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THE AMIGA® NEWS MAGAZINE

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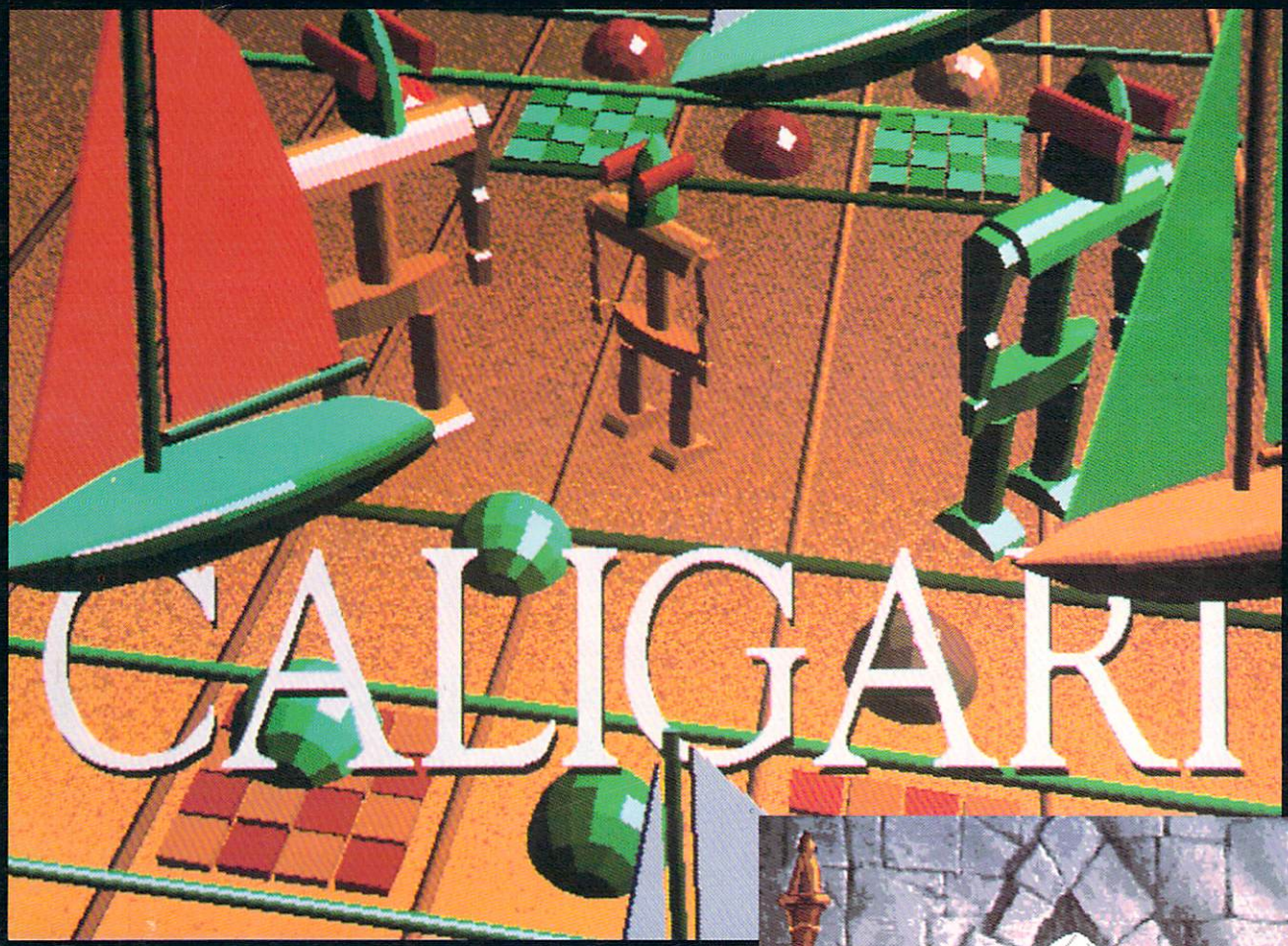

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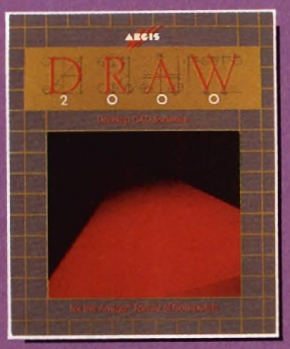

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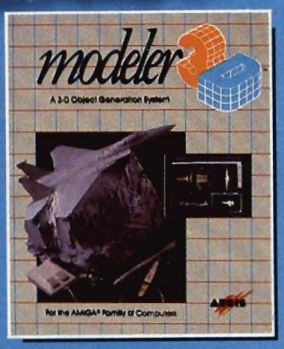

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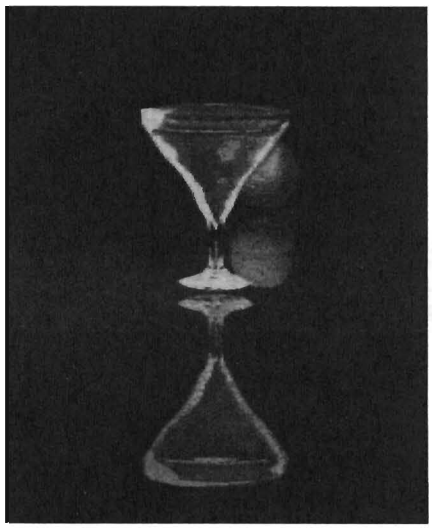

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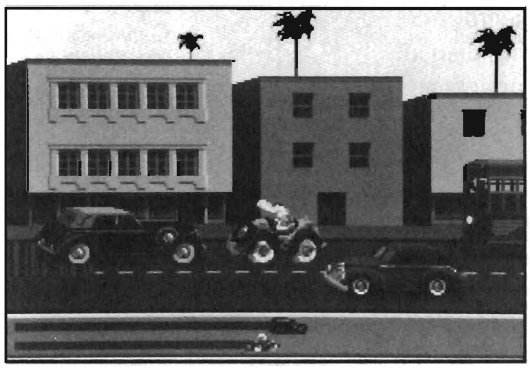

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On Point

Notes from Editor, Tom Bucklin

Recently, an article appeared in The Philadelphia Inquirer concerning Commodore's much ballyhooed comeback from the brink of financial extinction. The piece, entitled, "Commodore's back on line, and Amiga's the reason" centered mainly on the opinions of various New York stock analysts regarding Commodore's present standing as a financial force. The aspect of this article that impressed me was the authors grasp of Commodore and its relations with various parties. The long estranged relationship with many members of the dealer community and the seemingly unshakable reputation as a producer of "game machines" are issues that are apparently alive and well in Commodore's business image. It is somewhat disturbing that after the amount of time that has past since Commodore got serious about mending these image issues, they are still surprisingly prevalent.

Solutions for business problems, especially those related to image, are, granted, not easy to solve. As a matter of fact, it is a truism that products are sold by creating an "image" of something that you just *have* to have. Apple Computer has been astronomically successful in creating a desirable image behind their Plus and SE MacIntosh line, despite the inherent hardware limitations that these Macs possess when compared with the Amiga.

Well, now that we know the problems, the $1000 question remaining is, "who's got the answers." Just like Simon and Garfunkel once said, "the words of the prophets are written on the subway wall," I've heard more workable solution-knowledge expressed at one user group meeting than all of the corporate board meetings put together. Many times, the movers and shakers in a corporate structure are also those who are not on the user level of things, and can easily miss the boat as far as what users are really looking for. Now you can finally do something, at least about the direction of the Amiga line. Amiga product manager for Commodore, Keith Masavage, would love to hear your suggestions for new Amiga products. You can reach him by writing to Commodore and addressing your letter to:

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Comdex Fall '88

Commodore Introduces 3 new Amigas

The Fall 88 Comdex was held in Las Vegas, and as usual, it was an IBM/MS-Dos show. Commodore and Amiga were there, as were Apple and Atari, but most of the acreage was devoted to clones, and work-alikes of the machine we love to sneer, the IBM PC. Commodore occupied a large space in the center of one of the exhibit halls, so those interested could easily find it. This exhibit featured about a dozen prominent developers and their products. Try as we might, we couldn't find many other Amigas or Amiga products outside this exhibit. Apple and Atari took a different approach this year. Each operated exhibits away from the main floors in a room dedicated exclusively to their products. Like Commodore, they stuffed their rooms with existing developers.

At the pre-show dealer conference several official announcements were made by Joel Shusterman, VP of Marketing. These consisted of a handful of new products and a discussion of Fall marketing plans. First the big news; three new A2000 models. (Actually none of these are new since they were introduced in March 88 at the Hanover computer faire, but there had been no confirmation that Commodore USA would market these products.) First is the A2000-HD, a standard 2000 with a harddrive added at the factory. The 2000-HD should ship in early 89. This Amiga will the first which can be removed from the box ready to run from its harddrive (since Workbench 1.3 has been installed at the factory along with the new Fast Filing System). Commodore has added the 2090-A autoboot controller and a 40 Megabyte, 28 millisecond access harddrive to make this package.

The 2000-HD is aimed at "professional" Amiga users and at making life easier for Amiga dealers. The suggested price is $2999 for the 2000-HD without a monitor! We have to wonder at Amiga pricing. The list price for a standard 2000 is now $2195 and an A500 lists for $799, all without monitors. Since you can get many PC clones, with color monitor and 20 meg harddrives for about $1200, and the Tandy 1200 is available on every corner, what is Commodore's strategy?

Joel did announce that the population of Amiga's worldwide is over 700,000, and that there are over 1700 software titles available. While these are encouraging figures, he didn't mention that only about 50% of the 700,000 units are in the U.S. and that earlier projections called for 1,000,000 sales by end of 1988. On to the other new machines. The A2500 begins with the 2000-HD and adds the A2620 co-processor card to create a 68020 based Amiga. The 2620 is equipped with a 16Mhz 68020 running at 14.3 Mhz, 2 Megabytes of 32 bit RAM, a M68881 math co-processor, and a 68851 memory management unit (MMU). The 2 Meg 32 bit memory is, of course, in addition to the 1 meg of 16 bit memory standard in every 2000. The 2620 board is installed in the co-processor slot on the motherboard, so all the normal expansion slots are free. (The 2090-A takes one of these.) At a suggested price of $4699, the A2500 is aimed at "graphics, animation, and video professionals." This may seem pricey, but the price/performance ratio compared to Mac II, Sun 3, and PS2-50 is really pretty good. The 2500 uses Kickstart and WB 1.3, and is just a faster member of the Amiga family, so don't listen to the doom-sayers who are talking of obsolete Amigas. Look for the first 2500's in early 89.

The third new machine is the A2500 UX. This one starts with an A2500, adds two more megabytes of 32 bit memory on the A2620 card, replaces the 40 meg harddrive with 80 meg, and adds a 150 megabyte Irwin streaming tape drive. All this hardware is needed for the ATT Unix System V with Commodore's own AIX windowing interface. No pricing or availability was announced. Who needs Unix on an Amiga? Commodore thinks that this package will compete against the Sun

and Appollo workstations, and fit in University and research environments. The 2500 UX is currently available to qualified Commercial developers only, so we can expect that there are still some "issues" being resolved. Other new products were also shown, including the A590 expansion unit for the 500. This is a low profile box with a built-in 20 Meg harddrive, space for up to 2 Megabytes of expansion ram, an external SCSI port, and its own power supply. However, the fate of the A590 as far as being a real product in the US is still up in the air according to Commodore Amiga product manager, Keith Masavage. Said Masavage, "We have shown the A590 around in an effort to gauge consumer response so as to make a determination on the marketability of this product in the U.S." Apparently, there is concern over what kind of sales volume can be expected from marketing A500 peripherals that cost close to the cost of the computer. (In practice, though, you would be hard pressed to find consumers that did not expect to pay between $500 and $800 for a hard-

drive unit). The A2286 AT Bridgecard was also announced (again). This new Bridgecard comes with 1 Meg of PC RAM onboard, and an 8 MHZ 80286 processor. There is a socket for the 80287 math co-processor, and a parallel port is included on the board, as well. MS-DOS 3.3 is standard with the A2286, as is the new improved Janus 2.0 software. (The Janus software runs in the Amiga and lets MS-DOS co-exist.) Release 2.0 adds the ability for MS-DOS to autoboot from an Amiga Harddrive. Other improvements include improved file-sharing, and emulation of Microsoft Mouse with the Amiga mouse. Again, Commodore had no firm pricing or delivery schedule for this unit.

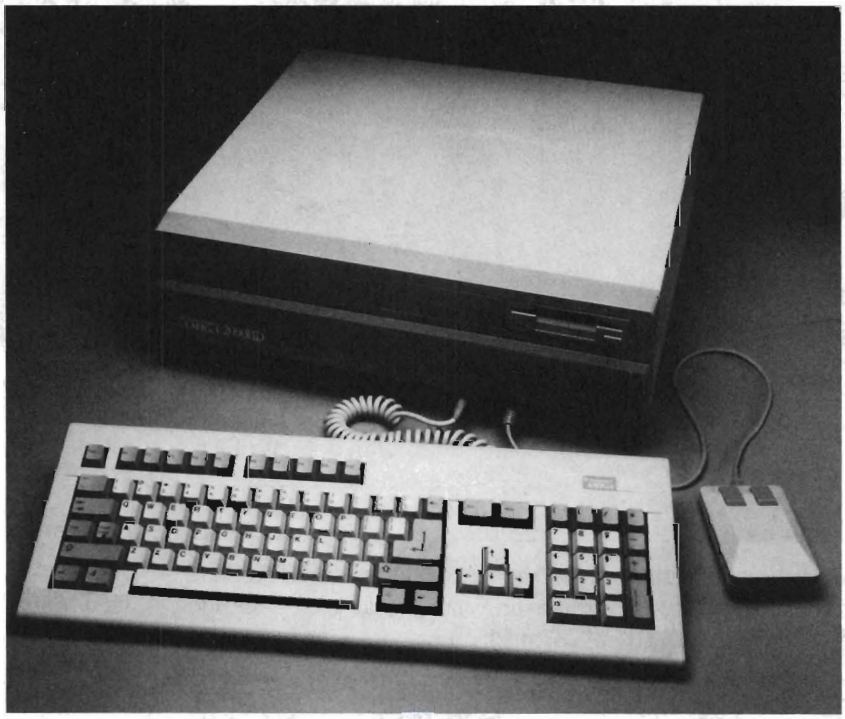
As is typical for a Comdex, the show floor was full

Two video products were discussed as "Technology Previews." (I guess this means that delivery dates are even more uncertain.) The Amiga PVA 2350 is a Professional Video Adaptor which has been shown at previous Comdex exhibits. It includes a frame-grabber, digitizer, and genlock in one unit and could be a real winner. The Amiga High Resolution Color Graphics Card promises 1024 by 1024 resolution from a palette of over 16 million colors. This is the "Lowell" graphics card which has been the works for over a year. It uses a Tex-

(continued on next page)

Comdex Fall 88 *(continued from previous page)*

as Instruments graphics processor to provide eight bit-planes or 256 simultaneous colors and comes with its own graphics library which must be used for Amiga software to access the TI graphics processor. Again, this could be a great way to add colors and resolution to the existing Amiga platform, if it moves from a preview, to a product. The final Commodore Amiga announcement was also a rehash of the Hanover news; an Inmos T414 transputer implementation for the 2000. Parallel processing is the transputer claim to fame. Each T414 runs at 15 MHZ, and can work with up to 16 other Transputers to provide a maximum of 170 MIPS (millions of instructions per second) in an Amiga. Of course, this power doesn't run with AmigaDos. The Helios multi user, multi-processor, multi-tasking operating system is included. The Transputer project is aimed at very high performance engineering and research applications, and comes with XWindows and LAN support.



The 2000HD comes complete with a 40 meg, autobooting hard drive installed

As to marketing the existing and new products, Mr. Shusterman described a new promotion aimed at selling 500's. Purchasing a 500 system and you get a VHS VCR, with remote control, free! Amiga dealers already have a supply of these special units and print advertisements will support the promotions. Commodore is running a series of over 1000 TV ads for the fall selling season! These ads are 15-30 second spots created completely on the Amiga by Griffin-Bacal. Every showing will be on MTV in an attempt to get the video generation into Amiga video.

There were a few new products announced or shown by Amiga developers, despite the concentration of shows late in the year. Since most were in the graphic area, we'll start with the exceptions, business and productivity applications. Prolific Inc. has completed a significant update to Pro-Board. These products perform substantially all the functions of dedicated $60,000 circuit design systems. Release 2.0A is available to registered users for only $10. A new product, Pro-Drill further extends this product line. Available in the first quarter, Pro-Drill will assist with the tedious process of fabricating holes in a PCB's for pads and other components.

B.E.S.T. Inc. announced several new products. B.E.S.T Payroll Management will handle up to 500 employees, their deductions, taxes, W2 forms, and quarterly reporting. At a price of $89.95 this will give ADP a scare. A full featured spreadsheet and modeling system, Plan/IT includes graphs, macros, and database capabilities. Plan/IT will have a suggested price of $149.95. This program can also be used for Desktop Presentations, ala Harvard Presentation Manager, something sorely missing in the Amiga market till now.

Access Technologies introduced another significant product for CAD users. ACAD Translator will take AutoCAD .DXF files and translate them into Sculpt-Animate format for rendering. At $179.95 this package will make high quality rendering a reality for many MS-DOS design houses. It sure would be nice if Access adds a translator from .DXF to Acgis Draw format. Access also introduced a Turbo-Silver version of their Fancy Fonts 3D package. Now users of Silver, as well as users of Sculpt-Animate, can benefit from two disks of well designed 3D fonts.

A pleasant surprise was a 200 Megabyte optical WORM disk working with an Amiga 2000. The system was developed by Kodiak Software of Concord Calif., and uses the Commodore 2090-A SCSI controller. Imagine being able to create a video or back up several harddrives to a 200 MB unit with removable media that cost about $25. The 200 MB optical drive sells for about $2000, and is scheduled for availability first quarter 89.

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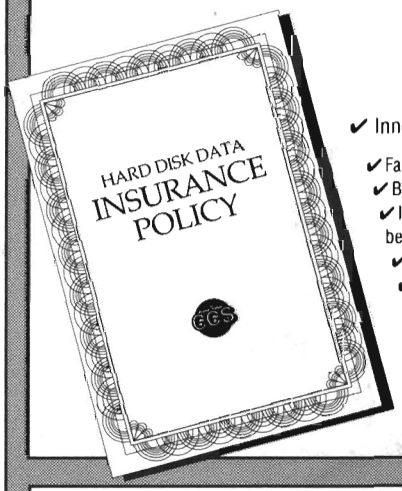

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DEALER INQUIRES WELCOME

VISA

Comdex Fall 88 (continued from page 6)

And now to graphics. Electronics Arts was showing Deluxe Paint III which will be available in March. Some of the new features are: extra-halfbrite support, overscan painting, wrap of images around brushes, and new tint modes for colorizing black and white images. In addition, a new set of animation features have been included. We will soon be able to paint a series of screens and animate them within the same program. The results will be stored in ANIM format. Even more exciting was the demonstration where a multi-frame animation was used as a brush in perspective mode. Dpaint III then computed the proper perspective for each frame!! The upgrade will cost $50 to registered owners, but will a must-have for every one. The paint wars continue with Photon Paint 2.0 from MicroIllusions. This HAM Paint program has set new standards for shading, blending, and 3D object wrapping. New features include the ability to wrap a brush around a 3D "landscape," multiple page animation, rub-through and pantagraph modes, stencil feature, adjustable airbrush, and complete colorization features. Photon Paint is scheduled to be released in the near future, so we hope to see it in the first quarter of 89.

The Right Answers Group introduced The Director Toolkit. This is disk of new routines which add more wipes, a pie-chart generator, palette selector, and a BlitUtility for working with the Director. Users of the Director can now create ANIM versions of their scripts, as well as a MIDI output module. All this and more is offered for only $39.95.

Aegis was at Comdex showing the recently introduced Draw 2000, and pre-release versions of AudioMaster II and Animagic, a new utility for manipulating ANIM files. The winners of the Aegis Desktop Video Contest were also announced:

1st Place - Jail Break by Rich Gibson & Anton Sixt

2nd Place - E.S. & A. Computer Graphics by David Boddy

3rd Place - Odyssey by Joseph Garner

Honorable Mention - Fire Anta by Bob Castro.

All of these videos used at least one Aegis product and were produced completely on an Amiga.

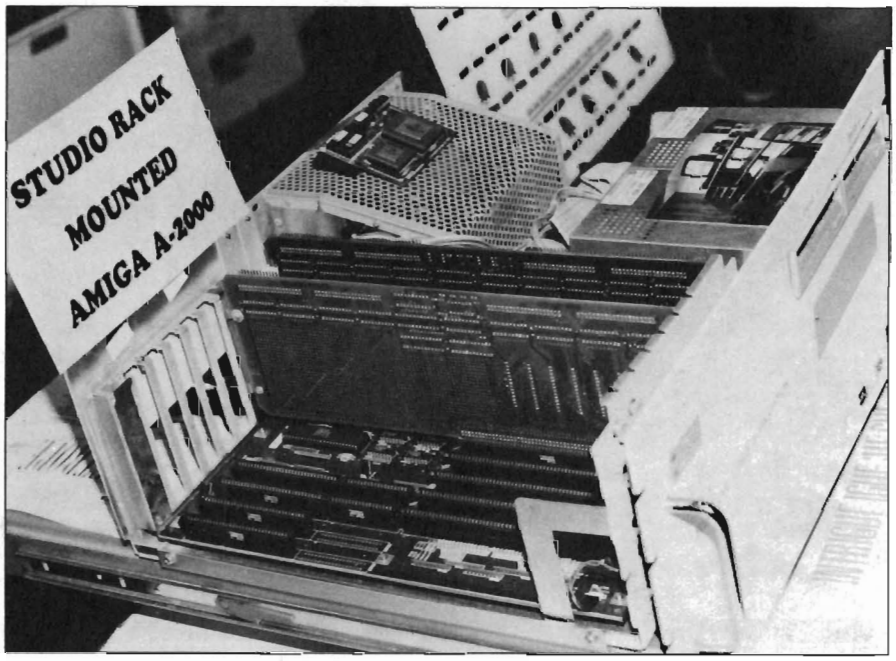
The Amiga A2500 model boasts a 68020, 2 megs of 32 bit ram, and a 68851 MMU

There were a number of new games introduced during the week, but we were overwhelmed with the products from Microdeal Michtron. This company has really shifted into high-gear. International Soccer, Fright Night, Ringside, Talespin, TurboTracks and Goldrunner II highlight the many games we will be seeing in the next two months. From sports to horror, road-racing to adventure games, the whole spectrum was shown here. Games aren't all from Mictron though. The VIVA authoring system is being sold in three versions. VIVA, VIVA Presents! and VIVA professional. You may remember our reports at previous shows of this "hypermedia" programming system which connects to video-disk players. MicroDeal also announced its own hardware/software for sound sampling and editing.

Of course there were other products shown at the Amiga Gallery, and you'll be reading about them in upcoming issue of The Amiga Sentry. Stay Tuned!

World of Commodore, USA

The Sucessful Canadian Show Makes its First USA Appearance



RGB Video showed their custom rack-mounted Amiga

There has been a thriving Commodore show and exhibition in Toronto, Canada for ten years. This "World of Commodore" has been operated by the Hunter Group, and produced with the official sponsorship of Commodore Business Machines. November 1988 saw the first U.S. presentation of a World of Commodore at Philadelphia's Convention Center. The Canadian shows have been known for very large attendance (40,000+), great retail bargains, and for being aimed at C64 and C128 users.

