tricks with memory. It can mark sections of memory as being protected in various ways, and it can 'translate' memory addresses, essentially remapping certain regions into other regions. Normally, the Amiga OS doesn't use this feature, but operating systems like UNIX do. For example, every UNIX program usually begins at location 0 in memory. Obviously, only one program could live at the real ('physical,' in MMU jargon) location 0 at any given time, but if you have an MMU, you can make any chunk of memory appear to be location 0 to the program that owns that memory. Motorola released an MMU

chip, called the 68851, for use with the 68020. In the Amiga market, only the Commodore A2620 board, the heart of the A2500/20 system, actually uses this part - it was quite expensive, and only really useful under UNIX, for which the A2620 was intended.

To solve the cost, speed, and complexity problems of the external MMU, the 68030 was created. This part, which is not identical but quite similar to the 32-bit 68020, incorporates most of the 68851 MMU internally. Aside from that, the 68030 adds more cache memory, more internal speedups, and a few new faster, more efficient bus cycle mode. The 68030 has been used in Amiga systems more than any processor except the 68000 itself. Commodore offers it in both the A2630, A2500/30, and the A3000. Lots of third party accelerator boards from companies like GVP, CSA, and Microbotics, have 68030s in them as well.

Very recently, Motorola has released their third generation 32-bit processor, the 68040. While this device is still a full 32-bit processor, it has quite a few major changes compared to the 68030. It has a much larger cache memory, much improved MMU, much improved internal instruction efficiencies, and an internal math chip (FPU). As I'm writing this, a few 68040 boards have been shipped by a few Amiga peripheral companies, though they're still rather expensive, often costing as much or more than the system they plug into.

Which does bring up the issue of an FPU, or Floating Point Unit. For a long time, microprocessors have performed basic integer arithmetic operations on their various data types. There are lots of modern applications, however, which require floating point arithmetic. Examples of these kinds of programs are spreadsheets, image renderers, and CAD programs. While the 68000 could support floating point math with a good subroutine library, it makes more sense to the programmer (and results in faster much code) if such operations can be added as part of the machine instruction set. The 68020 and 68030 support a special interface called the coprocessor interface. A special coprocessor chip, such as the 68881 or 68882 FPU, can be hooked up to the 68020 or 68030 in such a way as to actually

add new instructions to the assembly level interface of the processor, as far as any program is concerned. All full 32-bit Amiga systems from Commodore come with either the 68881 or 68882 FPU. These parts are practically identical, the 68882 being somewhat more efficient than the 68881. The presence of a math chip will speed up the kinds of programs I have mentioned; it won't do anything for a program that doesn't use floating point mathematics. Note that FPUs in 680x0 systems can have their own clock separate from that of the 68020 or 68030, or they can share the clock of the CPU.

Clock Speed

Every conventional microprocessor uses a clock of some kind to control its logical decoding and sequencing of instructions. While at first glance a faster clock implies a faster processor, there's a little more to it than that. Even with the same processor, clock speed isn't all there is to it - the actual microprocessor bus speed is at least as meaningful.

The processor's clock speed determines a few things. It provides the basis for internal operations, and sets an upper limit on how fast the processor can transact with memory. A processor transaction with memory is called a 'bus cycle.' A bus cycle is the time it takes for the processor to complete one transaction to memory. In the old days, the bus cycle was the limiting factor. All memory on a typical A500 or A2000 can go as fast as the minimum 68000 bus cycle, which is equal to four 68000 processor clock ticks. The 68020, on the other hand, can run a bus cycle in only three clocks. The 68030 can run a bus cycle in as little as two clocks, and it has a special 'burst' mode which cuts that down to an average of one and a quarter clocks per 32-bit transaction. Same goes for the 68040.

The implication of this is that, if you put the speed of the typical 68000 at 1, the 68020 would be 1.3, the 68030 would be 2, and the 68030 with burst capability would be 3.2. However, that's not the whole story. Since both the 68020 and 68030 can be moving twice as much information as possible with

the 16-bit 68000, those numbers are actually closer to 2.6, 4, and 6.4, respectively, based on actual data movement. Then you have to consider speed. Taking Commodore's Amiga products as an example, the A2620 runs at twice the A500/A2000 clock speed, at 14.3MHz. The A2630 and A3000 run at 25MHz, nearly four times the speed of the A500/A2000 clock. Some third party accelerator boards run the 68030 at a whopping 50MHz. Ideally speaking, a 14.3 MHz 68020 would be at least 5.2 on that scale, a 25MHz 68030 around 14 without burst, 22 with burst, and that 50MHz 68030 board ideally rates a 28 without burst, 44 with burst.

The Effect of Memory

The problem with such simple estimates is that you have to take reality into account. And based on current reality, you can't build memory systems that keep up with these faster processors, at least not practically. The relatively cheap and slow dynamic memory (DRAM) that comes in your A500 or A2000 is actually running two cycles for every 68000 cycle, and it keeps up just fine with the 7MHz 68000. Once you get to the typical double-speed 68020, even faster, more expensive DRAM has a hard time keeping up. There's no chance with the 25MHz 68030, and with any 50MHz part, even the most expensive dynamic memory falls short.

Faster processors adjust to slower memory by inserting what are called 'wait states.' These are idle clock cycles during which the processor is simply waiting for the memory to 'catch up.' Some 68020 boards, all 68020+68851 boards, and all 68030-based Amiga systems have some wait states inserted. The Amiga 3000 and some third party accelerator boards use the 68030's burst cycle to help hide some of these wait states, as certain special purpose DRAM access modes make burst cycles easier to run fast than arbitrary memory cycles.

The Effect of Cache

I mentioned 'cache' memory in my discussion of the 68020, 68030, and 68040. All three of these chips have

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VO# Stillstore - Used to create the "over the shoulder" graphic inserts all the 11:00 news.

VO# Graphics - Pcbase will let you view and track ALL of your IFF pictures all of those floppies! FreePaint is a Deluxe/Print workable. Agraph is a powerful utility to produce snazzy graphics.

FD75: Arcade Series - Descender is a clone of the classic arcade game "Tempest", complete with vectorized graphics. Tank is the classic battle of trajectories and inertia between two tanks-incredibly well done! Search is a maze game unlike any other-included is a level editor too! (Tare requires 1 meg chip memory-Fat Agus).

FD74: Arcade Series - RingWar is an "Outer Limits" clone with vectorized graphics. MotherLode is a "Lode Runner" clone with 50 levels! In BlitzTanks, they're coming at you from all directions! Call in air strikes and use your heavy artillery to survive!

FD73: Arcade Series - Intruder Alert is a MULTI-level "Berserk" clone. Features smooth gameplay, great graphics & digitized sound fx.

FD72: Space of the Warlock - This is a demo version of a great public domain graphic dungeon-adventure game. The adventure spans three diskettes and allows two players to go adventuring. The game has a Bards Tale feel to it. Three disk set, counts as 2. Requires 1 meg of RAM and 2 floppy drives or HD.

FD71A&B: Star Trek: TNG Trivia Challenge - So you think you know The Next Generation, huh? Complete with fantastic sound effects and digitized images, this game even looks and sounds like a genuine Star Trek terminal! VERY thorough and complete! Counts as 2 disks!

FD70: Star Games - Contains AmigoD's, <hinally> an Asteroids game that takes advantage of the Amiga-totally configurable with great sound and graphics. In Cosmostruction the object of the game is for each Cosmostruction team to acquire the most planets while consuming the fewest resources. The space station and planets.

FD69: MindGames - Had enough of shoot-'em-up blasting games? Relax and let these 21 games exercise your mind instead of your wrist.

FD68: Potpourri - Eternal Rome is a strategic simulation of the Roman Empire through military, diplomatic, political, economic and social factors. Lord of Hosts is a board strategy game for 2 players. In Moonshine, you've got to get the hooch across the state line-a great rolling, scrolling game!

FD67: Arcade - Includes Llamator, a will-clone "Roboton" clone. Hate is a "terrific" computer grade Zaxxon clone with multiple levels/worlds and smooth diagonal scrolling. Counts as 10.