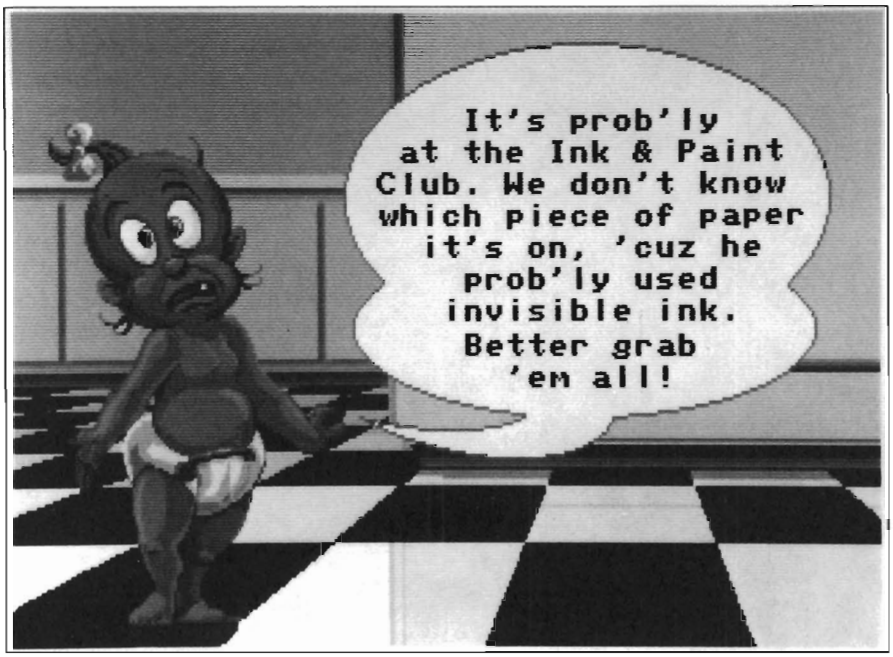
Many in the Amiga community wondered about the Philadelphia WOC. Would there be significant Amiga presence? Would Commodore provide the kind of events and personnel that make the Toronto show special? Would there be anything new at a show just four weeks after AmiExpo LA? Most of all, would large numbers of Amiga owners and prospects attend? Several of these concerns were answered even as we set-up for the show. Not only was the Amiga presence significant, it was overwhelming. There were about 50 exhibits on the main floor and less than 10 were showing C64 or C128 products. Even fewer were 64 exclusive! If this is an accurate indicator of the Commodore market, then the Amiga has indeed replaced the C64 as a focus for developers. The large, well-staffed, Commodore booth and stacks of A2000 and A500's in the supply area indicated a high level of commitment from Commodore. Throughout the four day show, attendees could chat with the senior hardware and software engineers, marketing staff, and CATS.

The look and feel of World of Commodore Philadelphia was very high-end. First, there were many more retailers, including about six Amiga dealers. The exhibit spaces featured hard-walled booths and carpeting, which gave an overall "plusher" look. Finally, the informative efforts were more accessible. At one end of the exhibition hall, a large stage was used for hourly presentations by vendors and Commodore spokesmen. The stage was equipped with a giant monitor and loud-speakers so that attendees could see and hear fairly well. The seminars (which were presented at no additional cost) were held in rooms with 15-20 Amiga systems set up for hands-on tu-

(continued on next page)

torials. The dealers were encouraged by special Commodore show promotions which offered a free VCR with the purchase of an A500, and low prices on A2000's (Commodore had several thousand systems warehoused on the lower level!).

One local dealer, Resources Systems & Solutions, attracted customers with a Hero Robot which could be operated by typing on an A2000 and live MIDI music performances. As far as new products, there were only a few which had not been shown at Los Angeles. The major surprise was at the ReadySoft booth. No, it wasn't the finished version of Dragon's Lair (see review in this issue). The surprise was a working Macintosh Emulator developed in New Zealand. This amazing product is a combination of hardware and software that lets any Amiga (1000,500 or 2000) run much of the software that has made the Mac a winner. We tested MacWrite, MacPaint, Pagesetter, and a 3D object editor. All worked well, without crashing and at normal, or faster than, Mac speed of operation (the faster speed of operation comes from the Mac's lack of the Amiga's custom chip assistance in handling the graphics displays. Instead the Mac relies on, and heavily taxes, the 68000). During the show, we pursuaded the Readysoft staff to try MAX out with a Flicker-Fixer, and a Hurricane accelerator card which were in use at the Expert Services booth. This says a lot for the way Max is written. It worked with both of these peripherals!



Roger Rabbit's adventure made its debut at the World of Commodore show

MAX uses official Apple MacIntosh ROMS and the 68000 inside your Amiga to simulate the Mac environment. The hardware provides sockets for the ROMS (you have to purchase your own for about $100 from resellers), and a circuit connected to an Amiga disk drive port. The software includes a configuration program, which runs as a normal Amiga Workbench program. A screen full of gadgets lets you choose the screen resolution, printer, colors and memory configuration you will use. MAX can work with med-res or hi-res interlace modes, depending on your preference. In med-res mode, the 640 by 200 Amiga screen will scroll to reveal the bottom half of the Mac display. In hi-res mode, an entire Mac screen will be visible.

There are selections for the parallel or serial port, and a setting for Apple Imagewriter. Laserwriter support is also incorporated for your Postscript output from desktop publishing programs (the mainstay of the MacIntosh). You can select any two colors to act as your background and foreground (No, the color modes of the Mac II are not emulated). When you have made your choices, you exit and the Max emulator takes over the system.

Max does not run with the Amiga operating system but takes over the entire machine. With the Max hardware connected to the disk-drive port, the boot process takes less than a minute. A different copyright message appears, but the familiar Mac icons and menus leave no doubt that you are working with a ROM based system. All the desktop functions work as expected: copying disks, opening folders, etc. The one operational difference is the mouse. Only the left mouse button is active. Of course, a Mac uses a one-button mouse, so this is an accurate, if annoying, emulation. We pressed several Mac users to test MAX at the show, and all agreed that the accuracy and speed of this emulator are impressive and promising. There are several features that still need to be worked out prior to the release of the product.

ReadySoft plans to sell MAX in January '89 for $149.95. At that time, Max will not support Amiga harddrives or Appletalk. These will have to wait for a

latter release. Since MAX works with 64K and 128K Mac ROMS, youwill be able to find the necessary ROMS, but may not be able to run the very latest Mac software. The Mac II and latest Mac SE use 256K ROM's for their operating system, and some newer software requires these.

The other issue ReadySoft is dealing with is memory configuration. Mac memory must begin at address 0000 and be contiguous. The Amiga memory configuration has a gap after the first 512K. This could limit MAX to running only as a 512K Mac. Some internal Amiga memory expansion units begin their address space at this gap, and could provide 1 Meg of contiguous space. The long-awaited Fatter Agnus will also provide 1 Meg of contiguous Chip Ram for 500 and 2000 users, and software solutions may also configure more memory, so this doesn't seem to be an insurmountable problem. What will be crucial to MAX's success is printer function and access to Mac disks.

We could not test any printers at WOC, but assume that ReadySoft will be sure that a wide variety, including proper Postscript laser support. Access to Mac disks is currently handled in an awkward fashion. You cannot read a Mac disk directly with MAX. Instead, you format a special 3.5 inch disk, which provids 272K of space that both the Mac and Amiga can read. You copy some data and programs to this disk on your Mac, then bring it over to the Amiga running MAX, and copy it to another disk. This process is tedious, but you only have to transfer your software once. Still, we hope someone finds a way to read Mac disks directly. ReadySoft has a done a fine job of enhancing and supporting their C64 emulator, and from what we've seen of MAX, Amiga owners can look forward to a functional and practical Mac emulator in the near future. The latest word from ReadySoft if that the MAX emulator is now up and running on the Moniterm full page display, as well.

There were three other interesting hardware developments at WOC. RGB Video Creations was showing the first rack-mounted Amiga 2000. This Video Workstation is designed to be mounted in a broadcast studio or post-production house for use by professionals. RGB continues its efforts to push the Amiga a a high-end professional platform by matching their offering to the real world requirements of practicing professionals who do not want a computer, but a would gladly buy a plug-in component. The exhibit floor was crawling with Amiga harddrives. What a change

(continued on next page)

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from 18 months ago! Supra, GVP, C-Ltd., Interactive Video, Pacific Peripherals, Spirit Technology were all promoting their products as the fastest and the best. This fierce competition hasn't discouraged newcomers though. Xetec, Inc. exhibited a new line of products for the A500 and A1000. These are based on the Xectec PC-JR chassis enclosures and an Amiga bus interface. The expansion box includes a cooling fan, its own power supply, and power line filter. With space for a 3.5 inch hard drive, 650MB streaming tape back-up system, and 512K-8 Megabyte memory expansion, this looks like a great option for the A1000 or A500 owner who is considering upgrading to the 2000 for expansion reasons.

Another IBM developer was exhibiting in the same area. Irwin Magnetic Systems is the acknowledged leader in commercial streaming tape systems. Irwin units are used on Ms-Dos, Mac, and Unix systems worldwide. The personnel in the booth explained that they were already supplying their tape units to Commodore for use with Unix systems (the A2500) and that they hoped that AmigaDos versions would soon be available.

We were fortunate to work with a very high end color printer in the Soft-Logik booth: The QMS Colormaster, a Postscript color printer. Imagine 300 DPI, with scalable objects and over a million colors. What Amiga software drives this beast? Well Pagestream will, soon. (The Atari version of Pagestream had been used to create some Postscript files which were being printed). Professional Page offers Postscript color separations, but not Postscript color. Only Express Paint 3.0 can produce Postscript color rat this time. We happened to have a disk with some Comicsetter art by Ed Fadigan (see the November 88 Sentry) and sought after a printout. Thus, we learned that the printer is part of a service called Digital Depot. Based in northern New Jersey, this graphics service bureau for Amiga can offer color separations, billboard size color hardcopy, and many other options from your IFF (or other) files. The Digital Depot folks knew how to go from the Comic-setter file to the printer. Only an hour later, we had the results. Stunning indeed. And for a cool $25,000 this printer can be yours.

There were several new products announced and/or demonstrated, including SuperPlan from Precision Inc., and a series of pre-school games from Kinder Street (see review in this issue). Most exciting, was the appearance of Roger Rabbit from Buena Vista Software (see review this issue).

The really big software news was the official release of WorkBench 1.3. Hundreds of attendees left with this three disk set under their arms. Although it's release comes six months after the projected release date, WB 1.3 is a must-have upgrade with vastly improved printing, many new CLI commands, the Fast File system, a built-in shell, and a recoverable, bootable, Ram drive (see the April 88 issue of Amiga Sentry for a highly detailed breakdown of the merits of the 1.3 OS). Here's one case where A1000 owners have the jump on those with an A500 or A2000. With Kickstart 1.3 on disk, you can be up and running to use the auto-boot feature in short order. Those with Kickstart in ROM must obtain and install a new KickStart ROM inside their machine (at least one Amiga dealer was selling 1.3 ROM chips at the show).

The documentation provided in the 1.3 Enhancer package is also excellent. With over 120 pages detailing commands, startup-sequences, and even printer switch-settings, this is a great improvement over the skimpy manual which came with the 1.2 upgrade.

The one disappointment was from Commodore. There were no new product announcements or machines on display. Not even the A2024 monitor or PVA board (which, by the way, have been shown many times). Commodore marketing personnel explained that with COMDEX just weeks away they preferred to hold introductions till then. It's a shame that they held out on officially introducing these new products to the faithful users, in favor of the often disconcerted, largely Ms-Dos, onlookers that populate a typical Comdex show.

The World of Commodore was certainly a success. More than 11,000 people attended, with the most traffic concentrated on Saturday. The dealers and other retailers seemed to have good sales, and exhibitors and attendees alike enjoyed the spacious facilities and upbeat atmosphere. The Hunter Group was also pleased. They have announced a series of US shows for 1989, including Detroit and Los Angeles. As currently scheduled, we will have at least 6 large Amiga exhibitions to attend during the next twelve months. Time to buy new sneakers.

Win, Lose, or Draw 2000

Last month we inadvertantly listed the suggested retail price on Aegis' Draw 2000 as $79.95. In reality, the actual price of Draw 2000 is $279.95.

Turbo Silver 3.0

The Latest Version in the Series is Loaded with Enhancements

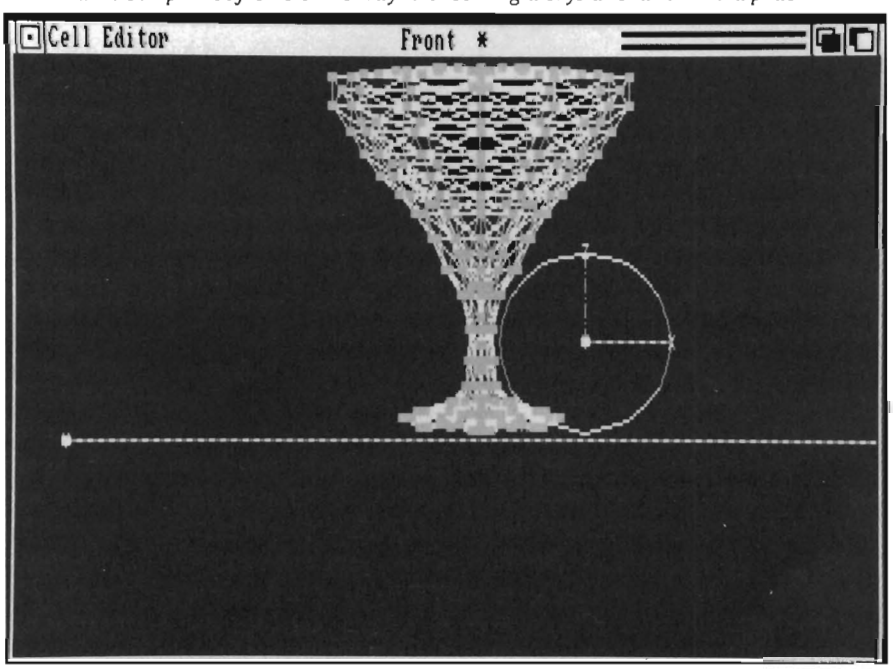
By Art Warsell

First there was Silver, introduced about a year ago. A few months later, Turbo Silver came along, a major upgrade to the original program. And now there's Turbo Silver 3.0, loaded with enhancements and spectacular new abilities.

For the benefit of those readers who are not familiar with Silver in any of its previous incarnations, we will sidestep comparisons of 3.0 to earlier versions. Instead, here is a partial listing of the program's current features.

* up to 32,000 light sources per scene
* inclusion of two complete 3D Font sets
* surface mapping of up to eight different IFF brushes on any shape
* the ability to make a light source into a "slide projector" by wrapping an IFF image on it
* ground patterns that can be produced from any IFF file
* stunningly beautiful color gradations for skies
* very fast rendering and even faster preview modes
* seamless integration between object creation and animation
* hierarchal (parent and child) groupings of objects to simplify production of complex animation movements
* up to 999 frames per animation sequence
* sliders that allow you to set the degree of transparency, reflectivity, smoothness, glossiness, texture and other attributes for each object
* quick and easy modification for objects being created through spin, sweep, extrude, scale, rotate, zoom and various other commands
* full support for accelerator boards

This complex object is on its way to becoming a crystal chalice and a peach



If this sounds like an exciting program to work with, it is. The manual cover lists the system requirements as: an Amiga computer, external or hard drive, kickstart/workbench 1.2 or higher, and imagination. Another requirement is patience.

Beginning Ray Tracing

Before going any further, I should present some background related to reviewing Turbo Silver 3.0. I purchased Sculpt 3D the first week it was available, a long time ago. Within a few days, I had given up on ever learning ray tracing. My experience at that time consisted of stealing precious hours out of a hectic schedule to watch

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little wheels turning on a tri-view screen. Eventually a window would appear in which convoluted networks of wireframe triangles had been transformed into a bizarre object, bearing no resemblance at all to what I had intended. I wondered if T. S. Eliot was thinking of ray tracing when he wrote:

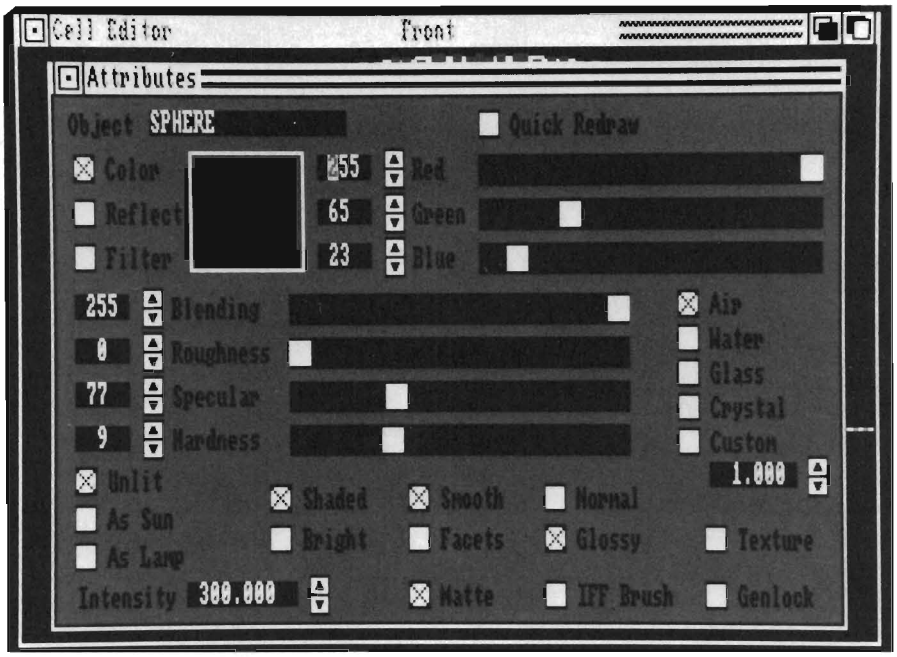
"But as if a magic lantern threw the nerves in patterns on a screen: would it have been worth while if one, settling a pillow or throwing off a shawl, and turning toward the window, should say: "That is not it at all, that is not what I meant at all."

To be fair to Byte by Byte, the fault was not really with Sculpt 3D. For someone not already steeped in 3D geometry, learning to use a ray tracing program is a formidable undertaking. One has to make a mental commitment roughly equal to what would be required to give up smoking, drinking, eating and sex.

So, my point of view for this review of Turbo Silver 3.0 is successfully learning to ray trace and animate. I've been there, and survived. I can tell you how Turbo Silver 3.0 made the process easier and quicker in some ways ... more difficult and painful in others.

The Program

To begin Turbo Silver 3.0 you must first boot with a Workbench disk. Then insert the Silver disk and click on the Icon. The opening screen shows a film strip, with each Frame and Cell numbered. This is the environment in which you will edit animations and render objects. After selecting a resolution (all are available), opening and naming a file, you enter the Cell Editor screen by double clicking inside the first Frame. My first pleasant surprise in working with the program was that



The Attributes screen is where you select how your object will be rendered

there is no tri-view here. The top of the screen informs us that we are viewing the Front. Function Key 8 (F-8) gives us a Top view, F-10 a view from the Right, and F-9 returns us to the Front. This mode of display is more spacious and less confusing for a beginner. It also has the advantage of requiring the program to redraw one third as many lines when you make a change. Editing is therefore faster and more responsive.

My second pleasant surprise was the ease with which objects can be animated, and the degree of control possible to exercise over their movements. Between my first and second surprises, there intervened about twenty hours of nightmarish frustration learning this process. It was worth it, even though much of my confusion could have been avoided. But before we go into that, let me tell you about the animation controls.

There is a command in the Cell Editor Window called Story. Story lets you draw a path of connected points and assign an object or group of objects to follow the path. Further, you can easily instruct objects to rotate or perform a sequence of hierarchal movements as they travel. I won't attempt to describe the particular steps involved here. Without the program on screen in front of you, that would be like telling a blind man how to tie an elephant's shoe. But once you've learned this procedure, it's easy and fun.

The animation editor is wonderfully fast in rendering test drives of your animations in wire frame. You can use function keys to speed up or slow down an animation while it's playing! I love this aspect of the program. The seamless transition from object editing to animation is a strength of Silver. One second you're adding a surface, the next you are viewing a wire-frame or solid rendering of the entire scene! This greatly facilitates the creative process. The

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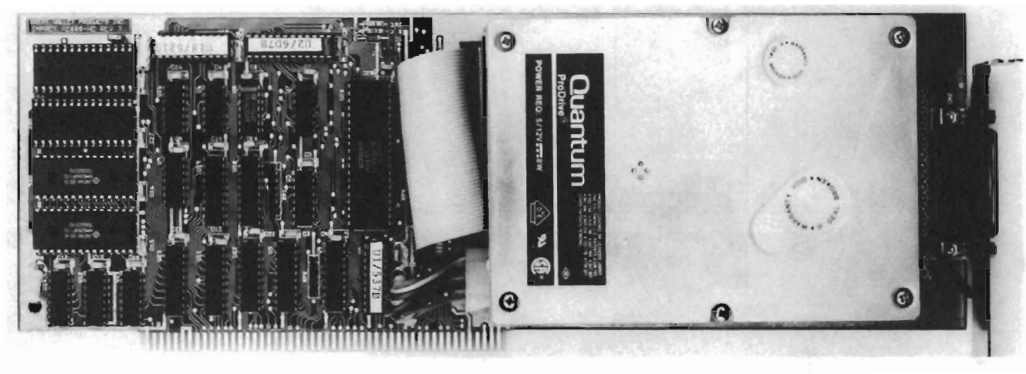

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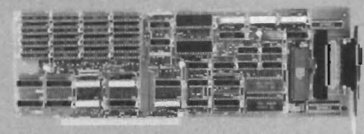

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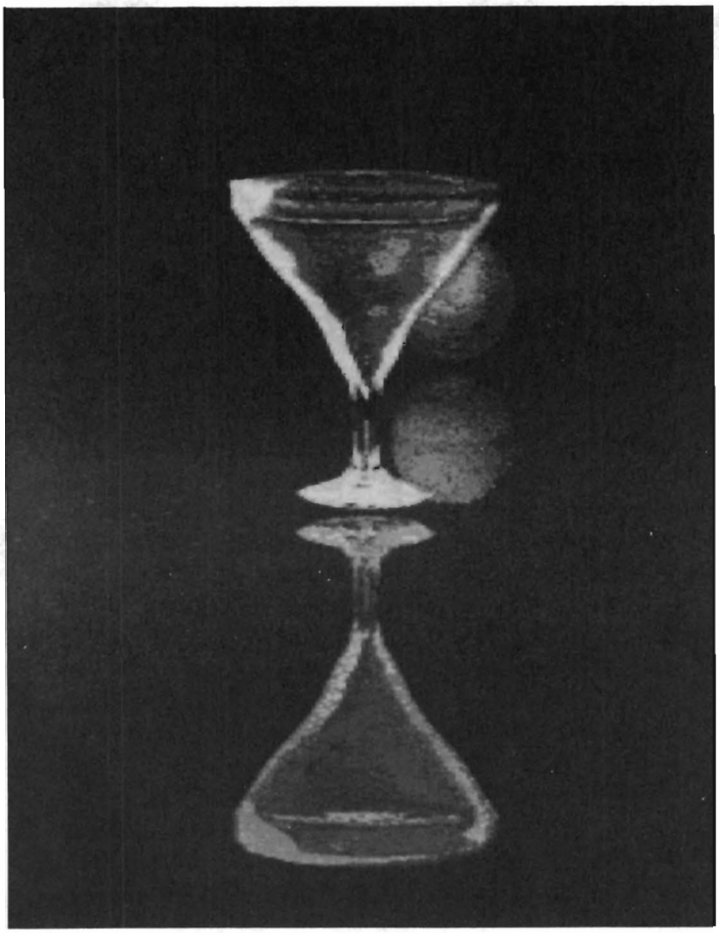
Silver 3.0 *(continued from page 14)*

completed Silver animations are not stored in the ANIM format, but in a form unique to Silver. There is a public domain player utility provided by Impluse, so you can share your results with the world. (Stan Kalisher of Impulse informs me that a new product from Hash Enterprises will read the Silver format and produce Anim if you really need to.)

Once oriented to the universe of Turbo Silver 3.0, I found it to be extraordinarily rich in features and thoughtful innovations. While there is a profusion of menus to make learning the program easier, most functions have keyboard equivalents to speed things up as you become experienced. Defining and manipulating objects, light sources, the camera, ground and sky becomes very intuitive and pleasurable once you catch on.



The finished object shows depth and delicate shading

The Terrain module (available separately, but released with 3.0) is a landscape generator which enables you to create instant mountain ranges and animated rivers that will knock everyone's socks off. While the terrains you can create are not fractals, the appearance is somewhat similar. One difference is that the hills, valleys and waves are generated almost instantly.

Another is that you can superimpose an IFF file over any surface you've concocted, and then set the whole thing in motion. The folks at Impulse have included a very impressive demo of a flag rippling in the breeze. Terrain can be learned in one session, and is an outstanding addition to Silver's bag of tricks. In fact, so much of Turbo Silver 3.0 is done so well, that I hate to mention its major shortcoming...

A Thorn In the Rose

In the Introduction, the manual recommends that "Even if you're familiar with the basics of 3D design and animation, you should read the entire manual at least once before using the program." I did. The content was stimulating and the style highly readable. But the carelessness evident in the large number of typos made me a little uneasy.

When I finally began using the program, following the manual page by page, my apprehensions were justified. Errors in the text, compounded by omissions and oversights, led me down one blind alley after another. I will give just one example of each type of deficiency to better convey the problem:

Errors in Text: The first step in the tutorial for the Story command instructs the reader to enter the Object Editor screen through Cell 000, the Key Cell. This cell is described by name, number and location on the screen. I followed the 18 steps for creating an animation half a dozen times. It didn't work. I finally called the Support Line and learned that the "ordinary" method for entering the Object Editor is what they wanted to convey.

Omissions: Loading and rendering ready-made objects is a piece of cake. Creating new objects involves, of necessity, wireframe triangles, vertices, edges, faces and more. I eventually figured out that Spinning is an easy way to construct basic 3D shapes, which can then be modified without too many complications. The manual was of little help in arriving at this discovery. The section on Spinning never even mentions that one must draw only half of the object to be spun. Pretty basic stuff, but not something we're born knowing.

Oversights: One of the most attractive features of Turbo Silver 3.0 is its ability to produce quick renderings. One method for obtaining a fast, fully ray traced preview is to exclude everything but one object, simply enclosing it in a box called a Zone. Apparently this feature was not fully implemented in earli-

er versions. In two different places the manual instructs the reader to follow a much clumsier procedure: "Place 'Post-It' stickers or other light adhesive labels on the screen where you want to render, then exit the cell and use these visual aids to set the Zone."

If Turbo Silver 3.0 were not an excellent (even awesome) program, these failures of the manual would not be such an affront. Impulse, has upgraded each version of this software almost as soon as it was released. Let's hope they will move at least as quickly in upgrading their documentation. If not motivated by the desire for profits or consideration for their users, they should do so out of respect for their gifted programmers.

On The Other Hand

In fairness, I cannot curse the manual without singing the praises of the people at the other end of the Technical Support Line. I called repeatedly and always received patient, clear and intelligent responses. They walked me through each process that was in question and encouraged me to call back for more if I needed it. If you are thinking about starting to learn ray tracing, the user support for Turbo Silver 3.0 is almost like having a private tutor.

A Wish List

So far as the software itself is concerned, I can think of only two improvements I hope to see in future versions:

1. Presently, all of the ready made objects (other than Fonts) are round. How about some cubes and pyramids that could be used like building blocks?
2. If possible, interactive rotation by grabbing an object and moving the mouse would be great. This should not replace entering numbers, but serve as an alternative approach.

With its multitude of options and powerful features, and its fast rendering and ease of use once learned, Turbo Silver 3.0 makes a major contribution to the state of its art.

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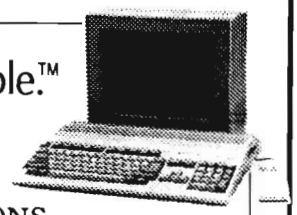
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Caligari

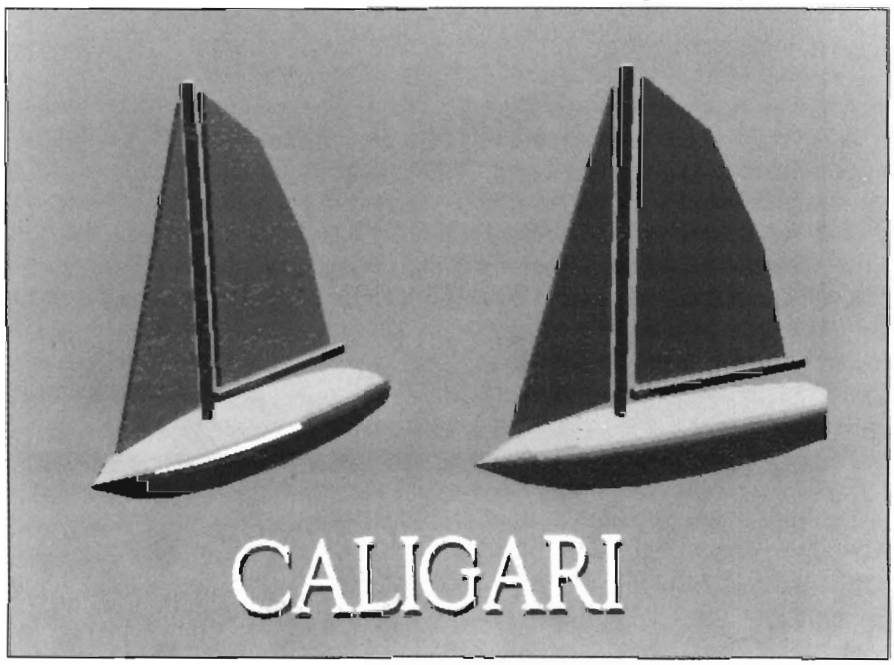
3D Object and Scene Creation from Octree Software

by Paul R. Miller

My first encounter with Caligari was early in 1987. I'd had my first Amiga for about 10 months, and the big events in those days were the release of 1.2 and DPaint II just before the Christmas of 86. I was much surprised when I visited the National Computer Graphics Association show (that happened to be in Philadelphia) and came across a large Commodore exhibit. Commodore wasn't even listed in the program, but they were there in strength, along with EA, Aegis, New-Tek and others, with lots of 2000's, Xerox 4020's, genlocks, and Sony U-matics. The booth was filled with suitably impressed "professionals" who had wandered over from the likes of the Pixar booth to express amazement at what the Amiga was doing.

Tucked in amongst the developers was a small Octree booth running a tape of a wire frame animation produced by a program called Caligari. I couldn't find anyone to speak with in the crush, but I picked up the literature that promised "options exclusive to dedicated graphics workstations costing up to one hundred times as much. Options like faceted and smooth shading, diffuse and specular lighting, multiple light sources, hierarchical data base, interactive script generation, real-time wire frame rendering, 4096 simultaneous colors, and 10-60 second frame generation time. The flyer ended with "available soon" (I still have the flyer). Subsequent phone calls to the number on the flyer yielded no results and in the ensuing months we saw the introduction of VideoScape, then Sculpt, and still more 3-d programs. I assumed that Caligari had been abandoned.

These windsurfers, created in Caligari, display the program's ability to give dimension to shapes through lighting



By now we have all learned what "available soon" really means. It means the product will be available as soon as it's available. Caligari is available now in an official "prerelease" version whose capabilities fulfill most of the promises of the original flyer. There is also a promised update in 6 to 12 months that will exceed those specifications. With a price of $ 1,995, Caligari has the distinction of being the single most expensive program for the Amiga (outside of some 68000 cross assembler software).

The faint of heart may want to consider another view at this point, because Caligari also needs some pricey hardware as well. Caligari is geared

for the video professional and the realm of frame-accurate VTR's with single frame controllers. In this context, two-thousand dollars for software doesn't seem like much. Caligari will run on any Amiga with at least 1 megabyte of memory, and a "home" version (without animation capability) will be forthcoming from Electronic Arts. But to produce truly professional video you'll need to acquire the following:

A 2000 with 2 to 4 meg memory, a co-processor and floating point accelerator, an RGB encoder for clean video output, a single frame controller, a frame accurate editing VTR, and a 24 bit-plane frame buffer (for the 16 million color upgrade).

Caligari supports two types of single frame controllers made by Video Media: the VSIO for $855, which supports only the Sony 5850 U-matic VTR, and the VLAN for $2,500, which is industry standard SMPTE time code for most other VTR's. Octree lists several frame accurate VTR's ranging from VHS, to 3/4" format. At the low end would be the VHS machines like the JVC BR-8600 at $3,295 or the Panasonic AG-6500 at $4,395. S-VHS jumps to $5,900 for the Panasonic AG-7500, and 3/4" format ranges from $8,350 for the Sony 5850, to $9,650 for the JVC CR-850. While we're at it, lets add in a co-processor with 32 bit RAM (say $3,000), another $750 to $1,500 for the genlock of your choice, and another $2,000 for your 16 million color frame buffer. For somewhere around $17,000, plus your Amiga, Caligari promises you full, professional, video animation capabilities.

Our review package included 2 disks, a loose-leaf binder, and a 30 minute long video tape tutorial. Our copy didn't include tape transport support, so we can't comment on the final video product, but the rest of the package offered plenty of excitement. First and foremost is the 3-D design interface. The author, Roman Ormandy, has spent three years in the development of an intuitive real time environment that is, frankly, a joy to use. First, almost all object and scene composition operations happen in near real time. When you move, rotate, or enlarge an object, it's just a matter of moving your mouse, and the operation occurs instantly! Secondly, Caligari presents a work environment that is centered on the view of the user. Rather than separate tri-view or perspective windows, the screen itself is the 3-D environment (with choices of orthogonal or perspective viewpoint) wherein the user can move at will. Third, Caligari abandons icon menus and arcane terminology for plain English and simple geometric terms. Fourth, all motion and viewpoints are centered on the user's viewpoint. Moving the cursor left moves the viewer or the object to the left, regardless of either's absolute position. Finally, Caligari provides for intuitive hierarchical object manipulation by the way that it creates complex objects out of individual parts (while retaining the individual identities of the parts). Parts are "glued" to other parts to build complex entities, yet the individual components can always be accessed by a direct point and click and then manipulated at will.

The creation process involves four modules of operations:

Object Design: Here you make objects from 3D primitives, with extrude, spin and cone tools, or by gluing or cloning primitives. Caligari is also supposed to have its own object object library, but it was not included with our review copy. Your object editing is done in wire frame real time, but this module also provides color rendering and palette modifications. The intuitive hierarchical approach extends to rendering and color modifications, as well as object manipulation.

Scene Design: Here, you create an environment populated with objects. In scene design you retain the ability to move, rotate and scale, and copy objects (again in real time wire frame), although you cannot edit the structure of the objects' component parts. In addition, you can modify object coloration, by assigning hue, intensity and degree of specular reflectance, and place scene lighting. There is no limit to the number of light sources, and each may be specified as to location, intensity and "softsize" from point source to ambient. This release supports only flat shaded surfaces, but Octree is developing smooth rendering techniques that will provide for full texture mapping. Octree is also working on antialiasing, shadows, reflectance mapping, Gouraud, Phong and Blinn shading, and ray tracing and radiosity. These are planned for release within 6 to 12 months, and will require a frame buffer for 24 bit planes and 16 million colors all at once. Octree presently utilizes a Targa Board through the AT bus, but plans to support Amiga frame buffers as they are introduced.

Script Design: A Director needs to choreograph the movement of objects and the camera. Caligari presently employs a simple written script which you produce with any text editor, then import into the program. With only a few simple commands (Go, Move, Rotate, Scale, Pause, Skip and Rate), most of which apply to both objects and the eye point, you can construct a scenario of unlimited length. The script is then compiled in the scene composition and then previewed in real time prior to final rendering to VTR. Caligari provides a "debug" button that reviews your text script and flags syntax errors.

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A second major upgrade being developed is an intuitive mouse based method of scripting instead of text editing. If Roman Ormandy achieves the same level of control over scripting that he has provided for object and scene editing, the results should be formidable.

Rendering: This is a fully automatic process that occurs after you have finalized your objects, scene, lighting, coloration, and script. Caligari signals the single frame controller through the serial port and renders individual frames to the VTR.

The best way to get to know your Caligari package is pop the tutorial tape in your VCR and sit back and be amazed. After a bit of spectacular sample animations, Roman Ormandy appears to introduce his program and lead you through it. It's a breezy tour that starts with the menu structure, shows you viewpoint and object movement, illustrates object hierarchies, color options, primitives and tools, and then moves through scene design, scripting, preview and rendering. Finally he shows you the step by step creation of a sample complex object. By now your eyes will have bulged a bit with amazement at the elegance and power of this program (they may even be a bit moist in some of the passages of real time manipulation). The whole show takes only 30 minutes, and most of it appears to have been shot in real time.

Booting the program will bring you to the default object design module with the main Navigation and Base Menu stretched across the bottom of the screen. Your view will be into a perspective world with a grid carpet. The screen will be in full video resolution. Here, Caligari introduces yet another format: 736 by 482 pixels. Rendering can occur in this mode with 16 colors, or in 362 by 482 with up to 64 colors. Object editing in this format takes a lot of chip ram. I tried to run Caligari from my normal hard drive interlaced Workbench and got an insufficient memory notice. Options for normal underscan screens would be nice, at least until Commodore makes the fatter Agnus available to the general public.

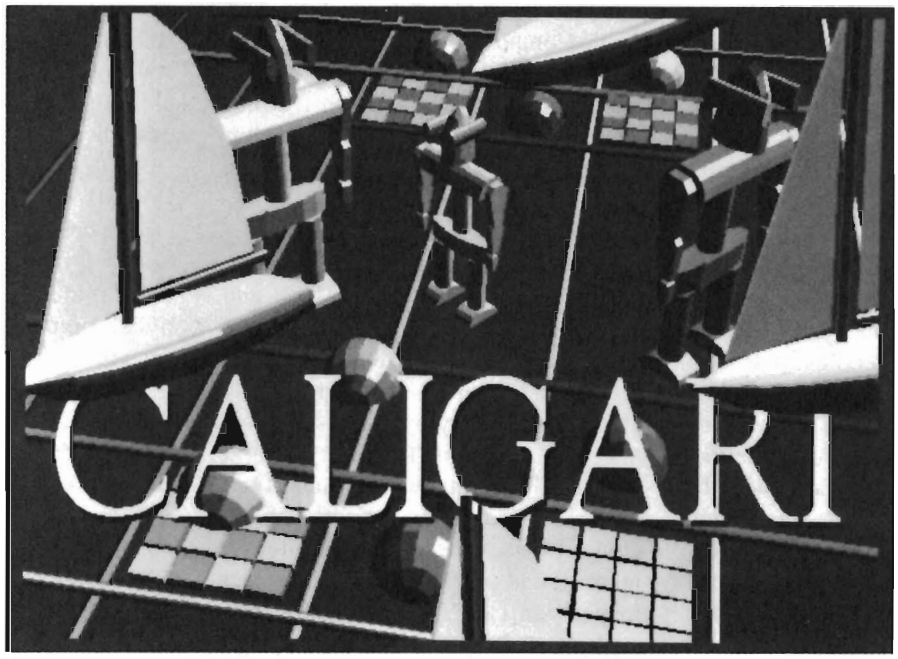
The NAV menu sits on top of the Base menu, the latter being common to both the object and scene design modules. These menus appear as strips of boxed text at the bottom of the screen. The base strip offers choices for NAV (movement and manipulation of objects), STATUS (numerical data), TOOLS (glue, unglue, extrude and copy), LOAD, SAVE, PRIM (3-D primitives), RENDER, SCENE (the scene composition module), and MAIN (Object Design, Scene Design, Utilities, Load Workspace, Render, and Exit). Caligari will stack menus for you as they are enabled from the Base choices, so all operations require only direct mouse clicks (you can eliminate and retrieve any or all menus depending on your working preferences). You'll be using NAV most of the time because it's the key to most operations. View choices are Perspective, Top, Front, or Left. You can move your viewpoint and zoom independently and they retain their settings as you switch back and forth. Viewpoint movement is enabled by three buttons: Move (linear translation of the eye), EnCir (orbiting), and P/T (pan and tilt). In combination with enabling buttons for the X, Y, and Z axes, which can be on or off in any combination, you simply move your mouse in the direction you want to go -- response is instantaneous!

A separate zoom slider changes the focal length of your lens and allows you to zoom in quickly for fine tuning and precise adjustments. Object manipulation involves three more buttons (again in conjunction with the axis gadgets) to Translate (linear), Rotate, or Scale (enlarge or reduce). Here there are two more options -- either in the World Coordinate System corresponding to the absolute directions of the X,Y and Z axes, or the Object Coordinate System, which is local to the object as it is created and remains constant no matter what the objects orientation in the "world." These two modes enable Caligari's intuitive hierarchical method of object manipulation. For example, when an object is rotated in the "world" grid, say, from facing front to an X to the Y direction, it still retains its own internal "frontness" as being the X axis. When you put this into words it doesn't make much sense. You have to see it, and do it, to understand. The prime tutorial example is a robot which was created out of simple shapes "glued" together. Caligari remembers the sequence in which the objects are glued to make a hierarchy. Now the PICK gadget comes into play. In addition to the simple selection of one object or another in on the field, PICK offers a hierarchy gadget (up or down) that will highlight the various levels of a complex glued object. Thus you start with the selection of the whole complex robot, then move to the body, the arm, then down the arm joints, with the ability at any level to rotate, translate, etc. There's nothing to specify or remember. The graphic interface provides a direct point and click selection process at any level. Combined with Caligari's real time manipulations, this simple and direct access to complicated structures provides immense power and grace in the forbidding world of solid modeling. The NAV menu is completed with Un-Do and Erase buttons, the latter operating on whatever is selected.

The Object Design Module also provides a menu of primitives (12 so far) which appear as icons when enabled -- a click immediately loads the object, which can then be scaled, distorted, ro-

tated, etc. as required to make more complex entities. Clicking on the TOOL button yields another menu with options for COPY, GLUE and UNGLUE, as well as EXTRUDER. *Copy* clones the object currently selected, Glue and Unglue allow you to assemble and disassemble your objects. Selecting Extruder opens a new 2-dimensional grid screen and offers further options for generating solids from freehand drawings. A mouse click will set a point at your cursor location, then rubberbands to each successive point. Points can be snapped to grid lines if desired (grid is adjustable), or you can enter points by typing numerical values in X and Y gadgets. When you are done, you close the polygon with a final gadget. Then, you proceed to either saving the shape, drawing another polygon hole within the first, editing your shape, setting your desired polygon center. You may also sweep the shape into the 3rd dimension under three more options: Extrude, Spin or Cone. Extrude grants thickness to shapes, and is modified by selections for thickness, center and orientation. Cone produces a pyramidal polyhedron with a base matching the shape and matching cross section which diminishes to the apex point.

Spin rotates the shape around an edge or any specified axis outside the shape, with control over the number of segments and the radial angle (i.e 0 to 360 degrees). Your shapes may have an unlimited number of sides and internal holes. The last, but certainly not the least menu choice from Object Design is RENDER. At any time, and in any view (perspective or orthogonal), solid color rendering is available for the selected object. Caligari will take longer to render the first time as it creates the data, but each successive rendering of the object is very fast. I didn't do any overly-extensive testing (our review copy is the straight 68000 version), but a typical object that required 38 seconds for the first view, only took 2.5 seconds for the second! Reportedly, much greater speeds result with the 68881 version. This quick re-render feature is preserved through all viewpoint modification and object manipulation except re-scaling. Rendering clears the screen of all menu bars for an unimpaired view, but two right mouse clicks will give you four more gadget choices: Print, Save (IFF files), Color, and Exit Render.



Cloning and combining images is a simple matter in Caligari

Caligari's approach to color is quite different from other Amiga programs and takes a little getting used to. The color menu appears as a series of boxes horizontally across the screen. The first box is reserved for background color, the second for object highlights (numbered color attribute "0"). The remaining color "attributes" consist of bands of shaded gradations also referred to as "palettes." Any selected palette can be modified (in interactive real time) with sliders for hue, saturation, and value, while the actual number of palettes can be increased or reduced. The number of shades within a palette can be increased or reduced by dragging your mouse above the selected range. Depending on the total number of palettes you have decided to use, the increase or decrease in shades in one palette has a dynamic effect on the degree of shading available in other palettes. Thus, you can make a tradeoff between the number of color attributes and the smoothness of shading. A particular color attribute (i.e. color number 1, 2, 3, etc) is assigned to an object. This attribute number is retained in scene rendering, but the actual color of that attribute is always subject to modification by hue, saturation, and value. Color attribute is assigned with a "Set To" gadget, and it operates on the object currently selected. The power of the hierarchy is maintained as well in color assignment, with the ability to pick through the levels of a complex object, assigning different attributes at any time. With these options, Caliga-

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ri also lets you load objects into a scene, make multiple copies, and assign different color appearances to each. Although the author claims the HSV approach to be more intuitive than RGB sliders (there aren't any), I cast my vote for their inclusion in the final version, along with calibration marks on all the color sliders. At present, it's a little too intuitive for my taste, and I found it nearly impossible, for example, to get a pure yellow with just the HSV gadgets.

The ETC menu is available in Object and Scene, and provides for numerical data entry, and other goodies. You can enter number values for eye viewpoint (move, encir, pan/tilt) and for object (translate, rotate, scale). You can define and implement grid snap (independently by axis) for object move, rotate and scale. You can enable reference rulers (orthogonal views only), and you can use the NORM device to automatically center an object in the world coordinates, find your object, or level the eye. One more setting, the CUBE gadget, determines the threshold for full representation of an object in wireframe, as opposed to a bounding cube. In order to preserve real time response, Caligari will switch to a bounding cube outline when the object gets too complex to permit screen refresh more than 5 times per second. If you are willing to sacrifice smoothness of motion while you manipulate in real time, you can increase the setting to preserve the details of your wireframe. As the lag between the moving bounding cube and the full wireframe rendering is only a fraction of a second, this extra nicety is probably best employed in conjunction with a faster processer, but you've got to applaud Octree, they seem to have thought of everything!

Having created and saved your objects, you can now proceed to the Scene Composition Module, where you assemble an environment, assign surface properties to the objects, and set up your light sources. The screen looks much like Object Design, with the familiar NAV menu, but with a few modifications to your choices. In Scene Composition you can "navigate" your viewpoint just as before, you can also move, rotate and scale objects, but you cannot access the hierarchy within an object to edit it. For this, you must switch back to object design.

Your TOOLS are different here, consisting of SCRIPT, LIGHTS and COPY. *Copy* creates clones of selected objects which can be moved, rotated, scaled, and colored. Caligari cleverly conserves memory by using the original data base of the objects and "pointing" to that data with modifications for location, color, etc. of the clone. Light sources are unlimited in number, and are specified with respect to position (X, Y, Z), intensity, and "softsize." The value 0 is a point source, 1 a planar source, with a value of 1000 being ambient. Gadgets permit addition or deletion of lights, which are automatically numbered by the program for reference. SCRIPT enables animation of your scene.

In its present stage of development, Caligari relies on a text script which must be produced outside the program in a text editor, then loaded in. The promised upgrade to Caligari will replace this method with a mouse driven interactive module (no doubt designed with the same brilliance as the object and scene interfaces), but even the present text method is quite simple in its commands, and the availability of real time wire frame preview makes editing and modifications quite easy. Commands are limited to:

MOVE -- which moves the the object or eye relative to its current position, specified by X,Y,Z and T (number of frames). AMOVE is similar but references absolute world coordinates.

SCALE -- which changes object size in any or all axes.

ROTATE -- eye or object relative to starting position. AROTATE is for absolute position, orbiting an arc, for example, around an axis.

PAUSE -- keeps the scene unchanged for a specified number of frames.

SKIP -- to speed up preview and editing by skipping already finished script frames.

GO -- executes the frames and various commands that follow on separate lines, and sets the number of frames

RATE -- to change speed of execution (a floating point number which will scale time,yielding fewer frames for faster and coarser motion, more frames for finer and slower motion).

PURGE -- to clear ongoing actions.

Once you've written your script and selected it, COMPILE will render it frame by frame in wireframe mode (length of time here depends on complexity of objects and scene, but it's still pretty quick). Now click on Preview and you'll see it in near real time wire frame! In more complex scenes the rate will not adhere to video's 30 frames per second, but the use of the RATE command in your script will restore realistic speed by showing you only every fifth or tenth frame (just go back and delete the Rate command before final rendering). Another button, DeBug, will display your text script line-by-line and will automatically flag syntax errors. Finally, RENDER will send your completed animation to a frame accurate VTR employing the sin-

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Caligari (*continued from page 22*)

gle frame controller timelock. Rendering time in this mode also seems impressive. I loaded a ready made scene with 29 objects and watched as 30 frames were rendered, each one took about 140 seconds to display (again, this is without benefit of co-processer or math chip).

Meanwhile, back at the main Scene Menu, we still have some more devices. The base menu Render button here will provide a solid view at any time, and yields even more features:

PRINT -- to print the scene image

SAVE -- to save IFF files

SETUP -- to toggle overscan and to select lo-res interlace for more colors

EXIT RENDER -- takes you back to wire frame

COLOR -- although color attribute numbers are assigned to objects prior to loading into the scene, the appearance of these attributes is controlled in the scene. A car, for example, may have wheels and body with different attributes--say #1 and #2. That car can be loaded into the scene under different names, and each may be made to vary in appearance. Car A may have gray wheels and a light blue body; Car B can have the same gray wheels, but a red body, Car C a shiny green body. From a scene rendering, one selects an object, sets the color attribute # for the object (this must be remembered from object editing), sets coefficients for diffuse and specular, and then selects an active hue from the array ofpalettes. Now click on the "Set Material" gadget and you are ready to re-render. At any time, you can alter the number of colors available and change hue, saturation, and value.