FD64: Games - Zaxxon's Quest - a "great" 50 level game with great graphics. Cubes - a 3-D Tetris-type game (retrocal dimensions). Husker Du - Colors and pattern rather than shape in this Tetris-esque game; 5 screens and 3 levels of difficulty. Requires Fat Agus (1 Meg of Chip).

FD62: PomPom Gunner - An extremely smooth and well done World War II gunner simulation. Requires 1 megabyte of memory.

WB11: Cellular Automata - Straight from the pages of the January 1990 issue of Scientific American, this electronic model will allow you to simulate cellular circuits.

WB110: Electronic Baby Book - Immerse your children in your Amiga! Tracks everything about your newborn-first steps, words, tooth, birthdays, X-mas, friends, etc.-even verse for a digitized photo!

WB109: VerseWise - Display, search and output The New Testament to text files or your printer.

WB108: OctaMED - This breakthrough program doubles your Amiga's sound capabilities from 4 channels to an ear-popping 8 channels! All the renowned editing capabilities of MED plus 4 more channels! If you thought your Amiga sound good before, you ain't heard nothing yet!

WB107A&B: Educational - Drawmap is a program that generates representations such as hemispherical views, and orbital views of the Earth's surface, complete with national boundaries. Screens can be printed or saved to disk as standard IFF files. 8802x-version included. 2 disk set, counts as 11

WB106: Home Manager - This is a great all-in-one address book with an autoletter notepad-to-do list-appointment scheduler/home inventory database and phone number dialer, zhifitv, and demo version.

WB105A&B: Workbench 2.0 Extras #2 - Several indispensable utilities, including TooManager, color-capable font editor, 2 hypnotic screen bladders, requester alternatives, public-domain puzzle, & more! An enhanced version of Risk, Rushhour - new side the pieces puzzle, & SpaceWar - Best described as a cross between Combats and asteroids.

FD1 PACMAN - This disk contains several pacman type games including: PacMan67, MazMan and Zonix.

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).

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.

FD33: Arcade Games - Freddy a mario brothers type of game, Gerbil's a target practice, toads a Gummis interpretation of Pipe Dreams. From a light cycles version, and retro, a wonderful version of asteroids with a hilarious twist.

FD39a & b: Star Trek, The New Generation - This is a, completely different version of Star Trek than that found on FD12. This one was created by the German author Tobias. Now with English instructions. Excelllent! Counts as two disks. Requires 512k memory.

FD50: Submarine Game - Sealance, one and a half years in the making, this is an outstanding submarine tactical game. Commercial quality, highly recommended.

FD57: Arcade Games - Includes 2 truly commercial quality games. MegaBall, an Arkanoid-ish clone, features 5 musical scores, multiple levels and adding game function. Gravitic Attack is a psychadelic trip through several different worlds-each distinctly different.

FD60: Games - In Nebula, race over a 3rd world to destroy enemy installations. Interferon: a great Dr. Mario clone. Engima; is a game of puzzle?

WB4: Telecommunication - 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 VT52/100/102/200

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

WB6: Video Fonts #2 - ShowFont(2.0) This program allows you to quickly and painlessly view all 256 characters in a typical font. Large AmigaDOS system fonts (many up to 56pts).

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

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

WB11: Business - Clerk(4.0), finally a full featured business accounting PD program for the small to medium company. Includes receivables, payables, end of month and such more.

WB12: Disk Utilities - This great disk is loaded with wonderful utilities for everything including making disk labels, disk cataloging, disk optimizing, disk and file recovery and more, and organizing, and all sorts of file management. A must have!

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/m management program and financial analysis (stocks).

WB16: Business - This disk contains an inventory manager, a loan analysis program, a great calendar/scheduler, a rolodex program, and pennymaze 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, Dmve1(1.35) a great programmers editor with strong macro features, TextED(v2.8) an enhanced Emacs type editor, and a spell checker.

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's General Theory of Relativity.

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

WB29: Graphics and Sound - This disk has several different Mandelbrot type programs and 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!

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 used, new release of this PD CAD program, now comes with predrawn common circuit components for insertion into schematics.

WB37: Educational - Educational games and puzzles that cover math, geography, spelling and books. Ages 8 - 15

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 - an incredibly well done Computer Aided Drafting program, very full featured, Tesselator - a program that helps generates fantastic fractal images, Escape - a game of puzzle.

WB41: Music - MED an incredibly well done, full featured music editor. Create your own stunning music directly on your Amiga. Similar to SoundTracker but better. Very powerful easy to use program. Ver. 3.10

WB43: Business - This disk contains AnalytCalc - probably the most powerful spreadsheet program on the Amiga. A full featured spreadsheet with many features expected in a commercial package. Requires 1/2 MB of memory!

WB46: Clip Art - HighRes clip art with the following motifs - embellishments (borders, dodads...), people, and transportation.

WB48: Clip Art - HighRes clip art with the following motifs - Holidays, music, medical, and misc.

WB53: Graphics - Raytracing programs generate absolutely stunning realistic looking pictures, rockets, buildings... and surreal images often consisting of highly polished spheres and objects. C-Light is the most powerful of the C-Seq, of this kind we have seen to date. This is easily better, and more full featured, than similar commercial programs costing in the hundreds of dollars. Also, sMovie - a full featured video text titler similar to ProVideo, Broadcast Tiler. Great video scrolling, wops, special effects and more.

WB57: Animation - This disk has several "Demo" style animations. Including, Bitter, Lolly, Sun5, vertigo, vortex, and kenemorph.

WB59: Business - contains a great, very full featured stock market technical analysis and tracking program, also an appointment calendar, and more.

WB61: Intermediate Utilities - Includes programs to help to drastically decrease flicker in interface and h-res modes (antiflick), an Atari-II emulator, an eeprom programmer, turn your amiga into an eight channel digital data analyzer or oscilloscope, and more.

WB62: Mid Utilities - Several useful mid utilities including programs to transfer to and from several mid programs to midi, a midi system handler, a midi recorder with multiple display mode, file sequence player, and a few scores!

WB63: Disk Utilities #3 - Several great programs to aid in removing duplicate files from your hard drive, performing backups, binary editing, fast formatting, file recovery, disk track recovery, and forced DISK VALIDATION of corrupt disks.

WB66: Icons #2, Lots of neat icons. Also, several wonderful programs that let you create your own icons, modify and manipulate icons and info structures.

WB68: Music Utilities - several good utilities for the Amiga music enthusiast. **WB69: Noisetrcr** - a great music creation program. **SonixMCD** - converts spx to .mod files which then can be used by noisetrcr, soundtrackr, and MED. **SpeakerSim** - a speaker design tool. **WonderSound** is an additive harmonic imitator with a separate equalizer and envelope design window and 16 relative harmonic strength and phase angle controls.

WB69: Music - This disk has over 90 minutes of classical and modern electronic music for you to enjoy.

WB70: Desk Top Job - Atcp - transfer Macintosh screen fonts, Mac or IBM format AFM metric files, to Amiga screen fonts and PPAGE metric files. With this program open door to the libraries of Adobe and PostScript type!, Calendar - month templates in font! Post - a beautiful post script menu, calendar and print utility.

WB75: Music - over 100 instruments files (.inst) and sample sound files (.ss) for your music programs.

WB76: Applications - This disk contains Sitchery - a often requested knitting design program. Lotta - another complete lettering and graphic design utility. SS5 - this screen capture program can grab almost any screen including games. Today - a personal calendar. Tarot - fortune teller, and Grammar - grammar checker.

WB79: Home & Business Accounting - Includes Ckbacl - the most complete checkbook accounting program on the Amiga. Includes a very well done calendar, 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 WorldClock - a world clock that is up to 50 time zones.

WB80: Graphics - Raytracing programs generate absolutely stunning realistic looking pictures, rockets, buildings-anything you can imagine, including surrealistic images with highly polished spheres and objects. 3-D Master is the most powerful Earth-like image generator we have seen to date. This is a wonderful and more capable than similar commercial programs costing in the hundreds of dollars!

WB81: Great Applications - DataEase a very easy to use, database program. Don't let the ease of use fool you, this is a very full featured database program including full printer control for address labels, notes and mail merge applications. Also includes, TypeTap a good typing tutor, RLC a full featured label printer, Banner, a multi-font banner maker, and Budget a home accounting in a program. Highly recommended.

WB84: The Holy Bible - A three disk set which contains the entire text of the New Testament and Old Testament. Great search utilities. Three disk set, counts as three.

WB93: Workbench Extras #2 This disk contains the utilities that Commodore should have shipped with the Amiga. Virus (x4.0), Snap, FrADisk (recovery corrupted files), Disk Optimizer (floppy & hard), MacHill (screen blocker, hotkey, mouse accel., macro, clock utility), GOMF (a gurusoftware) and PrintStudio.

WB98: Checkbook Accountant 2 - This is a fully featured checkbook program; we've seen many checkbook programs and this is absolutely the best. Full budgeting, transaction recording and report generation.

WB99: Dupers - Contains XcopyIII & Nib which will backup copy-protected software. Also contains two great utilities that moves copy protection from several programs, and SuperDupur will crank-out fast AmigaDOS copies.

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some cache memory on-chip. Anything a chip designer puts on-chip is going to run much faster than the equivalent device added to a system via circuit board interconnects, because things just plain happen faster inside a single chip than between chips. Such 'built-ins' also wind up lowering the cost over an equivalent system made from separate parts.

The concept of a cache is simple - a cache stores a copy of the most recently used instructions and (except for the 68020) data in some extremely fast memory. The theory is, if you run things from even a small amount of very fast memory most of the time, system performance starts to mimic a system full of such very fast memory, only you're only paying for a small amount. This is special memory, in that it not only stores the information accessed, but it stores where in main memory that information was located. When the processor starts a new cycle and generates a new memory address, a cache memory controller looks at that address and, via special hardware, figures out if it has a copy of that memory location stored in the cache. If so, the cache is said to 'hit,' and no external memory cycle is required. If not, the cache is said to 'miss,' and a normal cycle to memory takes place. The 68020 has 256 bytes of instruction cache, the 68030 has 256 bytes of instruction cache and 256 bytes of data cache, and the 68040 has 4K each of instruction and data cache.

Both the 68030 and 68040 processors use the dual caches to support a concept known as a Harvard architecture. On most processors, and externally to the 68030 and 68040, there is a single data bus, which is responsible for both instruction and data transfers. However, internally on these chips, there are separate busses for instructions and data. If an instruction requires data access, and neither instruction nor data is in the cache, the processor must wait for two external accesses, which happen serially to the main bus. If the instruction or data is in cache, there is really only one delay for access to the external bus. With both in cache, the processor can functionally run instruction and data transactions in parallel.

While the internal caches of the 32-bit 680x0 processors are fast and very easy to add to a system, it's also possible to build 'external' cache onto a computer system. This external cache is made up of a small number of very fast special purpose memory devices that work much like the internal cache does; they intercept external cycles and provide the most recently used information much faster than main memory can provide it.

What This All Means

Simply put, bigger processor numbers, faster clock speeds, smaller wait state counts, and larger caches all contribute to making a faster Amiga. You can look for all of these things when shopping for accelerator boards, but don't get obsessed by them. Consider first of all what it is that you need in the way of a system or an accelerator. If you're mainly concerned about raytracing, you want something with an FPU, hopefully a very fast FPU. After that, good 32-bit memory makes your trace race. If you want to run UNIX at some point in the future, you need a system with an MMU and at least four to eight megabytes of 32-bit DRAM. If all you want is a little more 'zippiness' for your A500-based wordprocessing, it may be overkill to plunk down \$800 for a 68020 gizmo when a faster 14 MHz 68000 with a little cache might do the job just fine.

Beware of any 32-bit processor that doesn't have some 32-bit memory available - remember that, in my ideal discussion, I mentioned that going from the 16-bit bus to the 32-bit bus made the 68020 instantly twice as fast. Keep in mind that, except for in A3000s, all basic Amiga memory is 16 bits wide. And in reality, due to some obscurities in the way 68020s and 68030s actually fetch stuff from memory, such a CPU running from 16-bit memory will actually run a little less than half as fast as it would with any decent 32-bit memory system attached. And although most 32-bit memory systems will result in a wait state or more, depending on the particulars, nearly all 32-bit memory systems out there go faster than basic Amiga 16-bit memory. So you can expect somewhere in the neighborhood

of a three to eight times speedup going to 32-bit memory, perhaps even more so with very fast processors.

You have to be careful about comparing different processor groups. A 16MHz 68000, even with fast memory or cache, will be slower at most things than a 14.3 MHz 68020. From the same speed memory, internal enhancements of the 68030 make it a little faster than the 68020. If you add burst memory, the 68030 can be much faster than the 68020. The 68040 will be much faster than the 68030. Within a group, if you know clock speed, memory wait states, and any cache capacity, you have a pretty good idea of the relative merits of different systems. And do your research - read magazine reviews when available, try things out in the store if possible, ask around to find out any hidden 'gotchas' when considering accelerated systems.

The Bottom Line

So now you say you want numbers. Well, it's impossible to come up with perfect numbers for every possible board and memory on the market, especially without testing each and every one. Figure 2 is designed to show off some basic trends. In each column, I show the processor type and the expected range of operation for a decent example of this kind of computer. A real detailed graph of this type would have to have separate boxes for each CPU/speed combination, since they can in fact overlap. For example, a 16MHz 68020 with 32-bit wide memory runs just about everything faster than a 25MHz 68030 with only 16-bit memory. Such bad setups, like 32-bit CPUs with 16-bit RAM, show performance that falls below the dotted line in each column. A 32-bit processor with 16-bit RAM and the internal caches turned off can actually run a tad slower than the A1000. Anyway, take these as good ballpark figures, but not gospel.

Math chips are a little easier, since there are only three kinds: the 68881, 68882, and 68040 internal FPU. It's a safe bet that a 68882 is always faster at the same clock speed than a 68881, probably somewhere between 15% and 100% faster, in raw floating point performance. The 68040 FPU can run up

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to ten times faster than a 68882, but since some of its instructions are emulated by software traps, not every application will see this kind of speedup. Actual floating point increases are a little harder to judge, too, because you never simply run just FPU code; there's always some integer CPU code mixed in as well. If you don't have an FPU at all, your application calls one of the math libraries, usually either the Motorola FFP libraries for 32-bit floating point, or the IEEE libraries for 64-bit floating point. Adding an FPU won't change the FFP results at all (though a faster CPU will make these go faster), but it will speed up the IEEE libraries somewhat, automatically. This is good for spreadsheets and other moderately floating point intensive programs. When you're dealing with a raytracer that takes hours or even days to render a single image, you don't use the IEEE math libraries, you get a special version compiled to produce direct in-line FPU instructions. Such a program may run up to 25 times faster with a 68881 at