Okay, I'm impressed. Even in it's first release state Caligari is a piece of work that should shake up the world of Amiga 3-D animation. It's a pleasure to make objects, it's super fast, it has just about everything. What else does it need? First, the professional will want the additional rendering modes for smooth shading, texture mapping and, of course, the 16 million colors that will put us in the major leagues. Second, would be the interactive scripting interface with more options for camera movement and hierarchical object movement (like the features that VideoScape and Modeler3D combine to offer). Of course, these are exactly what Roman Ormandy promises in the next 6 to 12 months. If he delivers, we can expect to see a lot of Amiga/Caligari productions at broadcast level. What about the rest of us who can't afford the hardware associated with frame accurate recording? Here's my wish list for the upcoming "home" version:

1. Don't compromise the quality by sacrificing features based on erroneous assumptions about hardware. Make the "home" version with all the features of the professional, except not dependent on single frame capability.

2. Give us, therefore, a method of storing and compressing animation frames so we can record segments onto good quality VCR's. You can now purchase a good VCR, either VHS-HQ or S-VHS with flying erase heads and insert and assemble edit for between $ 1,200 and $ 2,000. "Home" video equipment will keep getting better and cheaper, and the potential market for this program may be much larger than originally thought.

3. Since 24 bit planes with "anim" style compression probably isn't possible on the Amiga, we need either HAM rendering or some other approach to smooth shading and surface mapping.

4. Make a longer tutorial tape and spend more time demonstrating color control, the subtleties of object hierarchies, and go through a complete animation project. Also, let us save wire frame views in IFF and vector files for use in other applications.

5. Give us a way to utilize objects from other 3-D programs, and price the whole package at no more than $ 500.

Items 1 thru 4 shouldn't be too difficult compared with what Octree has done so far. Item 5 would clinch it and Caligari will become the new standard, because once you've played in this 3-D world, you'll never want to go back to a TriView again! Readers who would like to sample this environment can purchase a demo disk which contains all the program features, but does not enable saving files for $ 18 from:

Caligari $ 1,995

Octree Software Inc.
311 West 43rd Street
New York, NY 10036
(212) 262-3116

Requirements:

Amiga with at least 1 meg

for recording animations:

Single Frame Controller
Frame Accurate VTR
RGB to NTSC encoder

Program and Data Disks
Loose Leaf Bound Manual
Video Tape Tutorial

Who Framed Roger Rabbit?

Can Roger and Jessica find Happiness on a 3 1/2" Disk?

by Steve Ushioda

When "Who Framed Roger Rabbit," the movie, was released this summer, it truly broke new ground in animation technology. It combined "live" actors and backgrounds with superb Disney animation and computer assisted shading. Since Roger was such a box office hit, I was not suprised to see "Who Framed Roger Rabbit," the game before Christmas. Would the game be as good as the movie? Could the Disney quality animation be reproduced on the Amiga? Would Roger and Jessica be safe and find happiness on a 3.5 inch diskette?

One of the first things you'll notice is the quality of packaging and documentation on this product. On the front of the box is an action scene with all the major "Toons" in the movie perfectly drawn, computer shading and all. The back has screen shots, more Toons, and a short list of game features. Inside this attractive package, there is a small instruction sheet, a "gag catalog" (used for copy protection), a poster, and two game disks. The sheet tells everything you need to know to play the game, but the background information is found at the end of the gag catalog. The catalog is also used when the program asks for some information about one of the gags. Giving the wrong answer (i.e. not having the catalog), terminates your game. Unfortunately, the entire package was so good, it made me want to get playing the game as soon as possible.

I say unfortunately because the game takes a total of MORE THAN THREE MINUTES to begin the first action scene!! (That's longer than copying an entire disk, in case you don't normally clock loading sequences). This is with two drives and one megabyte of RAM. And if you are unlucky enough not to have the "recommended" second drive and extra memory, you'll have to swap disks about eight times before you can begin playing (just like Hollywood, first a buildup, then a long wait). I sure hoped this game would be worth the wait.

After staring at the "Loading Zone," you get briefed on your mission by Baby Herman (the "mature" Toon baby). In case you missed the movie, "Toons" are living cartoon characters who reside in ToonTown when not on the screen. They interact with humans,

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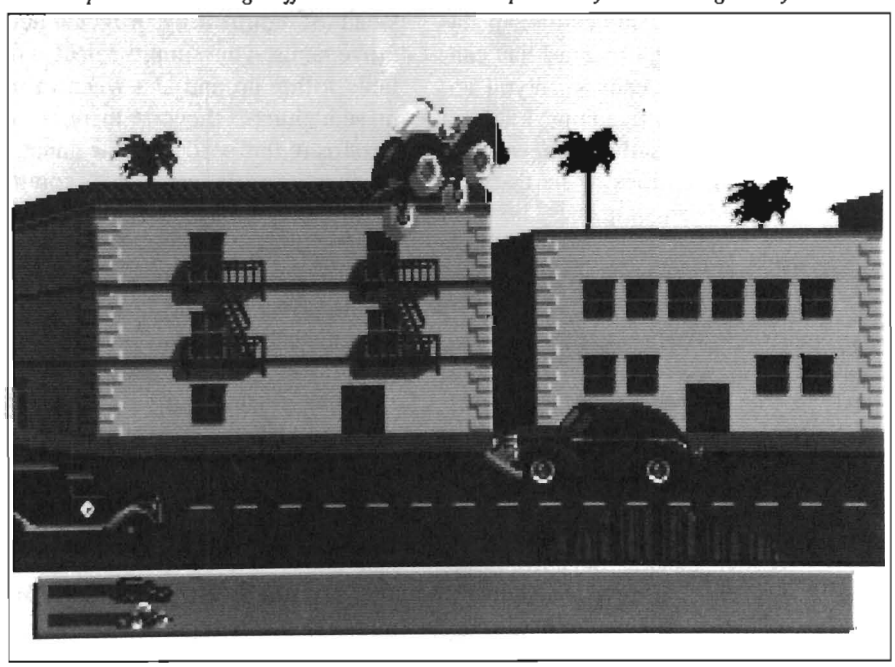
It's no problem avoiding traffic and the dreaded "dip" when you're driving Benny the Cab



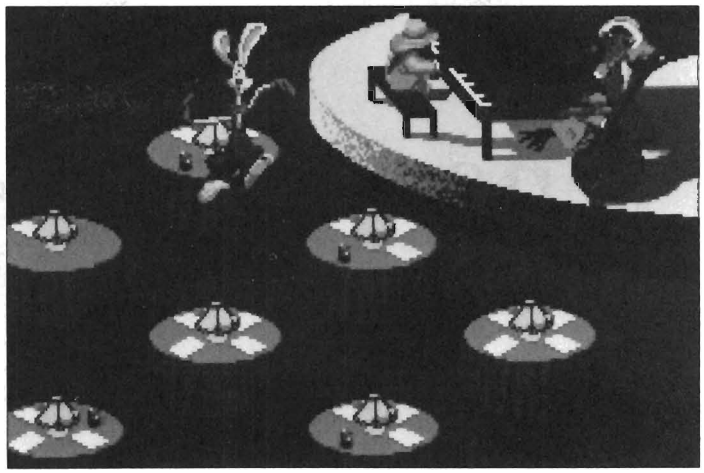
Roger Rabbit *(continued from previous page)*

and have problems, including Judge Doom and his weasels. This evil character has found a way to kill Toons (using DIP) and plans to tear down ToonTown for a freeway! Roger teams up with a down-and-out detective, Eddie, to solve a murder and save Toontown. Along the way, a toon taxie and toon-run nightclub sceen play important parts.

Back to the game. In the first scene Roger and Benny the Cab are racing the Weasels in their Toon Patrol Car to the Ink and Paint Club. Your job is beat the Weasels there and avoid the DIP in the road. You steer Benny with the joystick and control his special abilities with the trigger. The action takes place on a two lane road with buildings on the far side.

The graphics are quite good, but most importantly, they have a "cartoon like" feeling to them. Accompanying the visuals is lively music and Roger letting out an occasional "Yahoo!" in dangerous situations. There are regular cars, the Toon Patrol, and even a trolley or two to impede your progress to The Club, but the puddles of Dip on the road are the only obstacles that can hurt you. The game ends when you accumulate more than five Dips. Luckily though, Benny has the some of the same great capabilities as he does in the movie. He can jump, raise his suspension, and even drive on the tops of low buildings. The joystick controls all movements, and the "jump" action is rather tricky. You must tap the fire button while pressing up. If you hold the fire button you won't jump, just tap. This action may be difficult to master, but going fast or slow, and changing lanes to avoid Dip is easy. Once you master the jump, you've mastered this scene as only the jump option is needed to get to The Club.

When you complete the first driving scene without running through too much Dip, you will be asked for some trivial information from the gag catalog to make sure you bought the game. Then you must endure another long wait in the Loading Zone. Finally, the Club is ready for your arrival. The object here is to collect the missing "deed to ToonTown." Since the deed is written in invisible ink, you must gather all the paper in the Club! The club scene consists of seven round tables and a toon band playing behind them. Suddenly, two Toon penguins start running furiously around the tables, leaving papers and drinks on all of the them. Then out comes Roger, and he starts running around the tables, as well. The animation in this part of the game is about the fastest I have ever seen while still flowing smoothly. Instead of controlling Roger's actual movements, you simply select which table to run around and when to pick up something. Of course there are also hazards in this section of the game, including a gorilla bouncer. A common problem Roger runs into is picking up a drink instead of a piece of paper.



Rush around the Ink and paint club, but don't let Roger get that drink!

This is one of the funniest scenes in the entire game. Just like the movie Roger, the Amiga version has a poor tolerance for alcohol. Upon taking a drink, Roger suddenly stops and his head starts ringing. He then flies up in then air, falls down, and exclaims a digitized, "I needed that!" The Toon gorilla patrols the bottom portion of the screen and if he catches you, a Dip is added to your count as Roger says his famous, "p-p-p-p-pleeeze!" After finishing in the Paint Club (successful or otherwise), Roger hops back into Benny for another drive, this time to the Gag Factory.

After more extensive disk access and some words from Baby Herman, Roger finds himself in the Gag Factory. This is the last, toughest, and most complicated scene in the game. The object is to stop Judge Doom before he can use his deadly Dip machine on Roger's wife, Jessica. You must explore the gag factory, while avoiding the Weasels. The whole place is full of classic cartoon gags, like the kind Wily Coyote would use on the Road Runner. Any gag can be used against the Weasels, or it can backfire on you. In addition to the Weasels and gags, there are deadly puddles of Dip scattered about the floors of the factory. With all of these obstacles to get around, the Gag Factory takes some real thinking to complete. The factory is a masterpiece of wonderfully scary music and high quality, colorful graphics and animation.

"Who Framed Roger Rabbit" is obviously the product of a lot of time and effort, just like the movie. The nearly endless credits include some names fa-

(continued on page 28)

QUALITY

CygnusEd Professional

"Der Neue König Der Editoren"
("The New King of Editors")

68000er, February 1988

CygnusEd Professional By CygnusSoft Software
Published By ASDG Incorporated

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PERFORMANCE

Roger Rabbit *(continued from page 26)*

miliar to Amigans including Jim Sachs, Leo Schwab, and Ben Fuller. Their efforts produced the top notch graphics, animation, sound, color associated with the cartoons in this game. The whole concept of cartoons in computer games seems like a good one, and lends itself very well to the Amiga's sound and graphic capabilities. Even the packaging and hilarious gag catalog added to the overall "fun" feeling of the game.

Unfortunately, I feel that Roger-the-game concentrates a bit too much on the "extras," and not enough on playability. Each scene is like a separate game, and they don't tie into one another sufficiently. Roger is likely to appeal to a wide age range and the designers probably had this in mind.

Perhaps the younger ones will find the Taxi and Club scenes interesting, but I found the only truly challenging scene is the Gag Factory. The other scenes are too repetitive and require only quick reactions to master. Is it too much to ask for game play equal to the superb animation, sound, and graphics?

One small complaint is that Eddie (the main human character in the movie) is not present in any of the scenes. Also, none of the acts are faithfully "based on scenes from the film," like the back of the package claims. I also felt that more digitized speech could have been included. That short taste of Roger saying please left me hoping for more.

Finally, when you lose the game, you don't have the option of trying again. Not only can't you start from your last successful level, to continue you have to go through another 3 minutes of agony in The Loading Zone and watch the credits, Baby Herman and all!!

"Roger Rabbit" is undeniably a high quality game. The designers (there were quite a lot of them) certainly didn't skimp on the graphics, animation, or packaging. Too bad more of that effort didn't go into the gameplay itself. Many other Amiga games offer better playablilty (and a faster loading time!). If you are one of the millions of Roger's fans, you will find an entertaining romp through TuneTown.

Who Framed Roger Rabbit
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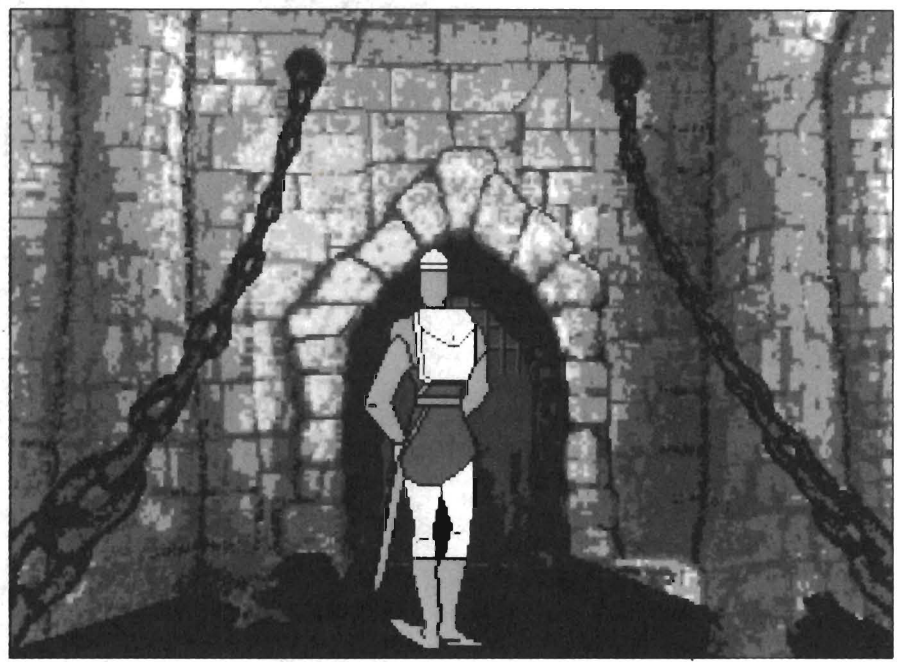
Dragon's Lair

Don Bluth's Famous Graphic Adventure

by Anthony Bevivino



Who knows what terrors await our hero as he enters by way of the drawbridge

Dragon's Lair - the smash arcade game hit that pioneered use of a laserdisc at home on my Amiga! Dragon's Lair - the epic adventure in which Dirk the Daring must face countless perils of the evil castle to find the Lair of Singe the Dragon and rescue the fair Princess Daphne. The Dragon's Lair with movie quality graphics, Disney quality animation, and hours of challenge? Yes, that Dragon's Lair. For those of you unfamiliar whose pockets haven't been emptied by the arcade version of Dragon's Lair, here's some information on what ReadySoft if offering you. Dragon's Lair was originally released as an arcade game in the early '80s. It was the first of it's kind. A laser disc game that featured the most impressive graphics ever seen, and in my opinion, is still unequaled. In the game, you play the role of the hero, Dirk the Daring. Armed with only a sword and your wits, your quest is to find a way through the evil castle, defeat all challenges, find the Dragon's Lair, slay the evil dragon, and rescue the beautiful Princess Daphne. Simple, isn't it?? You must journey through a series of rooms, each filled with monsters, traps and other lethal situations. Each room is presented in stunning detail, and you must choose which move to make. Make the right one and you live to enter the next room. Make the wrong move, and you die a horrible death.

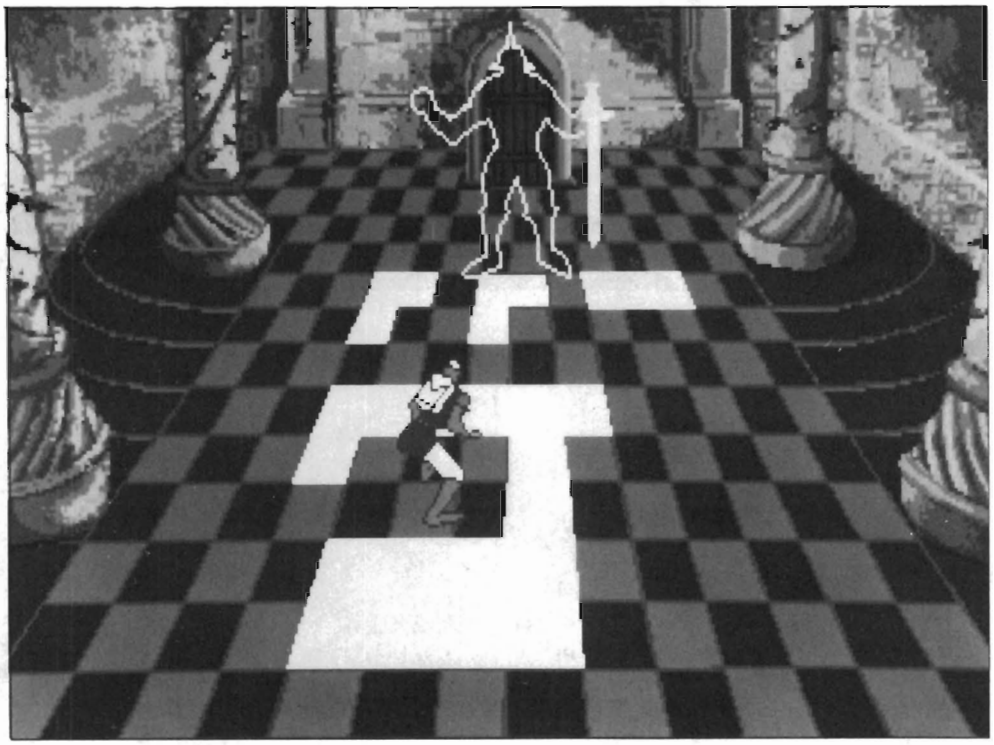
Each room has its own unique challenge, each more difficult than the last, and after finally getting through all of the castle, you get to face the Dragon's Lair itself. Can you stand up to the challenge and defeat the ferocious monsters, complex puzzles, and lethal traps that are found in every room of the accursed castle?? Can you succeed where countless others have failed and slay the mighty Dragon, Singe?? Can you survive in the Dragon's Lair? For those of you who are familiar with Dragon's Lair, you will be pleased to find that essentially, this is a faithful rendition of the arcade game on yiour Amiga!

In the arcade, the graphics were (or should I say, are) the best I have ever seen. Well, the same can be said for the Amiga version. These graphics go beyond what I thought even the Amiga was capable of. The detail is incredible. Each crack in the wall, every slimy tentacle and every expression on Dirk's face are as close to reality as I

(continued on next page)

Dragon's Lair *(continued from previous page)*

would care to get. The variety of color is massive and pleasing to the eye. It seems that not only has the full graphic potential of the Amiga been realized, it has been brought to new heights.



Surviving in Dragon's Lair is the name of the game; and survival comes from keen senses and good timing

ReadySoft used the original laser disc art to create this version. Months of digitizing each frame were followed by more months of compressing the data to fit on six disks and load much quicker than normal Amigados files. You can view the game in three different graphic modes used. The default mode is lo-res. Don't let the word "lo-res" fool you, however. These graphics are incredible. The entire screen is used, and while there are a few rough spots here and there, they are rarely noticeable. By hitting the 'I' key during any screen load, you can enter interlace mode. According to the documentation, "Interlace mode will double the number of lines displayed on your monitor, thus eliminating scan lines and improving image quality." Unfortunately, the only difference I found between interlace and lo-res was that interlace gave me screen flicker, with no appreciable improvement in the graphics. (If I could afford a low dot pitch monitor, interlace would tighten up the look of the screen.) The third mode is hi-res, which is activated by pressing the 'H' key. This mode condenses the picture to the middle and center of the monitor, making it approximately one third the size. The improvement in the quality of graphics is unreal. In my opinion, the graphics in this mode equal that of the arcade game and are truly an impressive sight. The only drawback is that there is no sound in this mode. I'd suggest using lo-res mode to learn the game and enjoy the sound, but once you are familiar with a screen, don't miss a unique graphics experience - play it again in hi-res. Another major feature of the arcade Dragon's Lair is the animation. Once again the Amiga version is excellent. Most of Dirk's movements are fluid and lifelike. The same can be said for the movement of the objects and monsters found in the rooms. The quality is not quite as great as the arcade version, but considering the amount of animation needed, the programmers did a top-notch job.

Sound in Dragon's Lair is used as an addition to the game, and it does not play a major part in it. There are a few good death screams, crashes, thuds and the like, but they are merely side-notes to the graphic action. Like the arcade game, there is no background music. This de-emphasis of the sound makes the hi-res mode much more acceptable, because you are not losing very much. Even though there is not a great quantity of sound, what is used is very well done and effective in the game.

One difference from the arcade is provision for two methods of controlling Dirk's actions, the joystick and the keypad. Dirk can only move up, down, left or right, and swing his sword. This corresponds nicely with the joystick and the 8,2,4,6, and 0 keys on the keypad, respectively. Both methods seemed to give the same results. Neither the joystick nor the keypad seemed to be the best. It comes down to personal choice, and both methods provide the opportunity for winning.

The arcade Dragon's Lair also had very good gameplay. After defeating a room, I always had the urge to go for "just one more." This ability to play for a long time without getting bored is a sure sign of a fun game. Not everyone

(continued on page 32)

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The Only Amiga Only

March 3 - 5, 1989
The Marriott Marquis
New York, New York

Dragon's Lair (*continued from page 30*)

likes the format of the Dragon's Lair. There is just one successful action at any time, and many times you have guessed correctly, but have not waited for the precisely correct timing. This is a tough game and it is predictable in a way, but I always found it fun to play. Once you have beaten a room, you have beaten that room forever. After a few hours, I was annoyed at having to repeat the earlier rooms, but here, too, the Amiga version is faithful to the original. On the technical side, this program is totally non-standard. In order to crunch down the over 300 Mega-Bytes of graphics and animation used in the game, a unique code had to be developed, and the Amiga operating system is pushed aside (no multi-tasking here). While this means that a huge amount of graphics are packed onto the six game disks, there are a few drawbacks. Dragon's Lair requires that Amiga 500's and 2000's have 1 megabyte, and 1000's have 512K. Since the program does not use any external memory, it will run slower on the 1000. In fact, as stated in the docs, on certain animation-intense sequences, the game will pause for a few seconds and then continue. I have an Amiga 1000, and this happened to me. It is distracting, but is not that much of a nuisance. I wish that there was some way to utilize external RAM, but the game does not suffer very much from this limitation.

Now that you know that your hard-earned external megs are useless in Dragon's Lair, I may as well let you know that your hard drive won't be of any use either. Because the game doesn't use AmigaDos, the programmers needed the source code for each brand of hard drive controller, and the only company that would supply so far was Comspec. For those of you with Comspec hard drives, it is extremely easy to transfer Dragon's Lair to your drive; but everyone else is left out in the cold. It is unfortunate that this is the case, but hard choices had to be made. The programmers were asking hard drive companies a lot when they asked for source code, and they can't be blamed for not supplying them. It must also be realized that if it tried to stay within the standard operating system, Dragon's Lair would be too large to use. While it would be nice to play from a hard drive, or have my external RAM come into play, Dragon's Lair still loads and plays faster than many other games I could mention.

That's enough about the technical side of the game. Perhaps a few helpful hints would be of use. One hint, mentioned in the documentation, is especially useful. Whenever you enter a room, there are two perspectives possible: yours and Dirks. What is "up" to you may be "left" to Dirk, and vice-versa. This little tip let me overcome a lot of rooms that had me stumped, and I know it will help you. The first screen, where you cross the drawbridge to enter the castle, was a lot more difficult than I thought it would be. It is important to remember that Dirk only needs your input at key times. If you try to direct his every action, you will wind up *very* dead.

Another room that I found very challenging is the "Tentacles, Tentacles, Everywhere" room. You will understand the name when you find the room. You can get out by swinging your sword, and moving in just the right sequence of directions. Of course, there are different perspectives for this room, so I will leave it up to you to find out which one works. And last, but certainly not least, some tips about the Lair itself. Now, I don't want to give too much away, but if I were in the Lair, I would make sure that Singe was not woken up. I would also want to get my hands on anything that would be of help to me at this crucial stage. By the way, I've heard that Princess Daphne is VERY grateful when (or should I say 'if') she is rescued.

There is not much more to be said. Dragon's Lair is a visual masterpiece. There is no program in existence for any personal computer that will touch this one in the quality of graphics and animation. Let's hope this program will set new standards that others will follow. Dragon's Lair is a fun and challenging game to play for all ages. Each individual room offers a new challenge, and just when you think you've seen it all, you see something new. Dragon's Lair is a game well worth owning, and I wish you and Dirk the Daring the best of luck in the quest to face the Dragon's Lair.