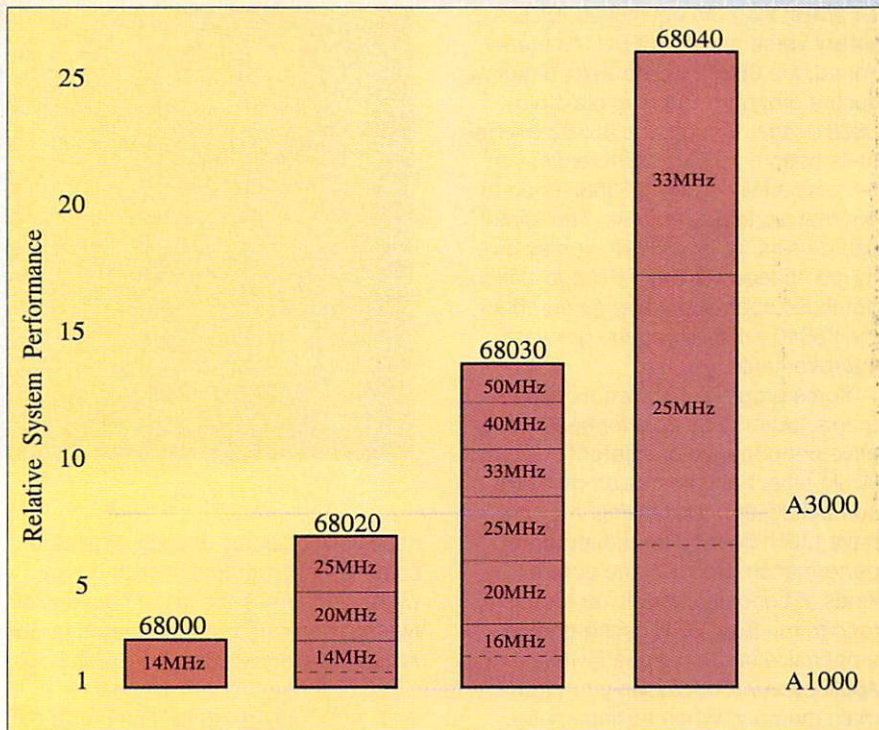


Figure 2 - Performance Expectations for 680x0 Family

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14.3MHz than the equivalent IEEE library version and no FPU. As mentioned, the 68882 will do even better at such a program. Running plain old 68881 code, though, the 68882 will run at its bottom 15% or so increase; you need specially ordered 68882 code to get real big improvements. The same can be said for the 68040 - it may give a nice speedup to any FPU application, but those specifically reengineered for the 68040 will give you the greatest improvements.

Some programs, known as benchmarks, claim to be able to measure relative performance of different systems. While most benchmarks do measure something, that 'something' may not have much bearing on real program performance. Some of the simpler kinds of benchmarks will, for example, tend to run from CPU cache and de-emphasize memory speed, while a real application will necessarily run from main memory. When testing speed, your best bet is to evaluate the speed of the applications you plan to be using on the hardware you're interested in buying.

The decision must ultimately be based on your needs and resources. Speed is a nice toy, but it's addictive. If you don't need it, wait a while and the same speed will eventually come down in price. Right now, 68020s are pretty much the low-end Amiga accelerators for A2000s and occasionally A500s. The dominant high-end Amiga micro-processor is the 68030, though it is increasingly available in cheaper accelerator configurations from third party companies. The 68040s are about to make their mark. They will be the fastest processors out there, but they won't remind anyone of 'cheap' for a few years to come. ■

A Tale of Two Copiers

By David W. Martin

The universe is a big place, and the portion of it containing Amiga software is expanding at a steady pace. Which makes it rather hard to keep up with your backups,



Maverick 3.0's colorful but unorthodox main control screen.

especially backups of copy-protected commercial programs. Which is why we're glad to see the latest versions of two software archiving programs for the Amiga: *Maverick 3.0* and *Project D 2.0*.

Maverick 3.0

Project D has been a long-time champ in the Amiga copier market, and until relatively recently had gone practically unchallenged. A new contender is *Maverick 3.0*. This product, with roots dating back to the C64, is attempting to challenge *Project D's* number one position.

Maverick is relatively new to the Amiga marketplace and comes from Software Support International (SSI), a company with a good reputation as a provider of C64 archival copiers. The noted C64 *Maverick* is well-loved among C64 users.

The suite of *Maverick* disk copy programs can be used to remove or duplicate a variety of protection schemes that are disk, manual, or dongle based. (*Maverick* even offers a hardware-

based copier solution via a companion product called *Backup Buddy* - see sidebar.) The *Maverick* copiers are called Hypercopy, Parameter Copy, and Override. Hypercopy and the included nibble copiers (used with Parameters and Override) are user configurable.

Hypercopy, as its name implies, is a fast copier that copies unprotected disks slightly faster than the AmigaDOS diskcopy command. The only major difference between it and diskcopy is that it attempts to recover data from errors on the source disk before writing to the destination.

The *Maverick* parameter copier uses small programs to duplicate a disk or patch the program on a disk. The patch method allows the copy to run without copy protection of any kind. This is the preferable method of duplication, and is used whenever possible. A patched program can then normally be copied using diskcopy, whereas an original disk cannot, since it includes the original disk protection scheme. I had some success with *Maverick* when using the parameter copier, but poor results with Override and *Backup Buddy*.

The Override copier claims fame as an Amiga first. The first what, you ask? Well, according to the letter I received, *Maverick's* Override system is the first Amiga copier that makes protected programs hard disk installable (after removing the copy protection of course). This feature sounds wonderful, but it often did not work as I expected it to. In the tests I ran, only two out of five programs tested were successfully copied with Override. If your sole

Maverick V3.0

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reason for buying *Maverick* is Override, then I suggest you experiment with it first, if possible. It's likely that it will not work with the programs you want to copy, either. But when it *does* work you'll find the convenience of loading your favorite program from hard disk quite rewarding.

Another *Maverick* feature is a set of user-configurable copiers (U1, U2, and U3) which allow you to customize the Hypercopy, Index Sync Nibbler, and Standard Sync Nibbler. Users are able to reconfigure these programs to work better with their Amiga system and needs. The U2 copier will even copy MS/DOS and Atari disks, according to SSI.

Each of *Maverick's* copiers carries a list of program titles that it will duplicate. The titles are color coded to match the appropriate copier so that you can tell what is going on, and there is an alphabetized paper listing of parameters in the package. If you activate more than one copier, then the parameter lists are all mixed, but still in Alphabetical order. The program has to load each list instead of having them all preloaded like *Project D*, which can slow things down a bit. Using the search option, you can rapidly find the title you need and activate the proper copier by selecting 'DO' from the *Maverick* control panel.

Maverick Utilities

The *Maverick* utilities KiilDFX and Inspector are accessories that help you copy and explore disks respectively. KiilDFX simply removes references to DF0: from a backup disk and is used in conjunction with some of *Maverick's* parameters. Inspector offers a disk block editor, track editor, and file editor. This utility is obviously something that was rapidly thrown together so that it could be included with *Maverick* 3.0. Its slow screen refresh is both unbearable and intolerable for an Amiga program. It is not something that I enjoy using, and I recommend you look elsewhere for disk editing capabilities. It really was a surprise to see something like this from the programmers of *Maverick* for the C64. Perhaps at a future date the *Maverick* utilities will live up to my expectations, but right now they do not.

Conclusions

Maverick's 'look and feel' are so poor that I am tempted to send the *Maverick* programming team a copy of the *Amiga User Interface Style Guide* so that they can learn what a real Amiga program should look and act like. It is time to modernize *Maverick* with AmigaDOS 2.0's look. Come on, guys, throw the 'toy' user interface away!

Unfortunately, looks are not *Maverick's* only problems. It is not very well behaved. It multitasks very poorly; I often found myself in the weirdest predicaments. For example, when switching screens I often could not get back to the *Maverick* screen to watch my copy taking place. The program even steals the mouse

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It is really more than just a dictionary. I would have bought this much sooner had I known how in depth it is. As a Foreign Language teacher, I really appreciate it. This is a very high quality product...one of the first computer FL programs to use current FL methods. *Ankeny, IA*

Enclosed is the demo disk I ordered from you several weeks ago. I would now like to order the whole German Disk Set...I am very impressed with the quality of the graphics of this program and am excited about receiving the entire program. *Gainesville, GA*

Wowee! The Spanish Audio Gallery Demo Disk is wonderful. Words can't describe how pleased we were with the sample. What a great learning tool. Please let us know when you have available Spanish Audio Gallery # 2...Thanks again for such a wonderful product. You have a winner on your hands. *Bartonville, IL*

We searched for a good Spanish program...this is the first - much liked. *Derby, IN*

I am very impressed with the use of digitized speech of native speakers that is used in your software. *Cedar Rapids, IA*

Love it - will be used in conjunction with course being taken on compact disk. *Ottawa, Ontario*

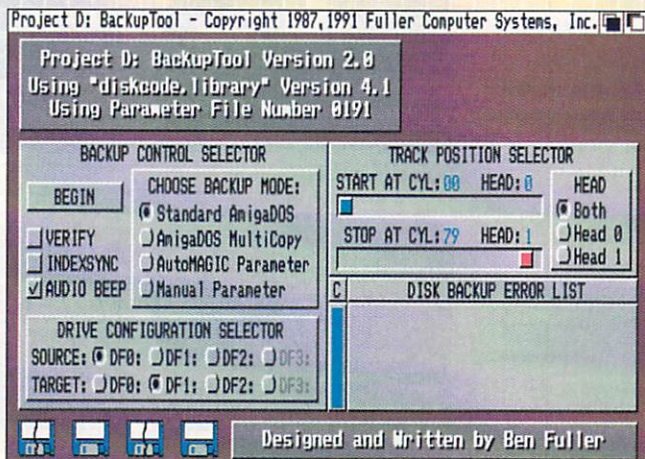
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.info technical support



The Backup Tool control screen from Project D 2.0.

pointer by grabbing control of it and refusing to let go. Further symptoms of poor Amiga programming are apparent in the slow screen updates in *Maverick's* utilities.

I discussed *Maverick's* poor multitasking with SSI and was basically told that this was 'not important.' I am sorry, but I have to disagree. There is simply no room on a multitasking computer for a program that acts like *Maverick* does when it steals system resources.

Maverick has many shortcomings as an Amiga program, though it does do its job as advertised a fair percentage of the time. I was sorely disappointed in this poor product from an otherwise excellent company.

Project D 2.0

Project D from Fuller Computer Systems contains a smorgasbord of disk

utilities for Amiga users. I found it to be easy to use even without reading the manual. Everything is controlled via the integrated desktop environment, a pseudo-Workbench. In fact, all features are readily available at the click of a mousebutton.

Project D's pseudo-Workbench environment multitasks just fine, and offers a 100% better user interface than *Maverick*. From this desktop environment you can access all the program's features, which consist of the Minitools menu, the Backuptool, the Omnitool, the Editortool, and the Catalogtool.

The Minitools menu controls access to a set of utilities that can be used from within *Project D* at any given point (i.e. regardless of which tool you are using, the Minitools menu is *always* available). The Minitools include:

- memtool - keeps track of system

memory usage by displaying chip RAM, fast RAM, total memory available, largest available memory segment, and the time.

- diskwipe - provides a means of quickly erasing a disk completely. The manual calls this the equivalent of a magnetic bulk eraser.

- miniprefs - enables you to redefine some printer settings, pointer, and colors.

- popdecoder - this utility makes backups of the game *Populus* and allows you to install it on a hard drive.

The Minitools menu also contains selections that let you read the current list of parameters (something I wish *Maverick* had) and release notes. While reading either of these, you can easily print them out for future reference. You can also toggle Workbench on or off, and exit a tool or *Project D* itself from this menu.

The Backuptool copies standard AmigaDOS disks as well as copy protected disks. It features a parameter copier with over 100 parameters for backing up protected disks. You have the option of letting the program choose the parameter to use, or you can select one to use yourself. I personally found manual selection to be more desirable than the 'automagic' setting.

According to the manual, the Omnitool duplicates most protection schemes used by other computers and even copies disks that cannot be copied on the host machine. This is due to the Amiga's flexible disk control hardware, with which Omnitool can

There are a variety of hardware disk copiers for the Amiga, offering all kinds of new methods to copy that hard-to-copy disk. But the question is: 'Do they work?'

I worked with SSI's *Backup Buddy* for over a week and could not get it to copy any of the titles I owned that were supposed to be copyable using it.

The *Backup Buddy* looks easy to use, but it isn't really. You are supplied with a small pencil that acts as a screwdriver to enable you to alter the speed of the special *Backup Buddy* disk drive. Just how fast do you want it? Well, special *Maverick* parameters will ask you to set the speed to a specific setting. I was not once able to get the setting on the drive to exactly match the speed requested. I always fell within a range on either side of the value (a very small margin). I suppose this is why the parameters failed to work.

SSI's ad calls the *Backup Buddy* 'a superb Konyo drive that we've worked our special magic on.' Well, guys, I suggest you fire your wizard. There is no magic here, and I still cannot back up those never-before-copied titles.

Backup Buddy

\$149.95



Software Support

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Ste. A-10

Vancouver WA 98661

800-356-1179

.info technical support

duplicate almost any disk format that uses MFM (Modified Frequency Modulation) data encoding. So with the Omnitool Amiga users can copy foreign disk formats including Atari ST, CP/M, MS/DOS, and Xenix disks in single or double sided modes, as well as some music synthesizer disk formats (i.e. Ensoniq and Roland). Users of Omnitool have reported the ability to copy HP and Arimedes disk formats, and even some copy protected Amiga programs.

Both the Backuptool and Omnitool support a multicopy mode that can best be exploited if you have three megabytes or more of expansion RAM. Multicopy mode simply reads in the source disk into RAM once, and thereafter you need only insert disks in the drives to make as many copies as you want, without having to re-insert the original disk. The manual states that at least 2.2 MB of RAM is necessary to copy a full disk of 80 cylinders.

Project D V2.0

\$59.95

☆☆☆☆

Fuller Computer Systems

PO Box 9222

Mesa AZ 85214

602-497-6070

Project D Utilities

The Editortool is a disk sector editor for AmigaDOS disks. The editor offers three modes of operation: raw MFM tracks, AmigaDOS tracks, and AmigaDOS files. MFM mode can be used to edit raw disk data; in this mode you are editing data as the disk drive sees it. AmigaDOS mode allows you to edit standard AmigaDOS sectors, which handles data as you and the computer see it. File mode allows you to edit the information within a file, or you can use it to find text strings. This handy feature

can be used to alter hard coded strings (like the name of a default disk drive) in some programs.

The editor features a scrolling window which contains the disk data that you wish to edit; both the keyboard and mouse are supported during the editing process. The user has the option of using ASCII or hex displays during editing. The ASCII display opens as a window overlapping the editing window and can be rather annoying, since it lacks a sizing gadget and can only be moved around. The addition of a sizing gadget would make the ASCII window more useful.

While in the editor, you can use the search feature to find certain bytes in a disk sector. Simply enter the value you are looking for in hex or ASCII and the program finds the data and places the cursor on it.

The Catalogtool is a disk file cataloger that helps you index and organize your software. Files listed in the catalog can be manually or automatically entered depending on the method

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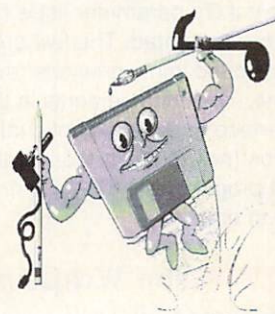
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Keyboard for A3000.....	\$130.00
Keyboard Adapter for CDTV.....	\$19.95
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chosen. The automated mode supports filtration so not everything has to be included in the catalog (for example, '.info' files can be omitted).

Catalogs can be sorted in a variety of ways, such as by filename, file size, date, etc. There are even several formats that you can choose to produce printed listings of the catalog. If you prefer not to look at a hard copy, the search function can quickly find the file you need.

User group librarians will find this tool invaluable for managing large PD software libraries. But I'm personally hard pressed to find a use for it. One possibility would be to use the program to catalog all your original disks as you receive them, to keep track of file sizes. Now if a virus of the type that alters a program's size should invade your computer, you could compare the file size stored in the catalog to the size of the actual file.

Conclusions

Regular .info readers may remember a previous review of *Project D* that I did in the Sept/Oct 1988 issue. Even at that time I was very impressed with *Project D* and nothing in my viewpoint has changed. My only complaint is that *Project D's* parameter list is becoming somewhat dated. The few problems mentioned in my previous review are gone. The improvements in the user interface and the exceptional documentation (nearly 200 pages) make *Project D* a program that others should be trying to emulate.

The WrapUp

Maverick for the Amiga was quite a surprise from a company that is so well known for its exceptional C64 products. I think that SSI needs to step back and take another look at *Maverick*. I am confident that they can come up with something better than what they have now. As far as parameters go, *Maverick* is currently stronger in that area than *Project D*; Fuller needs to update their parameter list. Still, *Project D's* great utilities almost make up for the age of its parameters.