Dragon's Lair $ 59.95

ReadySoft, Inc.
P.O. Box 1222
Lewiston, N.Y. 14092
(416) 731-4175

C++

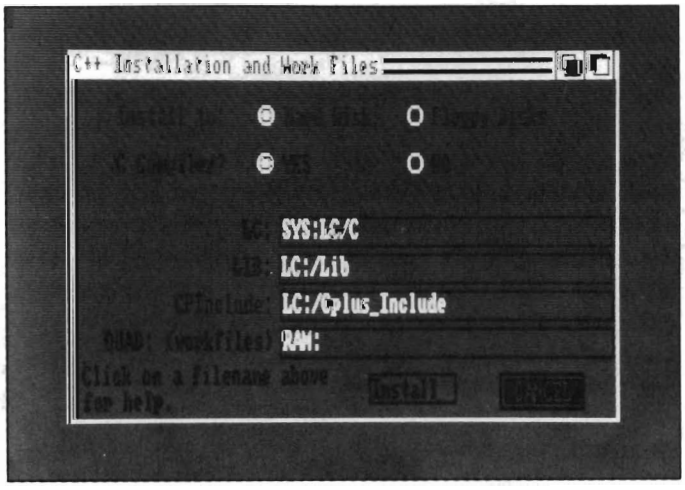
Lattice's new High-level Language

by Dave Haynie

The C programming language as been rapidly emerging as the standard high level programming language, not just on Amiga systems, but on most other personal computers, UNIX machines, and other mini, mainframe, and even super computers. For the many who use it, the C language provides the high level structured, procedural programming environment most programmers need for large program development, while at the same time allowing efowing efficient compilation and low level access to the system hardware usually matched only by assembly language.

However, the C language is beginning to show its age in many respects. More modern languages such as Ada and Modula 2 offer programming methods that many programmers consider not only superior, but absolutely necessary for the reasonable management of large software systems. As an answer to some of these concerns, the C++ programming language was created. The C++ language provides many of the advanced features of languages like Ada and Module 2, and does both of them one better by introducing object oriented programming, all in a very "C-ish" language that is for the most part a superset of traditional C language; and just recently, Lattice has introduced a version of the C++ language for the Amiga.

Lattice's C++ provides a window to make installation a snap



One interesting fact about C++ is that, as a language, it is still evolving in some ways. When the C language was introduced, its developers, Brian Kernighan and Dennis Ritchie of Bell Laboratories, produced a book called "The C Programming Language," which was intended to be a complete definition of the language, and has become the standard reference for the language (at least until recently). C++ was developed by Dr. Bjarne Stroustrup, also of Bell Laboratories. However, this time, no formal language standard was defined. It was first used outside Bell Labs in 1983, and has changes several times since then. Lattice's C++ is based on AT&T's "cfront," V1.1a.

What You Get

The Lattice package consists of two floppy disks containing the C++ programs, include files, and library files, along with some examples. As well as the software, Lattice provides a User's Guide, which explains their implementation of C++ on the Amiga, and "An Introduction to Object-Oriented Programming and C++" by Richard S. Wiener and Lewis J. Pinson. This book is designed to teach the C++ language to a programmer already familiar with the C language, and I found it a quite reasonable book. It should take about a weekend or two to read, and it's full of examples. This is a nice addition on the part of Lattice. Language packages don't usually come with language guides.

The C++ compiler system consists of the programs "cc," "cpp," "cfront," "lc," "lc1," "lc2," and "blink." There's also library files "cplus.lib," "lc.lib," "lcm.lib," "amiga.lib," and the startup

(continued on next page)

file "c.o." This is basically a portion of the Lattice V4.01 system, along with the goodies necessary to provide the full C++ system, and there's a good reason for this. As mentioned, this C++ system is based on AT&T's, and what AT&T provides is a "translator" (called "cfront"), which takes as input the C++ language and produces as output C language. In computer science terms, a compiler is a special case of a translator that happens to produce as output assembly or object code. As a full translator, the "cfront" will catch all the errors in your source code; any C code it produces without error messages will be correct C code (assuming there are no bugs in the translator). With the C++ system provided by Lattice, a program is first run through "cpp," which is a C language preprocessor that also recognizes the few pre-processor extensions in C++. That output goes to the "cfront" program, which produces Lattice-compatible C output. That goes into the Lattice "LC1" program, which produces an output file called a quad file, which is then converted by the "LC2" program into an object file. Finally, the "BLINK" linker converts the output file, plus any library files, into an object file. The "cc" program is a front end program that calls up all four phases to go from C++ input to object code output, and the "lc" program similarly calls up the two phases that lead from a C input to an object code output. The "BLINK" linker is a superset of the standard Amiga linker, and it has some special workings to support C++, so previous versions of BLINK, or the Amiga linker ALINK, won't work with C++.

A nice touch by Lattice was their installation procedures. They claim the system can be run on a two floppy system with 512K of RAM, but they recommend a system with system with 2.5 megabytes of RAM and at least 20 megabytes of hard disk. The system I used for most of this is a 68020 based A2000 with 5 megabytes of RAM and 40 megabytes of hard disk space, and ran into no problems. I tried some things on an A1000 with two floppies, and while you can use it, it's far from an ideal system. You better not have anything else going when the compiler is going, you may have to use the floppies for intermediate files, and it really won't take long before you run out of memory all together. Anyway, in order to install C++, you run the Lattice install program, giving it all the information it asks for. You end up with a CLI script that'll install the system on your hard disk, and another file that contains all the "Assigns" you'll need to add to your "Startup-Sequence" file. I really like this method. It doesn't leave you guessing, but it doesn't make you nervous either by doing stuff to your precious hard disk that you don't know about. If you're using floppies, the distribution disks will function without modification.

```
main()
{
        window me(10,10,240,150,"Graphics Window test");

        graf *gp = me.graphic();

        gp->move(20, 120);      // Initial point is 0,0 (in title bar).
        *gp << "Start with the wheels...";      // caption.

        // Here we define an absolute point at x=50, y=70.
        // This allows a demonstration of how the assignment operator
        // is overlaid so that assigning a Point to a RastPort causes
        // a Move to be performed.

        Point left_rear(50, 70);

        // The following is required for flood-fill:

printf ("Create new AREAINFO\n");
        gp->AreaInfo = new AreaInfo(10);
printf ("Create new ScratchRaster\n");
        gp->TmpRas =  new ScratchRaster (200, 100);
```

Looking very much like standard C at first glance, C++ adds higher level objects

Trying it Out

I ran the configuration program, modified my Startup-Sequence, and rebooted the machine, just to be safe. The first thing I did was to write a simple C++ program, a version of the classic "Hello, World!" program that just about everyone writes as a first program when testing a new compiler. This program is very simple in C++, and it looks like this:

```
// The famous "Hello, World" program

#include <streams.h>

void main() {
   cout << "Hello, World!\n";
}
```

According to Lattice, that would compile with the simple shell invocation "cc +L hello.cp" (I'll talk a little bit about C++ itself in a bit). So I tried that, and it compiled just fine, to about

504 bytes. However, after linking, it grew to 13920 bytes. Using C style I/O in the form of the "printf()" call, I reduced it to 7804 bytes. The Manx version of the same C program resulted in an object of 120 bytes with a finished file size of 4952 bytes. Obviously, we're dealing with large C++ run-time libraries here, though that's to be expected. In general, I found that C++ programs start out big, but grow only somewhat faster than plain C programs of similar size. Compile-time memory requirements, however, go up much faster than with plain C language.

I had both Lattice and Manx C compilers here on my system. The C++ compiler will peacefully coexist with the Lattice C compiler system, not surprisingly. However, the "cc" program used by Lattice collides with the "cc" program used by Manx, so if you regularly use both, you may have to rename one. I used a little WShell trickery here; I have an "alias" command called "lattice" which really just defines the alias "cc" to point to the Lattice version of "cc," and another called "manx" which defines the "cc" alias to point to the Manx version. I think you can do this with the AmigaDOS 1.3 "alias" command as well.

A Little on C++ Itself

By now you're probably wondering what C++ really is. While it's beyond the scope of this article to go much beyond scratching the surface, C++ is a highly extended language that is basically upward compatible with the standard C language. That little example shows two new features, the on-line comment, "//," which works just like "*" or ";" in most assemblers, or "--" in Ada; it just makes the rest of the line a comment. At the other extreme, the "streams" library takes the standard output stream, "cout," and sends it the string "Hello, World!\n" via the stream operator, "<<." There are a whole slew of new features in C++, many of which you'll find in languages like the aforementioned Modula 2 and Ada. C++ has constant variables, functions that produce code inline, parameters to functions passed by reference instead of value, allocation routines defined by the language instead of add-on libraries, and a number of other things that you'd expect in a more modern language. You may also have noticed the thing above, "<<," that I called the stream operator, looks suspiciously like "<<," the left-shift operator. In fact, they look just the same, but for C++, that's no problem. In fact, it's actually rather common. C++ normally does type checking of arguments to functions and operators. Based on the fact that it

(continued on next page)

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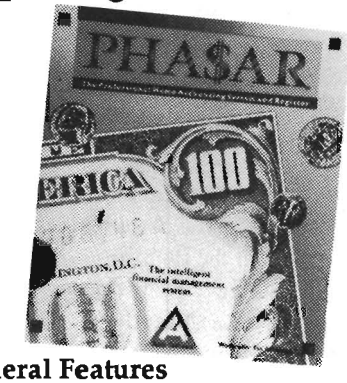

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knows what's being passed into a function or operator, it can do lots of neat stuff, such as supplying default parameters to functions if all arguments aren't specified. Or "overloading" functions or operators (basically, defining several different functions with the same name). The one that's used is the one that matches the arguments, which is why you get the stream operator when the first argument to the "<<" operator is a stream. In the Lattice implementation of C++, the first operator of "<<" could just as easily be a Window, or a Console device, or any object; the output method would be identical. C++ lets the programmer define overloads for both operators and functions.

The ANSI Connection

A good portion of the non object-oriented C++ constructs are being adopted by the ANSI C committee as part of the ANSI standard C language. When I mentioned that "The C Programming Language" was the standard for C, at least until recently, I was thinking of this forthcoming ANSI standard. This standard is an attempt to cover some of the shortcomings of today's C, without changing it drastically. I'm not sure whether that's really doing the job or not, but many of the C++ features being adopted into the ANSI standard are a great advantage to the programmer. Things like argument checking, function prototyping, constant declarations, and the "void" type were all first a part of C++. The current (V4.01) Lattice compiler has some of the ANSI extensions and ANSI standard functions.

OOPS, it's the Amiga!

Rather than go on with a tutorial, I'd like to discuss the most important part of C++, its object-oriented features, by discussing the implementation Lattice has provided. It turns out that many of the Amiga's special features map very nicely into C++ objects, and Lattice has provided C++ implementations of many of the more common Amiga objects.

A very simple one is the *List* structure. In plain old C, you'd probably use a List structure something like the accompanying illustration.

Lattice is implementing the List and Node types as C++ classes, and the class construct, the basis for object oriented programming, can do some cool stuff. The List and Node classes have constructors to build up objects. The Node constructor is defaulting the priority to zero here. If necessary, the class can also have a destructor, which cleans up memory (or anything else) that was allocated when an object was created. This is a good example of the power and the purpose of object oriented programming. You'll notice that in the C example, I had to know all about the internal structure of my data types in order to initialize or use them. I could write a function to do this for me, but it's still never as clean as the C++ implementation, and it would have more program overhead. Classes in C++ define both the data structure of the objects they operate on, and the functions or methods, that operate on the object as defined. When you can break down a program to a set of objects, you win in two ways. First of all, you have defined objects which are very likely reusable in other programs, and you've defined a program that is very easy to maintain in that changes in one object won't affect any other part of the program.

This meshing isn't perfect -- Lattice claims that several of the Amiga structures didn't lend themselves to direct implementation as objects. In many of these cases, the item can instead be implemented as a clean object using two declarations instead of just one. In other cases, things fit together very cleanly, and actually help out a lot.

```
/* Initialize the list */

struct List list;
struct Node node;

list.lh_Head = (struct Node *) &list.lh_Tail;
list.lh_TailPred = (struct Node *)&list.lh_Head;
list.lh_Tail = NULL;
list.lh_Type = NT_DEVICE;
list.lh_Pad = 0;

/* Initialize the node */

node.ln_Succ = node.ln_Pred = 0;
node.ln_Type = NT_MESSAGE;
node.ln_Name = "Example";
node.ln_Pri = 0;

/* If the list's empty, let's add the node to it. */

if (list.lh_Head->ln_Succ == NULL) AddHead
    (&list,&node);
```

In C++, I can do EXACTLY the same things with the
following code:

```
/* Initialize the list & node */

List list(NT_DEVICE);
Node node(NT_MESSAGE,"Example");

/* If the list's empty, let's add the node to it. */

if (list.is_empty()) list.add(&node);
```

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For instance, there are various kinds of linked lists in the system -- nodes, BPTR chains, some of the Intuition singly linked lists. In C++, to get the next element in a list, you simply use the method "next()," no matter which class is involved. Lattice has made "next()" a standard "next element" method, just as "<<" is a standard stream output method.

It may not be perfect, but I like it

I really like C++, and the Lattice implementation seems to be a pretty good one, as far as they went with it. My first nit to pick with it is that it's slow. This is understandable, considering all the four passes compilation process. I suspect all the includes and C passes would benefit from sitting in RAM: somewhere. In theory, at least, all the time you save writing with C++ should more than make up for this waiting time. I guess I'll find out. Since Lattice C++ is based on the AT&T V1.1a cfront program, it should be quite compatible with other implementations based on that version. Part of that accounts for the speed problems; a direct C++ compiler would be expected to run faster.

My second nit to pick is with stuff that I think is missing from the Lattice C++ system. The first of these is in the Amiga C++ include files. Some of the includes are pretty nice, and it's pretty amazing how small the source code gets for some C++ programs using Amiga features, as compared to the same code written in C. However, a few include files are missing from the C++. For example, the only files in "CPINCLUDE:libraries" are the "dos.h" and "dosextens.h" files. So if you need these includes, you'd have to get them somewhere else, which is unfortunate. Another missing item is documentation for all the functions in the standard lc.lib library. Certainly all the functions in standard C are treated as standard in C++ based on everything I've read on C++, but Lattice doesn't mention these anywhere. Since I have Lattice V4.01 here, it's easy for me to look them up, but based on documentation, this package doesn't stand alone. The other problem is that, since Lattice doesn't mention these functions, I have no idea if they're going to be supported in future C++ versions. The "lc.lib" file is needed in the C++ package to support the Lattice C compiler, but if Lattice should some day switch over to a full C++ compiler instead of this translator, there's so far no guarantee that any or all of the standard C functions will come along for the ride. Hopefully Lattice will clarify their po-

(continued on next page)

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C++ (continued from previous page)

sition on this and include better documentation in the future.

Finally, it's apparent that many of the objects defined in these includes aren't as fully "objectified" as they could be. In theory, every complex Amiga data type could be defined as a higher level C++ object, and that would save lots of trouble in many cases. Having constructor and accessor functions makes working with the Amiga much easier, and in many cases, there's no loss of run-time efficiency, since these methods are usually pretty simple and can be implemented in-line. Apparently, the choices made in the Lattice includes are based on memory requirements. It would be possible to provide nice object oriented interfaces to everything in the system, including constructors and destructors, where appropriate. However, they're also trying to make the compiler run to at least some degree on a 512K system. The compile-time memory requirements go up as you add new classes, so with everything in full C++ object form, it might be impossible to run on a 512K machine or get any serious work done even with a megabyte or two.

Conclusions

I would recommend Lattice C++, but not to everyone. If you haven't yet mastered your current programming system, C++ may be too much to bite off at once. If you're really happy with Modula 2, or any other procedural language other than C, you should probably do some reading on C++ before jumping into it. If you're not currently using Lattice C, you may have a hard time writing in Lattice C++ without full documentation of the standard C functions, but you can probably get by if you have any reasonable book on C, since these are standard functions. On the other hand, if you're interested in object oriented programming, this may be just what you're looking for. Not only is it real OOPS, but it produces production quality code, so you could actually do commercial development in C++. This certainly can't be said for some other object oriented language systems. If you're not quite happy with today's C, and envy some of the thing that Modula 2 users have, it's also worth looking into, especially if you like the way C goes about doing things. However, it's going to take some work.

Programming with objects requires no trivial amount of rethinking when it comes to program design; its somewhat akin to the rethinking one experiences going from non-structured to structured programming. You'll also have to be patient, waiting for your code to be compiled. But if you needed a reason to buy that 68020 board, this may be it. You'll also need a piece of spare change, because it's not cheap. If you have any doubts, the first thing I'd recommend for any new language is that you go out an get a book on it. After reading the book, you may have a better idea about how you'll feel with the language.

As for Lattice, they're a good company. I've used Lattice V4.01 for some time, and they've certainly supported it well. They have support groups on their own BBS, on BIX, and via the telephone. Additionally, if you have C++ questions, Dr. Stroustrup has been known to be available in groups on BIX and via usenet.

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Photon Cel Animator

Match Sound and Video with this Animation Utility

by Tom Reed

The latest box office figures show a strong resurgence of feature length animation films! "An American Tail" grossed more than $50 million in the United States alone. "Roger Rabbit," with a gross of more than $150 million in this country, is the box office leader of the year at this time. Currently, the films "Oliver and Company", from the Disney Studio, and "The Land Before Time" from the animators at Don Bluth Productions are in the theaters and doing very well.

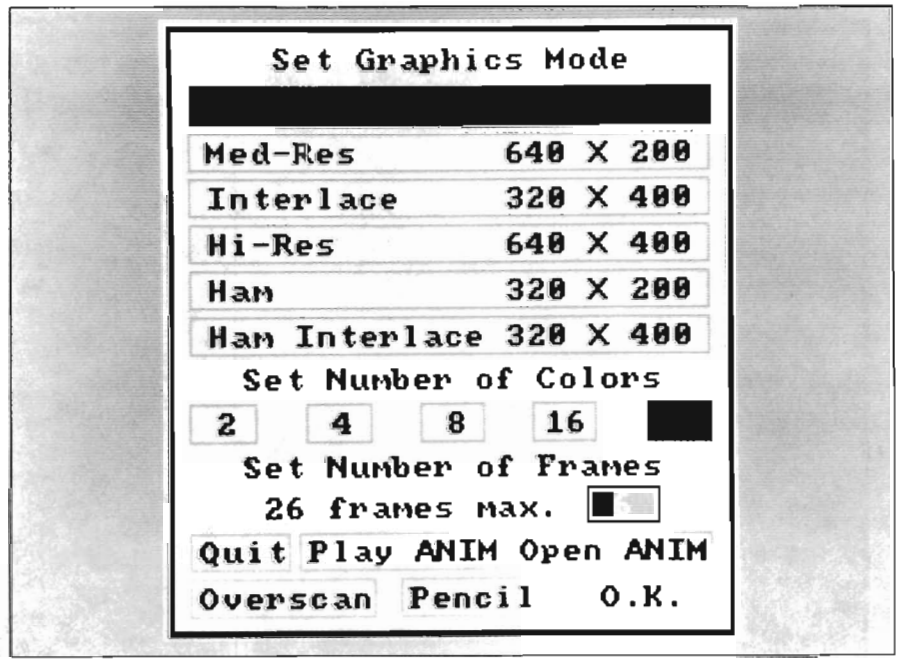
These figures can get anyone thinking about animation. But, before you can get the dollars, you have to bring to life the "stick" figures. Animate means "to give life to; make alive," and animation is the process by which you give life to an object. The question is, "Can Cel Animator help you bring these figures to life?"

Photon Video Cel Animator is a new playback and sound synchronization tool from Microillusions. Cel Animator will bring IFF picture files to life and synchronize them to a digitized IFF sound track. In short, Cel Animator is a sophisticated page flipping program with the ability to synchronize an audio track. Cel Animator comes with a non-copy protected program disk, two art disks, and a manual. The manual for Cel Animator is spiral bound, written in an interesting fashion, and easy to follow. An extensive table of contents is provided for the eight chapters, but there is no index and not a single graphic. An index and illustrations would be obvious and useful additions.

The manual was written by a professional animator whose career began at Walt Disney Productions, and who later joined Don Bluth when he broke away from the Disney organization (Don Bluth also produced "An American Tail"). The author shows a sensitivity to the needs of someone just starting out with the Amiga. Although the manual was written with the beginner in mind, it still provides information that the advanced computer user needs. No detail is too obvious to be overlooked and explained, including how to click on an icon. Those more familiar with computers are asked to begin the tutorial at a later stage and skip the current section. Unfortunately, you might miss out on some important hint hidden in the

(continued on next page)

Microillusions' Cel Animator supports 6 screen resolutions and up to 32 colors



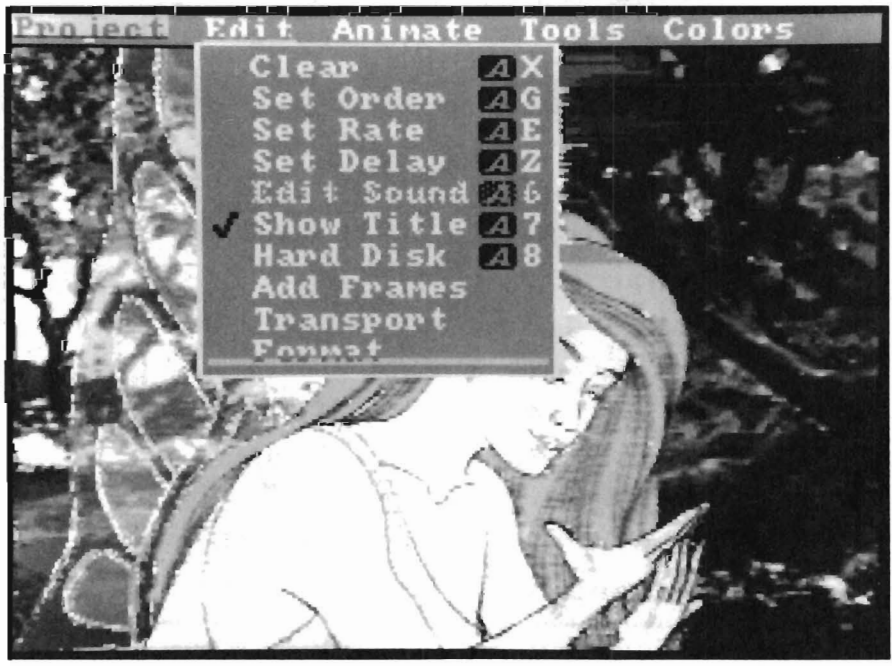
middle of this basic mechanics section. There is a quantity of helpful information about the process of animation included here, as well. I found myself wishing that more information was provided in the manual, however. I had trouble loading some sound files, but looking up each reference to sound files in the manual's table of contents provided no information about the problem.

Fortunately, MicroIllusions has an 800 number provided for just these occasions. The support staff were pleasant and informative. In fact, during the course of my exploration of the program, several calls to MicroIllusions were necessary. The support staff were even happy to call me back with the needed information when they could not answer the questions immediately.

There are five main menus in the program: Project, Edit, Animate, Tools and Color. The menu items under these main headings are well covered in the manual. Most of the menu items have keyboard equivalents for quick access. The edit menu has Clear, Set order, Set rate, Set delay, Edit sound, Show title, Hard disk (tells the program that you are using a hard disk and automatically sets the path to dh0:) Add frames, Format (returns you to the format screen) and Transport (for using the program with Photon Video's Transport Controller module). The Animate menu has Animate, Slow motion, Sound motion, Reverse, Current frame, Next frame, Last frame, Replace, Play anim and Pencil test. The tools menu has a limited array of drawing options available. These are Pen, Line, Box, Filled box, Circle, Flood fill, Cycle and Palette.

The palette in Cel Animator does not operate the way many paint program palettes work. When an animation (or picture) is loaded into the program, it brings its own specific palette with it. When you activate the palette control, the usual set of color sliders does not appear. Instead, the palette control in Cel Animator takes you back to the program's set of colors. The colors menu is used to display the color palette, but no color adjustments are possible.

The EDIT Menu can be used to set options that affect every frame of you animation



When you begin Cel Animator, the initial screen you encounter is a Format screen. This screen allows you set the resolution you will be working in, the number of colors, and the number of frames you will need for the animation. Screen formats available are: Lo-res (320x200) or lo-res overscan (352x240), Med-res (640-200) or med-res overscan (704x240), Interlace (320x400) or Interlace overscan (352x480), Hi-res 640x400) or Hi-res overscan (704x480), Ham (320x200) or Ham overscan (352x240), or Ham Interlace (320x400) or Ham Interlace overscan (352x480). As with all graphics programs, Cel Animator can go through memory faster than Roger Rabbit can race through ToonTown. This is especially true when you are working with sound and picture files together. Cel Animator stores IFF files in an ANIM format, but converts them back to their original IFF format while you are creating your animation. The stacking of IFF picture files in ram along with sound files takes large chunks of memory. In fact, the first tutorial in the manual requires at least two megabytes of memory to complete.