For the time being, I'm going to stick with *Project D* most of the time, but will occasionally find a use for *Maverick*. ■

TEST RESULTS

Program	Maverick	ProjectD
C64 Emulator II	*BB	N/A
Arkanoid	*BB	N/A
Solitaire Royale	*OVR	AUT
Battle Squadron	PAR	PAR
Powerstyx	*PAR	*SPC
Shanghai	OVR	PAR
3 Stooges	PAR	AUT
Menace	PAR	*AUT
S.E.U.C.K.	*OVR	AUT
Joe Blade	OVR	AUT
Star Wars	*OVR	AUT
Blood Money	PAR	AUT

* = Failed to copy using recommended method.

HYP = Hypercopy

AUT = Automagic

BB = Backup Buddy

N/A = Not Available

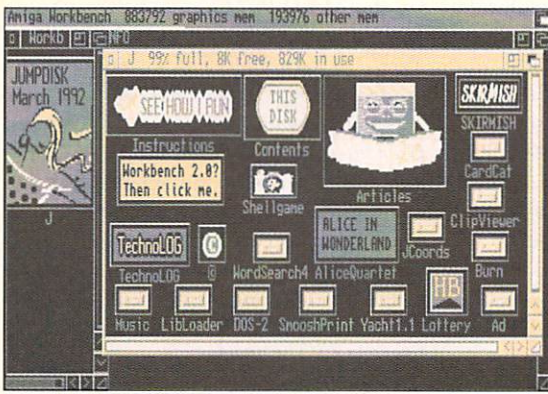
PAR = Parameter

OVR = Override

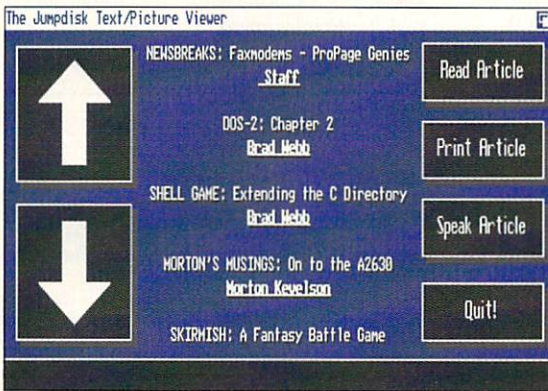
SPC = Special

A D V E R T I S E R S I N D E X

Reader Service #	Advertiser	Page
105	Ampex Systems	61
107	ASDG, Inc	7
110	CHS, Inc	15
173	Commodore Business Machines	9
179	Commodore Business Machines	11
143	Consultron, Inc	57
140	Devware	55
130	Fairbrothers	59
177	Grapevine Group, The	57
111	INOVAtronics	68
160	Jumpdisk	61
152	Maxis	33
125	Psygnosis	2
118	Psygnosis	3
128	Stylus	5
133	UniliGraphics	21
127	Virtual Reality	17



A sample of the mix of software and articles on a recent *JumpDisk*.



JumpDisk's article reader.

The .info File

... continued from page 23

gamut from telecommunications to multimedia to video to music. If you spot an issue focusing on your particular area of interest, by all means pick it up. Subscriptions are \$29.97/year; call 800-343-0728.

Compute's *Amiga Resource* used to be a full-blown Amiga magazine, but for the past couple of years it's been appearing as a section in *Compute* magazine. It's edited by the indefatigable Denny Atkins, and manages to pack a lot of useful Amiga information into just a few pages. Noted Amiga luminaries like Rhett Anderson, Randy Thompson, Jim Butterfield, Arlan Levitan, and Sheldon Leemon often appear in the *Resource* section. Unfortunately, *Amiga Resource* isn't included in most of the newsstand editions of *Compute* - you have to specifically request the 'Amiga Resource edition' when you subscribe to the magazine. \$2.95 on the newsstand, and a tremendous bargain at \$9.97 a year by mail (\$49.95 with bimonthly disk). Call 800-727-6937.

Disk Magazines

JumpDisk is the original disk magazine for the Amiga, still in publication after six years. Each issue is

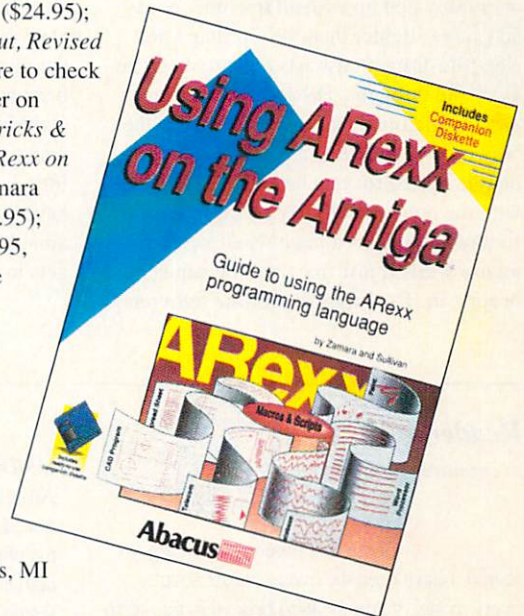
packed (literally, using *PowerPacker*) with original games, utilities, tutorials, reviews, and articles. (At my age, I can't say that I anticipate much excitement each month, but I can honestly say that I eagerly await each new issue of *JumpDisk*.) Publisher Richard Ramella is one of the nicest human beings on the face of the earth, and he richly deserves to receive your money. You can get a sample copy of a back issue of *JumpDisk* for only \$1, or plunge right in for \$66 for a full year. Contact *JumpDisk*, 1493 Mt. View Ave., Chico, CA 95926, 916-343-7658.

Enchanted Realms, from Digital Expressions, is a magazine with disk (\$39.95/six issues) for adventure gamers. It includes lengthy, serious, and often critical reviews of both PD and commercial games. The disk often includes demo versions of commercial Amiga games, and the text is insightful and humorous. Contact Digital Expressions, PO Box 33656, Cleveland OH 44133, 216-582-0910.

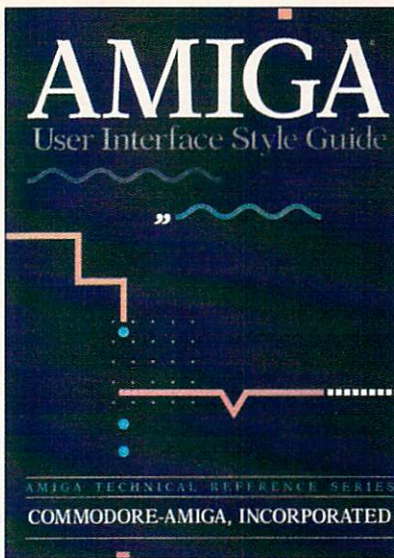
Books

There are a bunch of companies that each print a book or two pertaining to the Amiga, and I'll try to get to them all in this column eventually. But for now, I'd like to fill you in on the three companies that publish a complete line of Amiga books.

The first is **Abacus**. They currently publish no less than ten Amiga book titles, covering the gamut of Amiga interests. (There are even more Abacus Amiga titles, no longer in print, that you might be able to find if you frequent user group swap meets.) Their current list includes: *Amiga C for Beginners* (\$19.95); Guy Wright's *Amiga Desktop Video Power* (\$29.95); *Amiga for Beginners* (\$16.95); *Amiga Graphics Inside & Out* (\$34.95); *Amiga Machine Language* (\$19.95); *AmigaBASIC Inside & Out* (\$24.95); *AmigaDOS Inside & Out, Revised Edition* (\$24.95 - be sure to check out the excellent chapter on ARExx); *Best Amiga Tricks & Tips* (\$29.95); *Using ARExx on the Amiga* by Chris Zamara and Nick Sullivan (\$34.95); and *Amiga Intern* (\$34.95, coming soon). Most are very good, and many include disks with program examples. Those listed here without author attributions are translations of the Data Becker reference books from Germany. Abacus, 5370 52nd Street SE, Grand Rapids, MI 49512. 616-698-0330.



Compute Books' current list includes five Amiga-specific titles, and a whole bunch that are slightly more generic, relating to games and programs available on multiple platforms including the Amiga (for example, *Deluxe Paint* and *Leisure Suit Larry*.) Compute's five



Amiga books are: *Advanced Amiga BASIC* (\$18.95); the *Amiga Programmer's Guide* (\$18.95); *Mapping the Amiga* by Rhett Anderson and Randy Thompson (\$22.95); the *AmigaDOS Reference Guide, Fourth Edition* by Sheldon Leemon and Arlan Levitan (\$22.95, due in July); and *Kids and the Amiga, 2nd Edition* (\$16.95). Compute Books, 324 W. Wendover Ave. Ste. 200, Greensboro, NC 27408.

Addison-Wesley is the 'official' supplier of the Amiga Programmer's Reference Manuals. These are the books written by the Commodore hardware and software engineers who built the Amiga. Though often criticized for being too 'subtle,' they are must-have references for anyone seriously considering programming on the Amiga. There are currently four books in the series, all 'Third Editions' except the

last: the *Amiga ROM Kernel Reference Manual: Devices* (\$28.95); the *Amiga ROM Kernel Reference Manual: Includes and Autodocs* (\$38.95); the *Amiga Hardware Reference Manual* (\$28.95); and the *Amiga User Interface Style Guide* (\$21.95). This last volume is a wonderful reference, without doubt the best book ever put out by Commodore. If every developer followed the admonitions of the *Style Guide*, Amiga software would consistently be the best in the world. Addison-Wesley, Reading, MA 01867, 617-944-3700.

More To Come

Tune in to next month's column for more insight into Amiga sources and resources. Don't forget to write and let me know about *your* favorite sources of Amiga and real-world information.

Cordless Mouse

by Tom Malcom

I like the idea of a cordless mouse, even though my mousecord seldom gets in the way except when I take my system apart for some reason or another. Then it is invariably tied up with all the other cords and cables tighter than the Gordian knot. The Alfa-Data mouse has recently become available through CHS and we've been passing it around the .info offices. I'm the only one who has had any problems with it, but the reason for that has nothing to do with the mouse itself. My office faces southwest and has a large window. The mouse worked just fine until the sun started beating in. The brightness of the light ren-

dered it completely inoperable. As soon as I closed the blinds, it worked fine again. The mouse is in two pieces, a base unit and the mouse itself. The base unit, which comes with a power adapter, opens up like a clamshell, providing a base for recharging the mouse when you're not using it. It's been in use, off the base, for as long as eight hours without losing its charge. The response time is good, though I did notice a little lag now and then. The only quibble I have is that you have to be careful to keep it aimed at the base unit. If your mousecord gets in your way, this is a good solution.

Alfa-Data Cordless Mouse

☆☆☆+

\$99.95

CHS, Ins.

602 North Country Fair Drive
Champaign, IL 91821
217-356-1962

Reader Mail

... continued from page 9

For the first time in years I am scared. I have been the owner of just about every model of Amiga and I believe in this computer and its potential. Why is MS/DOS so popular? Why, when someone on *Computer Chronicles* mentions home-based PCs or a national article on computers is written, that both

MS/DOS and Mac are mentioned and the Amiga ignored? And when the Amiga is mentioned, it is usually with a smirk or snicker and the phrase "game machine" is dropped into the conversation. What it boils down to is poor marketing, poor advertising, and poor research and development on Commodore's part. I have always had the impression that Commodore itself does not believe in the Amiga or if it does, it does not know how to sell it. Commodore,

you've been sitting on your hands for years with no significant improvements to the machine. Why not keep your machines at their current prices and add some features?. The fact is that a few years ago the Amiga technology was simply awesome, but now everyone else has caught up or surpassed it. If you don't wake up, Commodore, you will find yourself in the same boat as Atari... sinking.

- Donnie Walker, Evansville, IN



A T P R E S S T I M E

... continued from page 66

industry. This new industry is evolving at a lightning pace and is by no means defined. Regardless of one's opinions regarding the relative technical merits of CDTV and CD-I, the challenge is finding a way to make this new category of products relevant and attractive to consumers. This means finding ways to stimulate developers and manufacturers to "push the envelope" to find better products, and faster, more advanced technology in order to help us all realize the phenomenal potential of this technology.

To reduce interactive multimedia to a "shootout" between two products trivializes not only the industry but your publication as well. This is a category of products that will challenge traditional definitions of the computer and consumer electronic industries and what it takes to bring new products to the market. Marketing clout, money and experience are not guarantees of success, as Philips is finding out. It is vision and creativity.

Until we find a way to ignite the imaginations of the millions of consumers who ultimately will create and define the multimedia experience, we have a technology with untapped potential. The goal for all of us in the coming months is to help define this category - to open up the minds of consumers and *.info* readers to the possibilities of the technology to overcome the technological and creative challenges facing this new market, rather than proclaim "winners and losers." We invite you to become part of that process.

Jim Dionne
President
Commodore Business Machines, Inc.

.info's Response

Dear Mr. Dionne;

Thank God! We finally got Commodore's attention! Now let's hope we can encourage you to act on our suggestions. Because these are not just *our* opinions, Mr. Dionne. They are the opinions of thousands of *.info* readers and hundreds of our contacts in the Amiga developer community.

We didn't just write that article so we

could say nasty things about CDTV. We *like* CDTV. And we didn't declare CD-I the 'winner'; we merely said it seemed to be winning so far. The race isn't over yet. When we said 'We have seen the future and the future is CD-I,' maybe we should have added 'unless Commodore changes its ways.' If Commodore makes some immediate changes in CDTV and in the way it's marketed, it could still be anyone's race.

The first point we'd like to make is that there are no factual errors in our CD-I vs. CDTV comparison article. Merely some differences between Philip's propaganda and Commodore's. Of course, you're both going to put the best light on your own product. That's business.

But we do believe that there is room for only *one* CD multimedia standard. That has always been the case when two technologies compete head-to-head. Audio cassettes made 8-track tapes obsolete. CDs killed vinyl records. Nintendo wiped out Atari. VHS survived, not Beta. The only exception occurs when one technology has specific advantages over the other for certain applications, as is the case with 8mm vs. VHS or Mac vs. IBM. CDTV and CD-I have very similar capabilities and are aimed squarely at the same market. There is no room for both. That's the lesson of history.

So what does Commodore have to do if CDTV is to win the multimedia war? Before anything else, you need to make a CDTV compatible CD-ROM drive available for all the Amiga platforms. We told Commodore early in the development of CDTV that the Amiga CD-ROM drive should come *first*, to establish an installed base for CDTV software developers. It is now long overdue. Once an Amiga CD-ROM drive does become available, it should help drive the CDTV market.

Your letter rightly points out some of the technological advantages CDTV already has over CD-I, most of which we mentioned in our comparison. You also mention some things that are still 'in the works' that could make a tremendous difference: Photo CD capability, MPEG chips, and CD-XL. But CDTV still needs some immediate technological fixes to make it more competitive. The addition of an integral disk drive and standard joystick ports would make CDTV able to run off-the-shelf

Amiga games as soon as it was unpacked. This would give it a *tremendous* marketing advantage over CD-I, and would create a broader market for Amiga game developers. And an internal DCTV chip should be added *now* to upgrade CDTV's video capabilities to the equal of CD-I's.

Most of all, CDTV needs to be promoted properly. Nobody could be happier than we are that Commodore has *finally* discovered that the biggest selling point CDTV has over CD-I is that it can be expanded into a full-blown Amiga computer. Commodore's marketing policy from the beginning has been to hide this fact from the consumer because he might be 'scared' by it. Bull! We've said from day one that Amiga expandability is the **number one reason** to buy a CDTV. We're glad that Commodore has finally seen the light. Let's hope it's not too late. But simply seeing the light is not enough; Commodore has to *shine* the light, too. You've got to let the public know about CDTV through advertising, promotion, and product availability in the stores. The biggest obstacle to CDTV's success is the same one that the Amiga has always battled: consumer ignorance of the product.

You conclude your letter by pointing out that the consumer still isn't aware of what a multimedia machine is good for. That's true. We were overjoyed to see Gail Wellington's letter to CDTV developers last month encouraging them to produce better software, but that's not enough. CDTV needs a killer application, one that will show off its *real* capabilities and sell machines. Commodore needs to sponsor the development of such an application *now!* Then you need to train store personnel to demonstrate it, and you need to make the media aware of it.