The initial tutorial uses a series of digitized pictures of Jim Donaldson (the programmer of Cel Animator) turning his head toward the camera and saying, "Where's Max." There are 40 frames of 32 colors which make up the sequence, and 23 sound frames synchronized with the visuals. The 40 frames equal about one and a third seconds. So, if you're doing a feature length animation, keep working! This should give you some appreciation of the amount of work that goes into one of the feature length ani-

mated films. At thirty frames a second, that's a heap of work. (Most animations that are done on the Amiga are looped sequences and play a limited number of frames over and over.)

The Pencil Test

One interesting feature for animators is a two color "pencil test." An animation which you have sketched on paper is digitized in black and white (with white as the background color). The two colors use only one bit plane, which allows for many more frames to be stored in ram and played back to check the movements of your animation. The pencil test mode in black and white allows the ghosting of previous frames during playback, enabling you to see a path of action. A minimum of 5 frames and a maximum of ten previous drawings appear in gray behind the black outlines of the foremost drawing. Cel Animator gives you precise control over playback. You may play your animation at regular speed, slow motion, or step through it a frame at a time. Simple key strokes allow you to add or delete frames. Order menus provide you with a means to change the sequence of your pictures easily.

The sound synchronization feature is an excellent and unique part of this program. The program loads a sound file and plays it back in "real time" one frame at a time, or as a continuous loop. Being able to play the sound track frame by frame in real time is a significant improvement over dragging magnetic tape across a sound head and getting deep muddy sound from which you try to decipher precise sound/frame locations. Cel Animator plays back each individual frame in with no distortion. For the average user to utilize the power and precision of Cel Animator, a number of other programs and peripherals are necessary. The manual talks about the use of the following hardware and software items with Cel Animator: a sound digitizer, a video digitizer, a frame grabber, paint programs, a transport Controller (for frame by frame transfer of your animation to video), frame by frame controllers, and a genlock system. It's presumed that the professional will already have the necessary video equipment to record and playback the animation.

Cel Animator is designed for serious animators, and has some unique features for use in professional applications. It does its job well and simply once you master the user interface. But I do not feel that this is a program for the average Amiga user. There are several good page-flippers on the market which include many special effects, and use a compression technique so they do not require so much memory. PageFilpper Plus from Mindware and Lights Camera Action! from Aegis are just two of these that I could recommend. Of course, if you require the ability to load pictures and a sound track, match these two elements up, play them back, or off-load them to tape (with the Video Transport Module), then Cel Animator could be a useful tool to meet your production goals.

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Road Raider

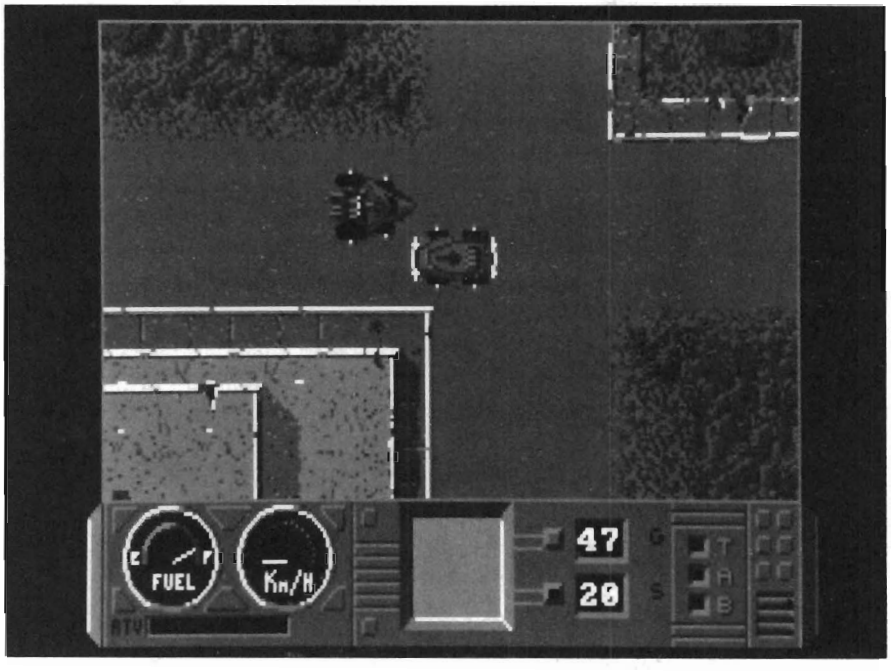
High Speed Futuristic Road Race Destruction

by Anthony Bevivino

Slam the door shut, and turn the engine over. It's been a long time since you last cranked this baby up, long before the Great Biological Holocaust. You used to be hot stuff then. You'd go just about anywhere to find anyone with a big enough price on his head. But times are tough. slimy mutants don't seem to generate much business for a bounty-hunter. Now the word is out that Dr. A. Noid, that mad menace that caused this mutant mess, is on the loose. Are there enough sane people left, in the right places, who'd like to see that little green guy put away?? You bet!!

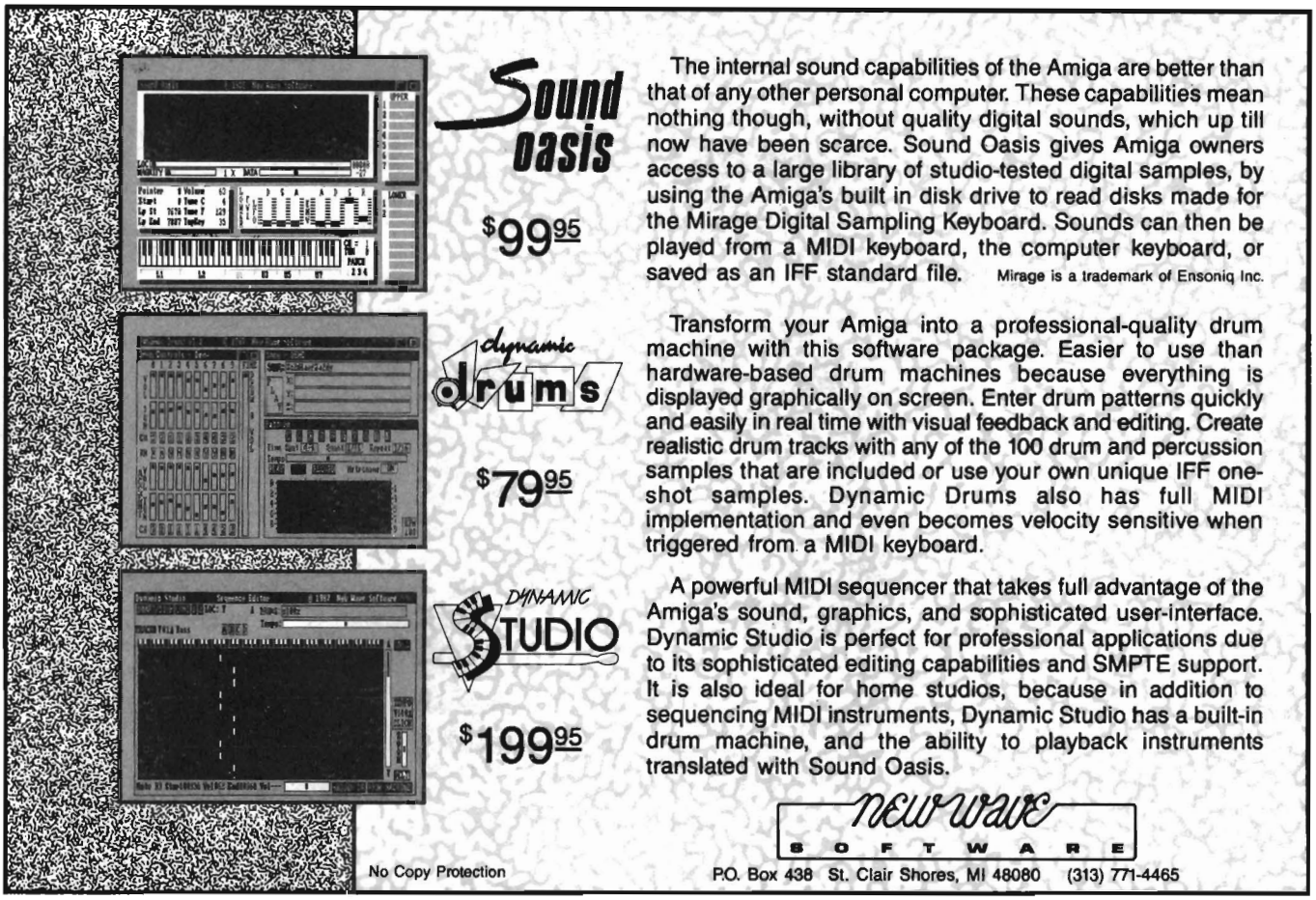
Welcome to the world of RoadRaider; a world where rules do not exist. The streets are filled with killer cars, buildings lay in ruins, and slimy green mutants roam the insides looking for healthy human victims. Can even your armor-plated racecar prepare you for what's in store?!?!

The drivers you meet on the holocaust highway are less than courteous



Before the Great Biological Holocaust, you were known as one of the greatest bounty hunters ever. You enjoyed hunting down criminals, and serving your country and fellow man. Besides, it paid a lot. But Dr. A. Noid changed all that. He is the inventor of Slu, a food substitute that did more than fill your stomach. Slu turns its victims into mutant zombies, whose only purpose for existing is to find and eat more Slu. Oh, they also enjoy finding healthy humans and contaminating them. The cities are in ruins, and zombies control everything. But a few humans remain, enough to put a very high price on Dr. A. Noid's head, a price that you would like to collect.

You begin the game in the first of three cities, parked in your ATV (Armored Tactical Vehicle). Money doesn't mean a thing anymore, so you must make all purchases with food. Unfortunately, you don't have any. You must search for food in order to purchase the gas, repairs, ammo and the weapons you will need. The only place you can hope to find food is in the few remaining buildings that still are in good shape. In these buildings, you will find the sustenance you need and some "extras" for your ATV. You will also find an army of slimy green mutants that can't be talked to, reasoned with, or knocked out by your good looks. The only way to take care of these mutants is to give them a serious case of lead poisoning (with your



.88 Magnum!!) After you have found what you need in the buildings, it's time to hit the streets. Here you will find land mines, potholes and wreckage blocking your path. (Hmmm... seems that city streets didn't change that much). But those are just the minor obstacles.

You will have to deal with kamikaze cars that will ram you into a pile of junk. There are two kinds of enemy cars, regular street cars, and modified killer cars with a steel ram. There is only one way to deal with these guys... your cannon. You also have to deal with deadly enemy blasters. These are heavy artillery positioned to guard a street with their heavy firepower. You can't destroy them, you can only drive through their area of fire VERY quickly. The Armored Tactical Vehicle is your chariot, and with it you can handle just about anything. It has good speed and acceleration, and the cannon mounted on the top comes in handy for those pesky kamikaze cars. Inside the buildings you can find additional equipment for your ATV, such as radar, turbochargers, battle-armor, and a smoke generator. This baby can handle almost anything on the road, but it does take gas, and it can be damaged and run out of cannon shells. The only way to keep the ATV going is to make some stops at the gas station, where you can get ANYTHING you need (for some food, of course)

Sometime in your exploration of the city, you will find an Arena Pass. This little card lets you into the Arena, a demolition derby to the death with a horde of mutant cars. If you survive, you will pass into the next city. The Arena of the third city contains your most deadly challenge: just you and Dr. A. Noid in a one-on-one duel to the death in your Ram-cars. The graphics in RoadRaider are good, but they gave the impression of being made for another computer. There is a lot of color and every item is creatively drawn. The ruins look like they have been deserted for years, the ransacked containers look well-searched, and those slimy green mutants look, well, slimy and green. However, the graphics are not extremely detailed, like we've come to expect on the Amiga. The animation was also very good. Your car looks as though its zooming along, and you appear to be running through the buildings with the mutants shuffling after you.

I was somewhat disappointed with the sound. It had very little quality or quantity. There was no background music, which I missed, and I feel this took away from the atmosphere of the game. The sound effects, for the most part,

(continued on next page)

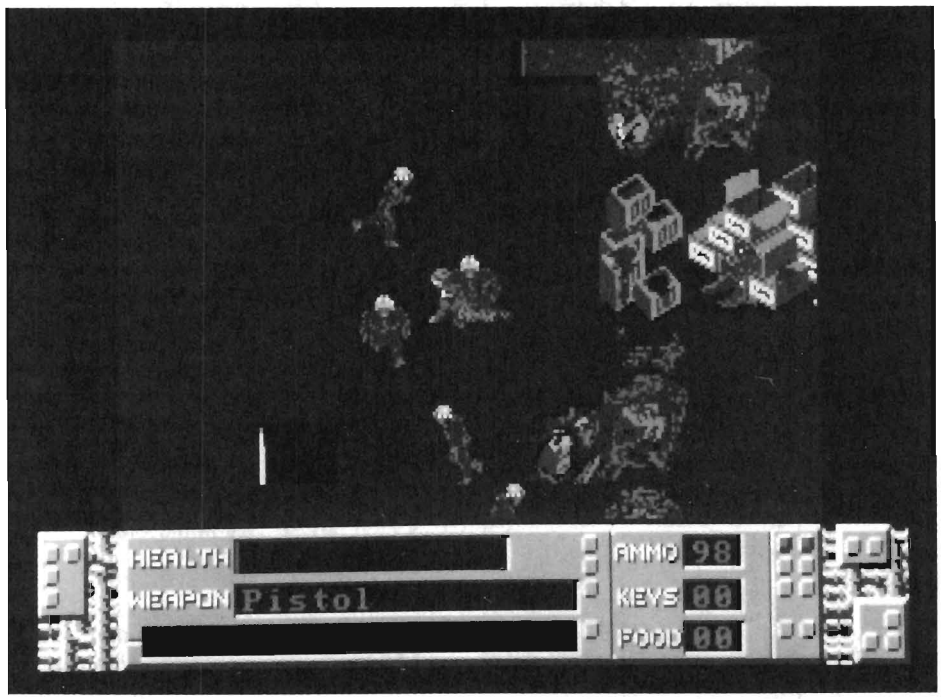
Road Raider (*continued from previous page*)

were inadequate. There was very little originality. When sound-effects are used, they're rather brief and to the point. Some sounds, like the "Aha!!" when you discover an item, or the death scream of the mutants are pretty good, but the sound in general in RoadRaider was not up to par.

Joystick control in RoadRaider is mixed. I found response poor when driving the ATV, and in the action aspect of a game like this one, that is an important oversight. There are two different ways of controlling your vehicle, but I did not feel either one worked very well. However, control inside the buildings was excellent. I liked the way your figure responded and how he moves. What I did not like was the movement of the mutants. They moved in straight lines, in the fastest way possible toward you. There was no challenge in avoiding them or lining them up and making a shooting gallery. A little random movement on the part of the mutants would have gone a long way.

The documentation for RoadRaider is very well done. Every aspect of the game is clearly explained and presented in a fun, easy-to-read manner. I felt that this made the game simpler and more enjoyable, and I am glad some attention was given to the docs.

The playability of this game was good. After a few hours, I did become tired, but it is still fun. The best part of the game is exploring the buildings, where there are many rooms and interesting items waiting to be found. Also, the mutants are a constant menace, and real fun to blow way. I did not like the outdoor part as well. The city is very tough to drive in, maybe too tough. The streets are a complicated maze and enemy cars and artillery make it impossible to watch where you are driving and not get smashed to bits. I constantly found myself running in a circles until I ran out of gas, even after many hours of game play. Maybe someone with a better sense of direction would have found the outside streets easier to handle, but I had a lot of trouble with them.



Inside the darkened city ruins you encounter the slimy mutants and search for food

My only other complaint is the save feature. You can save your position during a game, but it's pretty awkward to press SHIFT-8 while fighting several vehicles. The game will halt, save your position and restart from the title screen. When asked to press the fire button, press R instead and you can resume. You can only save when you are in the streets of a city, not inside a building, and only one game can be saved. These limitations are annoying, but not fatal. I do worry, however, about repeated saves to the game disk.

To summarize, RoadRaider is a decent game that has lots of action and an interesting story. It provides different types of action in an attempt to appeal to both the shoot-em-up and adventure game fan. The streets, the buildings, and the Arena, can be fun in a unique way. The graphics and sound are not state of the art Amiga, but they are more than sufficient in a game of this type.

Road Raider $39.95

Mindscape, Inc.
3444 Dundee Road
Northbrook, ILL 60062

(312) 480-7667

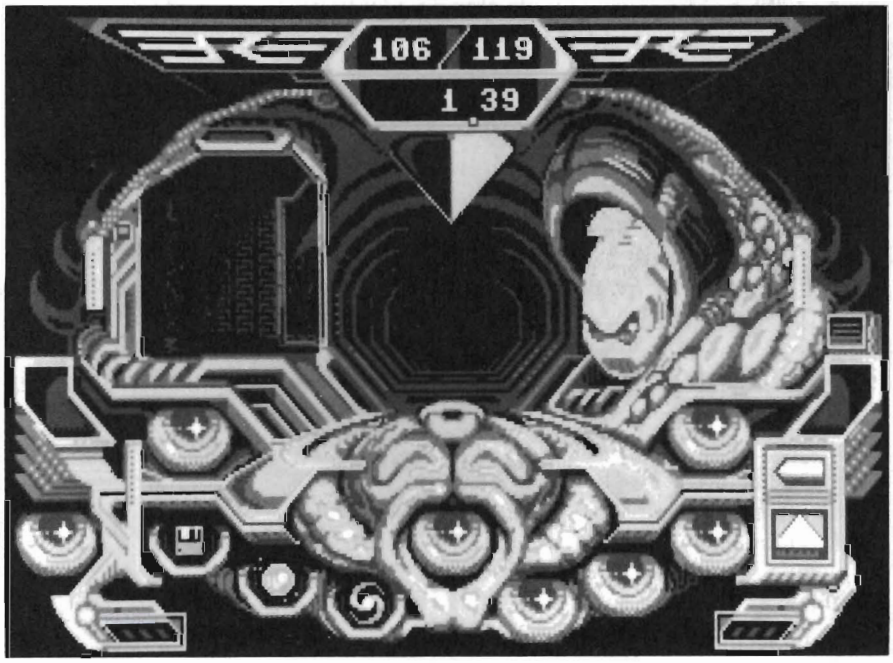
Captain Blood

Embark on a Futuristic Journey to Hydra

by Eric Hunt

I always wanted to meet and converse with alien creatures from wondrous planets all across the grand Universe. Now, whenever I boot up my Amiga, I can travel to any of more than a dozen populated planets. Even better, I can pick up a friend along the way and populate any of the 32,768 planets which can be identified on my Galaxy Map computer. All this power and more are mine in Captain Blood, a recent entry into the market of Sci-fi adventure games. As Blood, my space ship is better fitted than the Enterprise of Star Trek fame, and it is more sophisticated as well. Philippe Ulrich and Didier Bouchon have combined talents to answer my unspoken question, "Is there a way to more fully experience alien cultures?" There are many good Sci-fi novels, but neither Frank Herbert, Asimov, Clark, Larry Niven, Pournelle, nor Ursula K. Leguin are able to put graphics and sound into their creations. A good sci-fi computer game is like a novel, only better because we can participate. Captain Blood is like a Hugo award winner written by one of the masters - it will endure. That brings us to the storyline: You are *Captain Blood*, a programming genius whose life goal is to create the computer game to end all computer games. You envision and create an entire galaxy of worlds and cultures. Naming this new place Hydra, you work for months on every detail of your creation in the ultimate computer adventure. Suddenly, you are thrust into the fantasy Universe of Hydra by a bizarre accident. You find yourself trapped in the alternate existence you created. Slowly, the realization seeps into your mind. You begin to assess the situation. You are indeed the Captain Blood of fantasy. A Blood who is undergoing decomposition of precious tissues due to loss of body fluids. The bio-computer begins to replace your skin, bone, organs, and brain. You are made aware that five clones fragmented from you during a Hyperspace warp. Your only hope is to find each of the five clones, extract and absorb your vital fluids, and buy the time necessary to put the game into a pattern which may somehow facilitate your escape.

The success of your mission depends on making quick and correct control selections



The planet landing creatures (Oorxx) are activated by your next somewhat shaky movement. You fight to remain in control of the mouse as it transmits your directions to the mind-

(continued on next page)

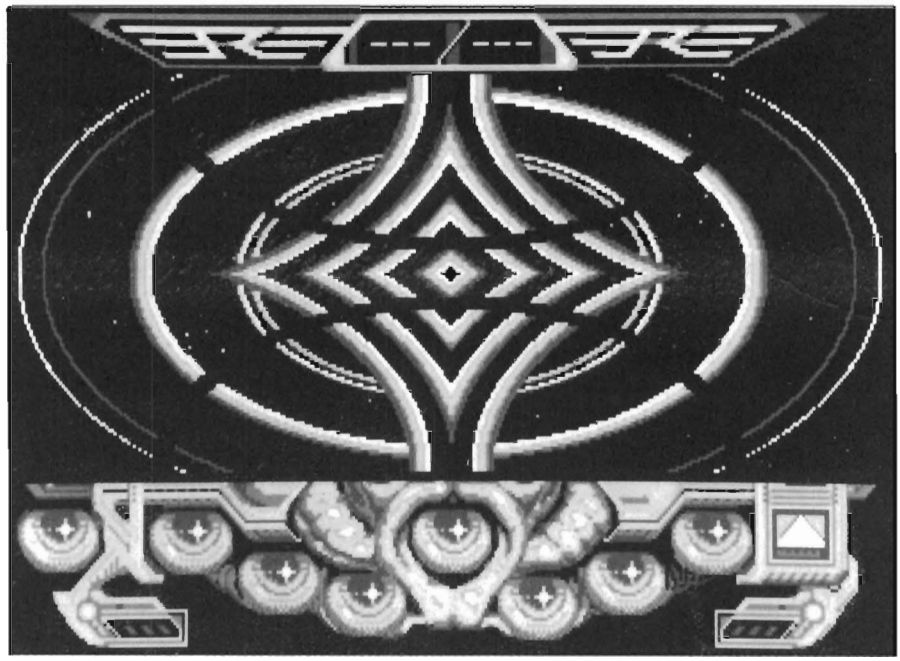
Captain Blood *(continued from previous page)*

less soaring Oorxx. Effortlessly, the Oorxx reacts to your movement. As it moves over the planet surface, its vision is translated into wire-frame landscapes which are instantly assimilated and displayed on the bio-monitor. Avoiding peaks and following the bio-monitors suggested path, you guide the Oorxx in for a pin point landing at the site of an alien home.

A startled creature appears as the bio-monitor executes the UPCOM (Universal Protocol of Communication) icon modules. The alien speaks first, saying "me small Yoko ... planet = Bow-Bow ... coordinates = 016/113 ... me like peace ... me small izwal ... small Yoko fear ship ... small Yoko want know identity." Your response is calculated to gain the respect and admiration of this small Yoko, "Me Blood... me want help you small Yoko." Yoko relates many stories, and you promise to appreciate his advice and directions. The UPCOM icons are familiar to you, and an extended conversation ensues. You set the coordinates of a planet that Yoko told you about. As you recheck all systems, you realize a possibility that you may be unprepared for the next challenge.

Multicolored illusions of Hyperspace are thrust upon your troubled mind as your ship shoots through the Galaxy. At the other end of hyperspace waits another planet, and other aliens. There isn't much time. You must find the clones before you are reduced to robotic parts. The race is on. One mistake and you are doomed...

At this point, I will refrain from relating any more of the adventure so that I can tell you just how much I appreciate this game. Captain Blood is loaded with the kinds of extras that computer games should have. First, it randomly generates a universe every time you begin anew. You can also save a game after five minutes. If you do, you will be able to restart from that point at any time you desire. Otherwise, you may start by a new approach if you find that chance has dealt you impossible odds. Secondly, the aliens are incredible. Talking to them is very interesting because the UPCOM icon message system is perfect. How else would I communicate with aliens but to have my own version of "C3P0." You get to see them as well, and the art work is super.



The Hyperspace phase of Captain Blood sends out rings of color

The transition from one scene to another is very smooth. In addition, the icon for Oorxx reactivation is a nice touch. I didn't notice it until I found myself looking at the interior controls and had managed to crash several Oorxx's trying to get a restored view of the fierce alien Croolis-Ulv DEAD. I happened upon the reactivator and was able to confront the beast for a second time. Fortunately, he said BYE and I was staring at the controls again.