If our article made you mad, we say 'Good!' We hope Commodore stays mad. We hope you stay mad enough to get out there and hustle and prove us wrong. Because we don't want - we've *never* wanted - Philip's CD-I machine to win out over CDTV. We like CDTV better; it is, after all, an Amiga. But without a few technological updates, without proper advertising and promotion, and without a base of excellent software titles, Commodore can't win this battle. Now, Mr. Dionne, it's all up to you.

- Mark & Benn



A T P R E S S T I M E

Commodore Responds to *.info* Article

What follows is the complete text of a letter we received from Jim Dionne, the President of Commodore Business Machines, in response to an article we printed in *.info* #47 comparing Philip's CD-I and Commodore's CDTV multimedia players.

CDTV vs. CD-I? THERE ARE BIGGER ISSUES IN MULTIMEDIA

There are some issues in your article comparing CDTV and CD-I multimedia players that we feel need to be addressed. In trying to help your readers evaluate the benefits and drawbacks of each new system by naming a "winner," *.info* not only misrepresented the facts, but completely missed the real issues facing the emerging consumer interactive multimedia industry.

First, the factual discrepancies. *.info's* assertion that the interactive multimedia industry will support only one standard flies in the face of the history of the computer industry and the current camcorder market. Of all publications writing on technology issues, *.info* should know better. Clearly there is a thriving market not only for Macintosh and DOS-based systems, but Amiga as well. Stating that there will be only one system and further, that that system will be CD-I, is naive to say the least.

Second, the assertion that CD-I is some sort of worldwide standard is inaccurate. Contrary to Philips' propaganda, CD-I is a standard only unto itself. No internationally recognized standards organization, such as ISO, has endorsed CD-I as a multimedia standard. In fact, the only recognized CD-ROM-related standard in the interactive multimedia industry is ISO 9660, which CDTV supports and CD-I does not.

The reality is that CD-I is an extremely complex and expensive system for developers. Unlike the Amiga-based development system behind CDTV, it is immature and unproven. The fact of the matter is that the development system behind CD-I is so unwieldy and expensive that it is virtually im-

possible for a developer to produce a profitable piece of software.

The other myth that has been perpetuated is that there are dozens of manufacturers about to unleash new CD-I players into the market in the coming months. While some other manufacturers may have licensed the technology, to date no manufacturer has brought a CD-I player to market. For good reason. CD-I, despite nearly \$500 million in development costs and more than \$15 million spent in the U.S. advertising, point-of-sale support, hype and hoopla, had been a colossal failure at retail. Industry sources close to CD-I retailers believe that no more than 1000 units were sold to consumers during the holiday season. Even if five times that number were actually sold, amortize the cost of CD-I advertising on a per-unit basis and you'll have an idea of the magnitude of the failure of CD-I in the marketplace. Manufacturers watching the performance at retail have good reason to rethink their commitment to CD-I.

CDTV, on the other hand, has developed far greater sales velocity than CD-I. To date CDTV has been actively selling in more than 20 countries; CD-I is sold only in the U.S. In fact, in U.S. outlets where CDTV and CD-I have competed head-to-head, CDTV has outsold CD-I.

Here's why. CDTV is a far more flexible product. It can be expanded into a full Amiga personal computer through the addition of peripheral products - a key benefit considering that at the heart of the market for interactive multimedia products are people who are computer-literate. In fact, the ability of CDTV to be expanded into a full computer was one of the key motivations for consumers to purchase CDTV over CD-I.

CDTV is as easy to use as CD-I. The Disc Caddy protects discs, a key benefit for parents who are buying applications for children. And the controller is more intuitive and easier to use than CD-I's, especially for children.

Contrary to *.info's* article, CDTV has four different video outputs - Composite, S-VHS, RF and RGB - making it compatible

with any video format. CDTV has far better audio handling capabilities than CD-I, no small irony considering Philips' alleged consumer electronics expertise. CD-I is not MIDI-capable, no small factor when one considers that there are 4 million MIDI keyboard owners in the U.S. And when it comes to video processing, CD-I cannot handle a Genlock and lacks the ability to be configured for vertical market applications, such as sales training, point-of-sale or other business applications. In short, CD-I is just a Compact Disc player with pictures and text, nothing more.

The other major issue in your comparison concerns software. While there are some exciting titles available for CD-I, what was the expense to developers? Given \$500,000 budgets, it is possible to create a limited roster of trophy titles, but the reality is that this level of investment cannot continue without a vital, installed base of CD-I units. Given Philips' numerous failed attempts to bring CD-I to market beginning in 1987, it is unlikely that Philips will develop an installed base quickly enough to generate profits for developers. To date, developers have not made a dime on CD-I. Once developers fall out, the product is dead.

In contrast, we will develop a much larger installed base for CDTV than Philips once we introduce the CD-ROM drive for Amiga 500. From a developer's standpoint, CDTV will be much more profitable, much faster than CD-I.

Further, CDTV is an evolutionary product. Technical advances such as CD-XL will bring richer, more rewarding applications to a format that is mature, inexpensive and powerful. Once an MPEG chip is available, CDTV will have full-motion capability, and a chipset that can be easily retrofitted to units already in the market. And CDTV can have Photo CD capability, once licensing arrangements with Kodak and Philips have been completed.

Factual discrepancies aside, the most disturbing part of your article is that it existed at all. *.info* clearly lost sight of the realities of the consumer interactive multimedia

continued on page 65 . . .

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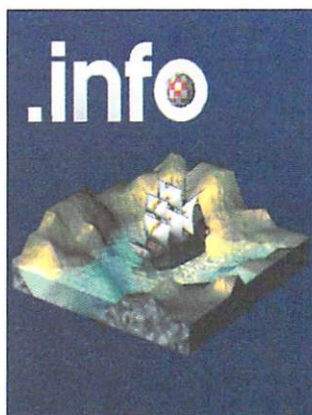
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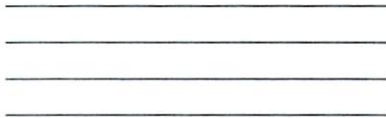
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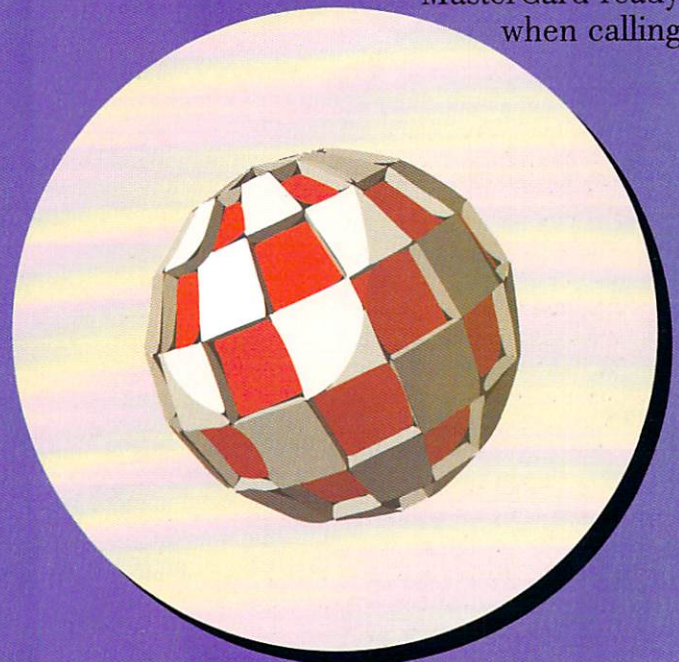
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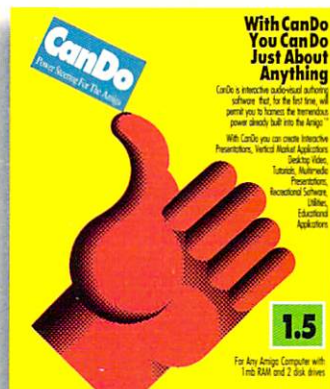
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