There certainly isn't anything lacking in this game. Graphics are worthy of the Amiga, but do not slow down the action. As you float the Oorxx over a planet the wire-frame rendering is fast and detailed. Press the space bar while floating, and a realisitc fractal rendering will appear. The master control panel and its switches, hyperspace, and even Blood's arm combine to build a complete illusion. This universe becomes all too real.

Captain Blood is not an easy game to play. However, it is so well detailed and designed that you will work diligently. Soon you will become more proficient at flying the Oorxx, communicating with aliens via icons, and finding clones, so that putting together the puzzle pieces will be fun and intriging in the world of Captain Blood.

Captain Blood $49.95
Mindscape, Inc.
3444 Dundee Road
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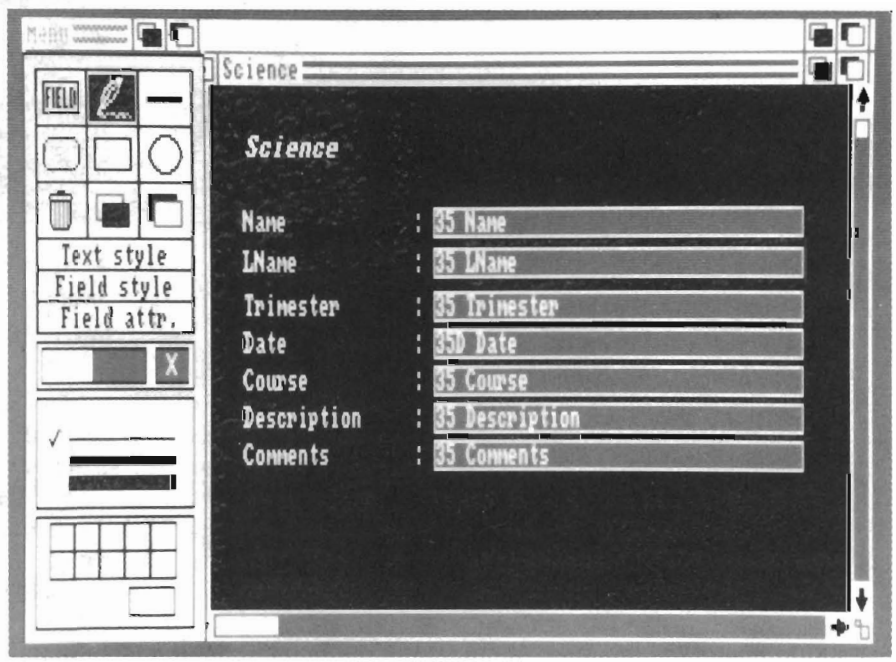
Professional Data Retrieve

Abacus' High-end Entry into the Database Management Arena

by Glenn Heck, Jr.

Professional Data Retrieve (PDR henceforth) is a new and powerful relational database management system designed specifically for the Amiga. Along with spreadsheets and word processors, database management systems have become essential within the business community. In fact, the computer was originally conceived as a tool for management of huge amounts of data. When the Amiga appeared in late 1985, with its intuitive user interface and powerful multitasking environment, I had high hopes for fast, flexible, and easy to use data management software. The flexibility and power promised in first (and some second) generation databases never reached fuition. It has just been in the past six months that powerful, easy to use, flexible data management software has begun to appear for the Amiga. Does PDR fulfill these requirements? Let's see.



The Mask Edit screen provides tools which let you create custom data entry screens

Documentation

PDR comes with a 8.5" x 5.5" three ring binder containing a hefty six section manual and two disks in a plastic disk sleeve (this packaging seems to have become the standard for "serious" business applications). Each of the first five sections in the manual has its own table of contents:

Section 1 contains an introduction to database management, an overview of the manual, installation procedures and a series of six tutorials.

Section 2 contains a detailed description of all the pull down menus.

Section 3 describes the mask editors and building relationships between files.

Section 4 contains an exhaustive description of the PROFIL language, which is similar in structure to BASIC.

Section 5, the appendices, contain a glossary, keyboard shortcuts, an expert section on file structure, error messages, and technical data. Section 6 contains the index, manual updates, and a form used to report software problems. Although the manual is well organized, I found it to be lacking in detailed explanations of some of the more complex features of the program.

The disk based help files were created as a PDR database file and can be accessed and modified like any user created file. Installation is simple enough. With a two drive system,

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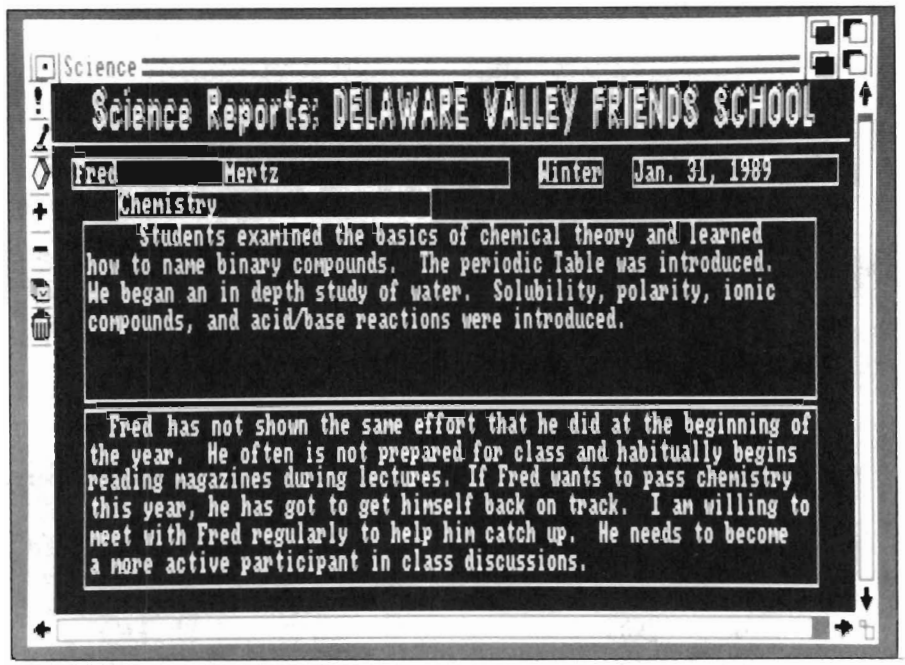
simply make a back up of the Workbench 1.2 program disk and the data disk and you're ready to go. With a hard drive, simply copy the program and the files on the PDRdata disk into a drawer and assign PDRdata: to that drawer.

WARNING: PDR requires a minimum of 1 megabyte of memory. The program will not run on less and this system limitation is not mentioned anywhere on the packaging.

Once installed and primed by reading the introductory section, you're ready to go. I received my review copy of PDR during finals week. Since the school requires anecdotal reports written for each of my students, I thought that it would be interesting, and perhaps productive, to try to write and print my reports using PDR. I was not disappointed. Skipping the six tutorials for the time being, I dove into the program and began creating my own PDR file.

When creating a new database, you must first open the file by selecting the OPEN FILE option in the FILE menu. A slightly non-standard file requester appears listing all the files currently created for PDR. To begin a new file, simply type in a name that does not yet exist. PDR assumes that you want a new file created and does so. Next, you are presented with a requester for entering the names of your data fields (a data field is a place in the file where one specific piece of information is stored). Here you are given the choice of six types of fields. Depending on the type of data you will be entering, you choose the type of each field as you name that field. Text fields can use any alphanumeric characters, as well as all punctuation without restriction. Data in a text field is handled as simple text. Data entered as a Date field will be formatted in any one of several standard date formats. A Time field allows input of data in standard hour/minute format. Creation of a number field allows the manipulation of numerical data. Numbers and formulae can be entered into a number field. In an IFF field, the path of any IFF graphic file can be entered. Finally, a "choice" field allows only the input of preset choices to be entered (M/F, Yes/No/Maybe). Up to twenty choices can be specified. Entering data into a field is similar to using a word processor, and most common text manipulation processes (cut, paste, copy) are available.



The finished Data Mask using large fonts and text entry fields

For my grade reports, I created text fields for first and last names of students, the trimester as a choice field (Fall/Winter/Spring), the date as a date field, and the name of course, course description, and comments on student progress as text fields. So far, so good. Once the fields are named and created, the program dumps you into a standard screen mask. A mask is a template for entering data or for printing records, and PDR is a mask oriented program. The standard screen mask for a newly created file is simply a list containing the name of each field and a box, one line by 30 characters, for entering data. Since I wanted a different looking screen for entering my data (30 characters would be useless for entering student comments), I looked for a way to change this default screen mask. Searching the menus, I finally located EDIT MASKS in the OPTIONS menu. A sub-menu gave me the choice of working on screen masks, list masks, or printer masks. Holding my breath expectantly, I selected EDIT SCREEN MASK. Two new windows appeared. A Menu window, containing tools and gadgets used in modifying the mask, and the default screen mask (See picture).

Editing the mask is very intuitive. The size and location of each field can be adjusted by simply a click and a drag of the mouse. Text can be created and placed anywhere on the screen in any

combination of Amiga screen fonts and styles (several very nice screen fonts are included on the program disk). Nothing could be simpler. Field sizes are dynamic, and are not limited by the size of the screen (text fields can be up to 32,000 characters in length). Attributes of each field are adjusted here. Fields can be assigned six different attributes depending on how you want them to respond. Several of my fields will have the same information in them for every student (date, course name, course description, trimester), so I assigned them as repeat fields. When entering data, a repeat field will automatically contain the same information as it did in the previously entered record. Other choices include result fields, verified fields, automatic fields, input fields, and required fields.

Once I perfected my mask, (see picture) I simply exited the mask editor and was prompted with a file requester for saving the mask. PDR saves screen masks, automatically adding a .msk extension to the name of the data file. With PDR, it is possible to create any number of screen masks for each database. The Screen Mask Editor certainly lives up to expectations of flexibility and ease of use. A completed screen mask can also be edited at any time by simply re-entering the editor.

When exiting the Screen Mask Editor, PDR places you immediately into input mode using your newly created screen mask. By clicking in the first field, you begin entering data. Here, I began to notice some inconsistencies in the program's user interface. If my data entry field was only one line deep, pressing return automatically moved me into the next field. But if I was entering data in a multiple line field, the return key simply moved me to the next line in that field. Worse than that, pressing return did not automatically move me past my repeat fields, but inserted a blank line in at the beginning of the data in the multi-line repeat field (UGH)! A quick look in the keyboard shortcuts section of the manual informed me that I could move forward from field to field by pressing shift cursor down. Inconsistencies aside, I was able to input all my students' reports with little trouble. The ease of input is directly related to you're ability to design the appearance of your screen. It's yours, so it's bound to be friendly. Very impressive. I was able to go from opening the package to creating and filling a practical database file in fewer than four hours of work.

Now, let's look at another area of the program, Reporting. I have seen more than my share of data management software that lets you input information quickly and easily, but has weak reporting capabilities.

PDR's manual claims that the program's report generation capabilities allow printing of anything from a simple listing of data (one printed line for every record), through the ability to create mailmerged letters. In fact, PDR does have these capabilities. Selecting EDIT PRINTER MASK in the OPTIONS menu brings forward two windows very similar to the Screen Mask Editor. Two menu items in this editor allow you to create headers and footers, top and bottom margins, and to set printer preferences for your particular mask. This allows you to bypass the Workbench Preferences printer settings if you like. Printouts use your printer's fonts and are not screen dumps, so Amiga screen fonts are not available from the printer masks (although there is also a menu selection for PRINT GRAPHIC, which does a screen dump of your records). Vertical and horizontal scroll bars on the printer mask allow you to format your printouts to fit any size paper. I have to print my report cards on a standard triplicate form with blank lines at the top for student name, date, etc., a checklist of work habits in the center of the form, and room at the bottom of the form for course description and individual comments. After setting my margins, pitch, and spacing, I dragged and sized my fields around the screen until I had them exactly where I wanted them. For first and last name, I wanted to be able to concatenate the two fields with only one space between them. Could I accomplish this easily so that I didn't have to adjust each record for different length first names? No problem. I simply entered a text field in the printer mask that looked like this: [Name]+" "+[LName] PDR translated this properly and every one of my records was adjusted accordingly. Now for the test, an actual printing.

I selected PRINT FORMS from the INPUT/OUTPUT menu and a requester appeared asking if I wanted to print escape codes (special text styles like bold, italics, etc.) and whether I wanted to print to the screen, a file, or to the printer. I chose the printer (might as well be daring) and everything printed perfectly. All the fields appeared on my forms exactly where I asked for them except... Oh, oh; the last word in several of my lines of text in the larger fields (course description and student comments) were chopped off ...Gone! Simply not there! I tried changing Preferences margin settings. I went back into the Printer Mask Editor several times making this or that adjustment. I made a long distance call to Abacus in Michigan. Nothing seemed to help. The technical support person at Abacus had never seen the problem before, but thought it must be an interaction with my printer driver, the 1.3 Workbench, EpsonX driver. Then I tried to print forms to the screen. The same results! That would suggest a bug internal to the program. After sev-

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eral more attempts, I finally located the culprit. I had used the tab key to indent paragraphs. When I rewrote the fields using the space bar for indentations, everything worked like a charm...perfect printouts. PDR does not handle use of the tab key properly! Not a major flaw, but annoying. It *did* cost me several hours to track it down and rewrite my data, however.

Finally, let's take a look at PDR's searching and sorting capabilities. I am expected to alphabetize my completed stack of report cards before they are handed in. Hmmm, how about if I let PDR sort them for me before my final printing onto forms? Again, no problem. To save time in sorting large files, PDR lets you create multiple indexes. An index is simply a list of your records, sorted on a particular field. Choosing INDEX...SELECT from the EDIT menu caused a requester to appear containing the names of each of my fields. I simply clicked on the field that I wanted to sort by, LName, selected the depth of the sort, and clicked the OK gadget. After a few seconds (I only had to sort forty records) my data was indeed sorted alphabetically by last names. Multiple indexes can be created for each file and saved to disk for later use. This is handy for mailing lists where you might want sorting by last name or phone number for some applications, or sorting by zip codes for bulk mailings. There is an area of sorting which is discussed briefly and vaguely in the manual. I have two students named Johnson. How does PDR handle sorting of identical fields? The program does not support nested indexes. In order to sort on multiple fields, you must create a result field which is the concatenation of the fields that you wish to sort under. For my purposes, I needed to create a new field name by selecting the ADD FIELD NAME in the OPTIONS menu. I named the field NAMES and created it as a text field. After leaving the field naming requester, I then had to re-enter the Screen Mask Editor, create a box for my new field (a simple click and drag), and create a result field in the Field Attribute requester. The formula for my result field was a simple concatenation: [LNAME]+" "+[NAME].

After resaving this modified screen mask. I browsed through my files and found (to my horror) that the result field was not automatically filled with data. I had to go back and manually rewrite each last name and replace each modified record in order for the newly created result field to be filled with the proper data! It would make sense to plan ahead when creating the file. If you think nested sorts are going to be necessary, create the result fields for these sorts before you begin entering your data! The manual should have made this clear. However, it did not!

What about searching for data? Here, PDR really shines. Searches are fast and efficient. Several wildcard features are available. Suppose that I wanted to find all of the students in chemistry classes whose last name began with 'J', and who had a comment about homework. To accomplish this you need to enter search mode (click), erase all of the data from the screen (click), type J* in the LName field, type C* into the Course Name field, and type / homework into the Comment field. With this done, I chose SUBRANGE...SELECT from the OPTIONS menu. In a matter of seconds my search criterion are accomplished and I have access to only those records which match my requirements. Even better, I can sort this subrange and save it as a separate database. There are six wildcard options available for search subranges:

* (multiple wildcard) Ignores all characters at and following the asterisk.

? (single wildcard) Replaces any character.

~ (range divider) Separates the lower and upper bounds of a search range. D~W would find all occurrences alphabetically beginning with any letter between D and W.

| (OR combination) allows you to enter several possible values as criteria. If any match, the record is found.

/ (Global search in field) finds occurrences of a string anywhere within a field.

\ (Global search in a record) finds any occurrences of a string in any field. It doesn't matter what field this wildcard is typed into.

Okay, so PDR is fast, flexible, and powerful...but you say that you've got all of your data already entered into some other program. That's no problem. PDR supports export and import from virtually any other source that can save ASCII files. The program allows you to preset the field and record delimiters as they are created by the other program. Simply create a database file with the proper number of fields (in the same order as your external text file), set the I/O parameters, and read in your text file. Exporting your data files works exactly the same way.

Here I am almost through this review and I haven't even begun to examine PROFIL, the internal programming language for PDR. Is it as flexible, powerful, and easy to use as PDR itself? At first glance, I would have to answer affirmatively to all three of these queries. PROFIL is written to be similar to BASIC in structure. It contains 116 commands and 97 functions. PROFIL allows definition of numeric, array, string, date, time, IFF, and choice variables. You can access the data from a field by specifying its field name. It supports arithmetic, string, relational, and logical operators. PRO-

(continued on page 63)

MIDI Magic

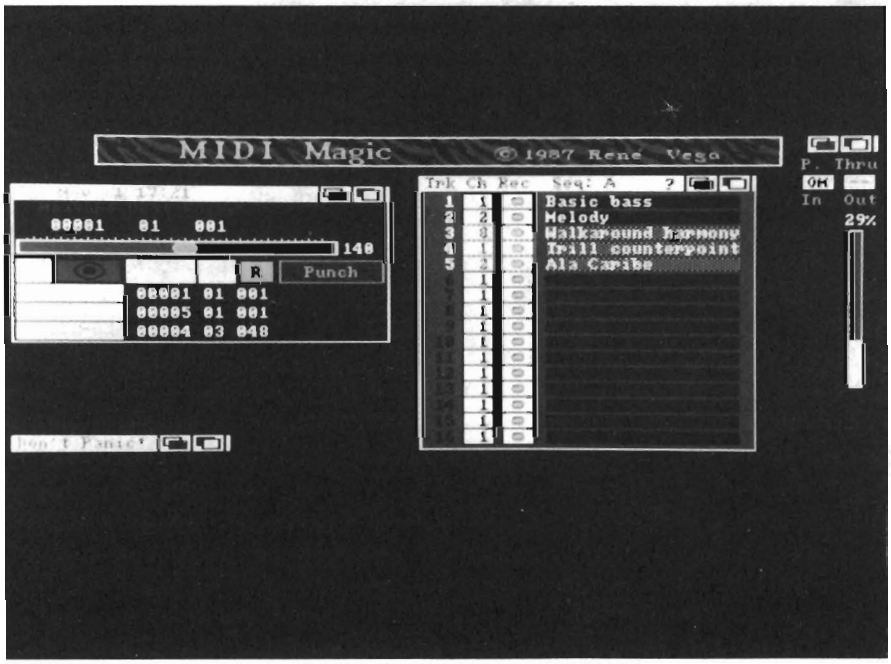
Simultaneous Multiple MIDI Track Recording, and more!

by David Glassman and Michael Shuler

At the Fall '88 AmiEXPO in Los Angeles, the doors opened and a swarm of attendees hit the booths like bees descending on a field. The scouts in the lead were buzzing "didgaseedat" to direct those in the rear to the areas with that had a "honeycomb" of hot new products. For the wild group of Amiga musicians, the immediate draw was to all new MIDI products. Circum Design and Brown-Wagh Publishing debuted the newest MIDI sequencer on the Amiga, MIDI Magic v. 1.3, and drew considerable attention in doing so.

Among the features that warranted this attention were claims of multiple track recording, resolutions up to 480 ppqn, multimode quantization, a step-entry recording mode, mixed time signatures and quantization values within sequences, an audible metronome with a visual display, alternative record-start options and a fine set of editing windows. We'll get to tsome aspects of the interface design after we cover some of the recording/playback and editing features.

The MIDI Magic main screen, shown here in high resolution.



Recording and Playback

The basic screen, optimized for recording and playback, has two main windows (Track Display and Tape Transport) and three gadgets (visual metronome, software play through and a "don't panic" button).

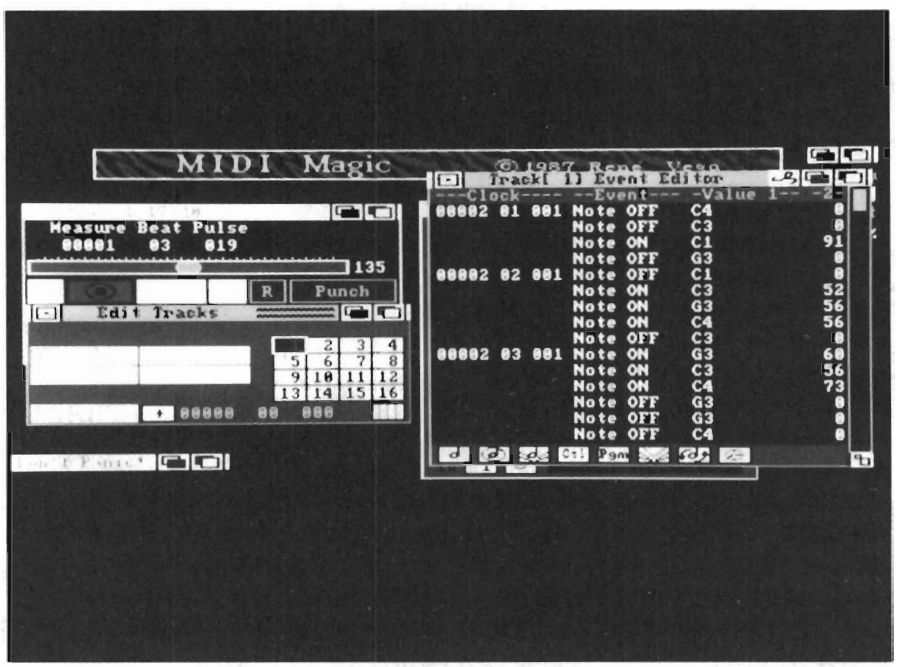
MIDI Magic uses a modular MIDI data organization, wherein multi-track sequences are assembled in some order to form songs. You can record/playback up to 26 sequences with up to 16 tracks per sequence.

MIDI Magic is the first Amiga sequencer to offer multiple, concurrent track recording. Among other benefits, this feature would allow you to record "live" sessions using two or more different MIDI input devices simultaneously if you route the data through an optional hardware device, a MIDI merger.

Individual tracks in a sequence can be set to record or playback mode, muted-unmuted, soloed and assigned a receive (1-16 and Omni) and output MIDI channel. Tracks also have a name/comment field and can be recognized as used or empty. To select an active sequence (A-Z) for recording/playback, editing or song construction you have to hop back up to the menu

(continued on next page)

(this is somewhat inconvenient). The Tape Transport Window has one counter to reflect the sequence's current position (in measures/beats/pulses). The tempo slider is below the counter. This is followed by tape deck style buttons (with F-key equivalents) to set current status (rewind, stop, forward/pause, fast forward, master record enable/disable and autopunch). There are three more counters with buttons for SET IN/OUT/END points. The four Tape Transport counters let you know the value of the current clock, the track range beginning and end points for editing and autopunch operations, and the end point of the sequence or the point where recording would resume if you extended the length of the sequence.



MIDI Magic achieves its editing capabilities through the use of an event list

The Play Through is a software MIDI through channelizer for routing incoming signals (channels 1-16 and omni) and outgoing signals (channels 1-16 or no output). The "don't panic" button, a boon to those of us afflicted by "stuck" notes, sends an all-notes-off message on all channels. The memory guage keeps you abreast of how many events you can record (actually, % RAM used); when it flashes red at 98% used, save your files. This program is better-behaved than most under low memory conditions, which are likely to expose AmigaDOS errors, since there is a routine that scavanges chip memory fragments for use.

Compliments to Rene Vega, the programmer, who must have suffered with other sequencers in his time and was able to include: (1) a tempo control (28-240 bpm) that can be set by a slider or by tapping out a desired rhythm on the space bar or synthesizer key, (2) an audible metronome, using the Amiga's internal sound, that is adjustable and can have an accented downbeat - it is a visual metronome that you can see clearly w-a-y over at your keyboard where the audio click may be drowned out by your 16-bit sampler, (3) a set of options to start recording (a one measure countdown, cueing in recording at the current clock with a keypress, etc.), (4) selectable time signatures (4/4, 3/4, 2/2 and custom time signatures up to 99/99) and resolutions (24, 48, 192 or 480 ppqn) and the ability to mix time signatures and resolutions within sequences, (5) a step-entry recording mode that let's you enter music without worrying about timing and, (6) the ability to transmit MIDI control messages by channel, where applicable (local on-off, omni on, set poly mode, set mono mode, notes-off, system reset and tune)

Editing

Editing functions exist at several levels of data organizations from notes to songs, but we'd like to highlight the track level editing functions. These functions are organized by logical category into six windows. Their form and content are exemplary - well-ordered buttons, icons and grids (for selection of one or more tracks for editing operations). They are accessed via menu selections and they remain open until their close gadget is clicked. Editing operations do require that the sequencer be stopped.

In the default medium-res display, the contents of the windows are clear as can be. No problem reading the type or aiming at a little gadget and hitting its neighbor by mistake. But, for users who want them all on screen at the same time without overlapping, there is an option of switching to a hi-res display (and reducing the contrast so that flicker isn't pronounced). This issue of windows overlapping is acknowledged in the manual which states that the hi-res display " ... is handy if you have nineteen windows open at the moment and you can't even FIND the track display."

The Copy Tracks Window layout has two 4 x 4 grids (each cell has a track number) that are headed TO: and

FROM:. Below each is a miniature version of the grids to select all tracks and a COPY button. After you select a particular sequence and set the SET IN/OUT points to designate an edit region, copy away. You can bounce multiple tracks to one track, or copy one track to multiple tracks to make duplicates.

In the Edit Tracks Window you can transpose, invert, cut, erase and shift tracks. Transposition is effected by pressing a note on your synthesizer to determine the number of semitones a track is raised or lowered. That is, if middle C is considered the zero point, then to lower the track one octave, you'd press the C below middle C, lowering it 12 semitones. Similarly, to invert, another form of transposing, you would press a note on your keyboard to select an inversion point. All the notes in the track(s) above that point would be switched to a new position an equal number of semitones above the inversion point. Those below that point would be switched to a new position an equal number of semitones below the inversion point. "Erase" blanks a track, but maintains the timing of the track. "Cut" snips out a selected region of the track, shortening its duration. The track shift button, a plus/minus gadget and a counter are used to effect a movement of track data to a new time location to create special effects, such as delay, or to correct synchronization. When multiple tracks are shifted, their timing (relative to one another) is maintained.

The Quantize Tracks Window does error correction at values ranging from a quarter note, to a 32nd note triplet. You can quantize one or more tracks at once, or some range within those tracks (we welcome the multiple quantization modes in an Amiga sequencer). You can chose to quantize: (1) note-one data, where durations are maintained, (2) note durations, where note-on data is unchanged, (3) note-on data, where not-off data is maintained and, 94) note-ons and note-offs.

The Track Event Editor may be a standard faire, text-based, event list, but MIDI Magic spices things up, by providing icons to delete and insert events (notes-on/off, poly pressure, control, program change, channel pressure and pitchbend), the ability to play a highlighted note when you are changing its value, and to see events at the current position during recording and playback. We thought the ability to play a highlighted range so that notes could be heard in a context, and the ability to mark an edit range during playback by a key, would be useful additions.

The Global Delete Window filters all-notes, controller events, program changes, pitchbend, channel and/or poly pressure (aftertouch events), sustain and mod wheel.

At the sequence level of editing, you can append a sequence to itself or another sequence (used or empty). At the song level of editing, you can assemble (insert or delete) song lists, modify the sequences (transpose, repeat or set a new tempo) and play/loop songs. The program also provides information windows with useful data (in an outline format) related to sequences and songs.

Interface

MIDI Magic is fully multitasking and well-behaved with the patch/editor librarians we ran with it. The help system is extensive, and the bulk of the manual is accessible from within the program. For general browsing, you can click on items in a subject index (text scrolls in the windows). Or, you can use it in a context-dependent fashion to learn about the function associated with the area last clicked in an active window. MIDI Magic's colors,

(continued on next page)

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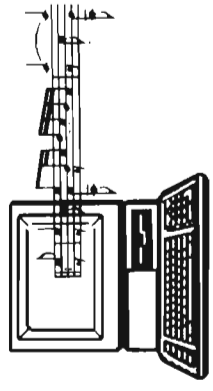

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window location and size, and default set-up options (tempo, resolution, etc.) are customizable by editing the Tool Types portion of the program icon.

When we took the program out for a test spin we found ourselves prone to mishaps and we found that performance can be sluggish. To give an analogy, we felt that we had our hands on a $20,000 sports car and someone had messed with the steering wheel, replacing it with a joystick that made maneuvering slower and choppier. The interface has some areas of softness, as well. Mind you, this is the perspective of "test drivers" who want to floor the throttle and take curves at high speeds without thinking about alot the guages.

The procedures for effecting functions required more separate steps than we're used to. Also, the steps required that you move the mouse from one area of the screen to another too often. Aside from the F-keys that correspond to tape transport controls, the program doesn't make use of single keystroke commands or Amiga+keystroke equivalents of menu items. These are likely to be added in future revisions.

An UNDO function and an edit buffer would be important additions to the program to bail you out of destructive edits. When you use the event list editor you can change a values by clicking on it and sliding the mouse to increase or decrease it. A few times we were trying to highlight an event and we managed to change a note value instead. We also had trouble using the click and slide method to set a specific value. We understand that users have asked for the ability to enter values by typing in a value and that this will be implemented in future versions. We would also like to see some marker (such as an asterisk) to set off inserted or changed events. MIDI Magic allows you to record on a used track, merging the events from each "take." When we first started using the program we would, mistakenly, record over a used track. We found ourselves ignoring the used track indicator (the change of track number from black to white was too subtle for us) and the fact that the record enable gadget on the track was still on (it flashes red, but it's small and in a visual field with other larger red objects).

The clock counter continues (while you are recording) until you hit the stop button, and it doesn't zero itself in preparation for the next recording pass. We found this a mixed blessing. We'd like to see an auto rewind - auto stop feature for rewinding to a specified time after recording/playback, and to stop at a specified time. If, for example, you were recording and decided that the first eight bars were just what the doctor ordered, you would use the cut function to snip to that length. But, the cut function doesn't automatically add note-offs, so that if you had held the last chord a few pulses into the next measure, you'd have to insert note-offs to prevent hung notes.

The Head Magician

MIDI Magic is a new program, not a port of a program from another machine that has been worked over for years. In many ways, it is original in design. We were pleased to learn, from Rene Vega, that some of the interface issues that made us cranky, in fact, represented novel and useful design considerations. Some we misunderstood would be clarified in a revised manual that will include application illustrations, and some have already been fixed in the program currently shipping. In addition to revisions, he will be expanding the program to include, on a near term basis, standard MIDI file format and Sysex editor librarian functions. He also plans to add the ability to use Amiga's internal sound capabilities.

System Requirements and Manuals

MIDI Magic will run on all Amiga models. A single drive, 512K byte machine can record 10,000 events; a 1 Meg machine will record 90,00 events. It is *not* copy protected, and is easily installed on hard drives. It operates well within the range of other Amiga sequencers, requiring 258K bytes of memory, and an additional 32K bytes in hi-res mode. It has internal sync or external sync to MIDI clock, and outputs MIDI clock (24 ppqn clock pulses to sync external devices).

Aside from needing application illustrations, the manual is quite good. It is well-organized, folksy, and relies on a metaphor of a magical guided tour. It is one of the better sequencer manuals for a beginner, since it explains matters in common language and has a supportive tone. Advanced users should be pleased as well.

In summary, we thought MIDI Magic was a strong, entry level sequencer and a fundamentally sound foundation (with additions) for a pro level MIDI sequencer. Some of it's features, particularly, the implementation of editing functions represented novel advances for an Amiga sequencer. But we also felt that routine operations involved in recording and editing were too indirect for users who wanted to get in a groove and pay little attention to the presence of the interface.

MIDI Magic 149.95
Distributed by:
Brown-Wagh
16795 Lark Ave, Suite 210
Los Gatos, CA 65030
(800) 451-0900

ATalk III

The Latest Generation of Powerful Telecommunications from Felsina Software

By George Rapp

Amiga telecommunications software ranks with the best of personal computers for user support and software dissemination. However, in most cases, the high quality of support has not been matched by sophistication of features. For quite a while now, we have waited for a terminal program that can meet the demands of the knowledgeable Amiga user who is experienced on other personal computers. A-Talk III is aimed at this user. It is not new to the Amiga, but the current release is a major upgrade. This update features a wide selection of communication protocols, Tektronix graphic terminal emulation, emulation of many other common terminal types, a script language for easier use and a custom feel, and an Arexx port to make use of William Hawes' interprocess communications software.

The package comes with two disks and a 1/4 inch thick manual that covers all the installation and basic uses. The disks include the main system disk that contains the executable files and an installation disk. The installation disk has script files for installing the A-Talk on either a floppy or hard disk based system, and a few public domain programs that are helpful to the novice. A-Talk is one of the easier programs that I have run across to use for the first time. The pull down menus are standard and follow in a logical order. Those of you who do not like pull down menus and prefer clicking on gadgets can use the "Quick Menu" which puts almost all the options on the screen at once for easy configuration.

The second chapter of the manual is entitled, "Up and Running in Thirty Minutes," and it is no exaggeration. Screen shots enhance the text descriptions and straight forward instructions. The next seven chapters go into detailed explanations of each of the menu headings and a few of the other icons on the disk including the "Talk Toy." The use of speech is prominently displayed on the packaging and mentioned several times throughout the manual. It is the standard Amiga voice and works as described. But as you know, the Amiga voice gets tiresome quickly, even with the parameters set through the A-Talk Talk Toy. What most people use a terminal program for is transferring files and electronic mail. A-Talk is well equipped to handle these tasks. It starts with a sim-

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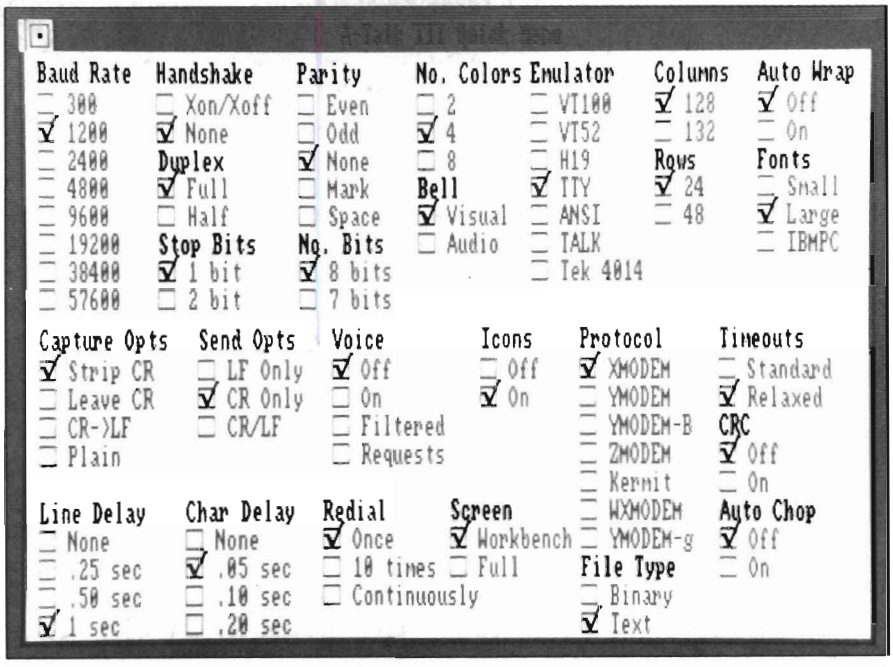
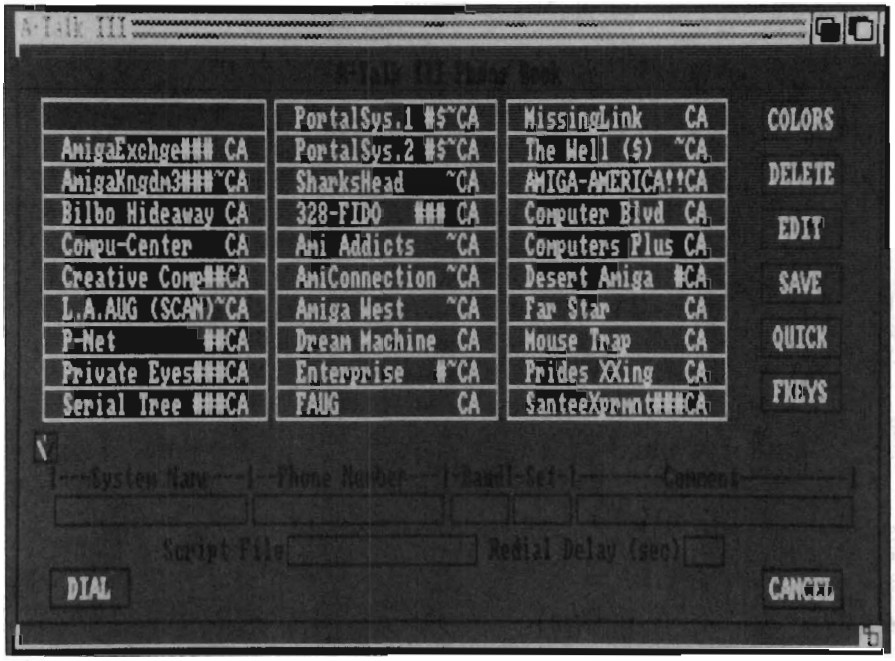
This quick menu lets you set up your telecommunication options in a snap



ple to understand phone directory that holds 64 entries. The phone book information is stored in a text file to match Chet Solace's BBS list, and can be updated from any text editor or from A-Talk itself. For file transfers, a terminal program should offer an interface to select the files to send and receive, as well as a method of ensuring that the data is intact at the end of the transfer. In this area, A-Talk clearly shines. Instead of typing in volume and file names, A-Talk has a fast, clear requester that will list all drives and directories by a few simple mouse clicks. The requesters include arrow marks for sub and parent directories, making for some of the quickest access to and from subdirectories. One unique feature of this requester is its ability to continue selections while the "ZZ" busy mouse is showing. This permits selection of subdirectories before the entire list is displayed. By clicking on the area between the gadgets and on the string gadget areas, you can pause and resume the directory list.



ATalk III's phone book features a capacity of 64 numbers, and it comes ready-stocked with BBS numbers

Since selecting files for transfer is so easy to use, making sure the file's data is sent intact is the next major concern. The most common way of ensuring this use of a transfer protocol. Transfer protocols are software checks added to the data sent in order to verify the information. Most commonly, the data is broken into small packets to which a special type of number called a checksum is added. By comparing the received data blocks checksum to the checksum received after the block, most errors can be detected and the faulty block resent. There are several commonly used protocols with various levels of sophistication, each having its own advantages.

There are a few protocols that I consider absolutely essential. The first of these is one of the oldest and certainly the most widely supported, Ward Christensen's Xmodem. Xmodem has a fairly large amount of overhead because of the small block size of 128 bytes before the checksum. A later variant called Ymodem, or more accurately, 1K-Xmodem uses 1024 byte blocks. The larger block size decreases overhead, but is more prone to errors. So called "True Ymodem" or Ymodem Batch also uses the 1024 byte blocks and adds file names and an improved checksum calculation.

A more recent development is the "ACKless" protocols like SEALink and Zmodem. One of these should be in a good terminal package with my preference being ZModem because of its wider acceptance and slightly higher transfer rates. (A-Talk includes Zmodem!)

Zmodem and SEALink avoid some of the overhead in the other protocols by breaking data into blocks and sending the checksum, but they do not wait for an acknowledgement from the receiving computer. Zmodem from Omen Technologies has the added benefits error recovery and variable block size. Under good phone line conditions, Zmodem uses 1024 byte blocks. Should the conditions deteriorate, Zmodem can decrease the block size to cut down on the number of blocks that have to be retransmitted and the size of the blocks present. Error recovery means that if the transfer is interrupted for any reason, the transfer can resume at the point of interruption. Lastly, a protocol called Kermit is useful. Though not fast, it specializes in mainframe to micro communications.

A-Talk also has two additional protocols of note. The first, WXmodem is a variant of Xmodem which has some advantages, but in practice is often not used, or implemented incorrectly. The second one is Ymodem-G, which is not really an error correcting protocol. Instead, it is optimized for speed and depends upon error correction built into MNP or PEP modems. Something I like to see is a graphics protocol to take

advantage of the Amiga's abilities in this area. A-Talk does not have a real graphics protocol in the Amiga sense, but rather, offers an effective simulation of the Tektronics 4014. The "Tek" terminal emulation is not exact since the Amiga resolution is lower than the actual dedicated graphics terminal. If you choose the Tek emulation mode, an extra pull down menu appears that has options just for the graphics terminal video display. The default is a two color display of green on black in hi-res interlaced mode.

Video options also include a choice of overscan or severe overscan modes to get closer to the resolution of the Tek terminal (at the expense of clarity around the edges of the CRT). The choice of green on black matches the Tek terminal and also minimizes the flicker from interlace. All other options are still available, including file transfer protocols. One outstanding inclusion is the option to save the Tek graphic images as either Aegis Draw or IFF images for later use in other Amiga programs. You should know that the Tek pictures of the Space Shuttle, etc. will be converted to the Draw format as one big object, not a set of layers or parts. The overscan graphics can use up memory quickly and Felsina planned for this. Instead of a hang or a crash, A-Talk informs you of low memory and resumes without hangs or crashes.

This is a whole lot of telecommunicatioons power in one small package. I would be hard pressed to find an application that I could not run with A-Talk. For those few applications that A-Talk does not directly support, you can build a solution through the use of programmable function keys and a script language. The function keys of F1 through F10 and Shift-F1 through Shift-F10 give 20 quick shortcuts from many common typed phrases, including some special characters for cursor and flow control. If function keys are not enough, the script language will do the rest. Some of the most powerful commands start scripts at a certain time, transfer control to other scripts, open and close the capture buffer, dial a call, the Got and If commands, execute an Arexx script, send and receive files, and wait for a specific string. This is not a comprehensive list, but does represent the type of power built in to the script language. One nice touch is a series of sample scripts for many popular BBS systems.

Of course, there are a few additions that I would like to see in A-Talk III. The window that opens for file sends and receives shows an estimate for transmit time (if the file size is known). I would like to see an extra line to show either elapsed time, or time remaining. One menu choice that I found good (but too small) is the font selector. The only fonts listed are an IBM-ANSI font, and small and large fonts. I think a larger selection of fonts is important so fonts designed to work with FastFonts can be added. The IBM font seemed to miss some of the non-standard graphics characters that IBM uses so that a call to an IBM based BBS can lead to some strange characters on the screen.

A-Talk III does not list any flow control except for XON/XOFF, which the manual states should be on or off depending upon the protocol used. I would have thought it possible to build that selection into the protocol choice, or to have the protocol dictate flow control during file transfer. Flow control is important, especially to the newer, high speed modems that allow a fixed data transfer between the computer and modem, no matter what the connect speed is. I would also like to see the manual address this type of flow control and explain how the Amiga serial device affects the A-Talk III program function. Another small change that I would prefer is a larger phone book, or at least easy access to multiple phone books.

The only other telecommunications program that offers competition to A-Talk III is Online!, which has many of the same features. A-Talk III does have a few more features, like the Tek 4014 graphics and the Arexx port. Online, however, does not load down the system as much and, since it does not use the Amiga serial device, it does a slightly better job of handling transfers above 9600 Baud.

Overall, I have very few criticisms of A-Talk III and hope to see more software packages of this quality. Many other Amiga software publishers can take an object lesson from Oxxi and Felsina in design, packaging, and execution of software. A-Talk III is an excellent example of a telecommunications program with all the features that anyone is likely to need. Given the track record of Felsina, it is probable that they will continue to refine and improve this program to keep it one of the leaders in Amiga terminal programs, and, at this point, my personal choice for everyday use.

ATalk III $99.00

Distributed by:

Oxxi, Inc.
P.O. Box 90309
Long Beach, CA 90809-0309
(213) 427-1227

Talking Animator

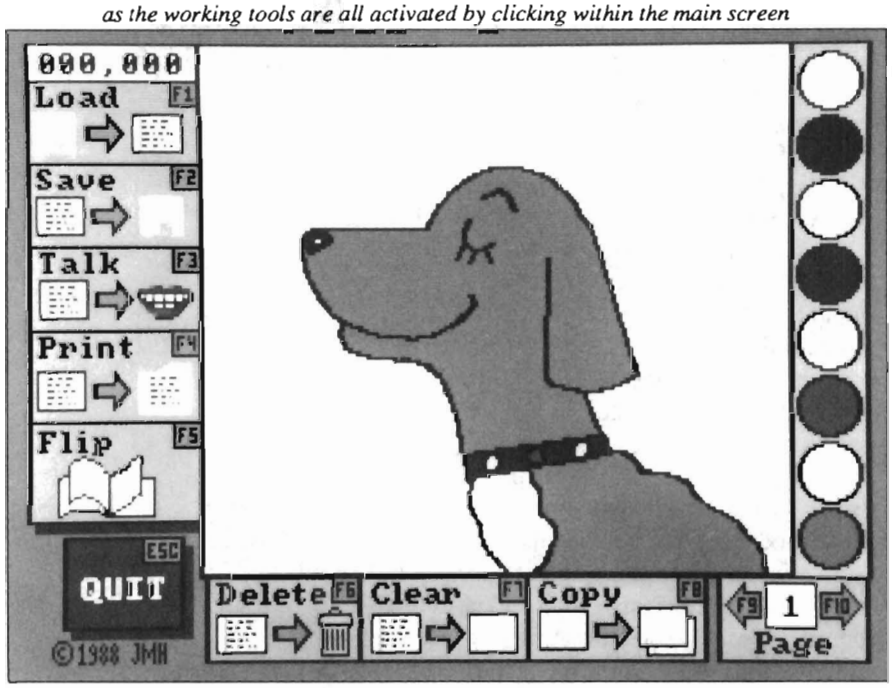
An Easy to use Icon-Oriented Animation/Learning System

by William Barker

The folks at JMH Software of Minnesota have produced a new animation package entitled, "The Talking Animator." This software is an extremely easy to use animation system which can add speech to your animations. The product includes a program diskette and a demo diskette of sample animations. The developers claim that the program is intuitive, easy to learn and suitable for anyone from the age of 6 to 60. As if to drive home this claim, the only information provided is a one page overview of the product.

With such skimpy documentation I was apprehensive. Fortunately, I found the program very easy to use and was able to create simple animations after only 10 minutes. The large icons are easy to understand, and all functions can be accomplished by using the mouse, the mouse along with the CTRL-ALT-SHIFT keys, or the by using the function keys. Talking Animator is a "page-flipper" which is designed as an instructional tool. Very simple animations can be created, but are limited by the amount of RAM available. The animation files produced tend to be quite large. The program does not appear to use any type of compression techniques, or store only the changes between frames. I created a large file of some 70 plus pages and found that the file was 696,000 bytes in size. It still was able to fit on a floppy disk, but used up ram very fast, which is a consideration for owners of 512k machines.

Talking Animator uses an "everything out on the table" layout, as the working tools are all activated by clicking within the main screen



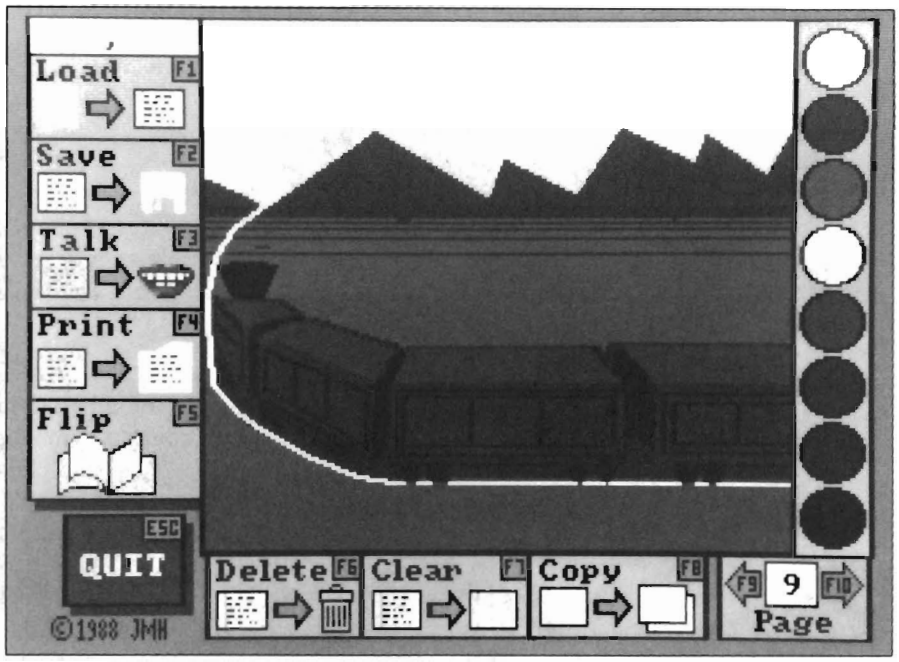
The Main program screen consists of a work area of approximately 7 inches by 6 inches in the center of the screen. This is called the "Notepad," and is surrounded on three sides with icons (gadgets) and the paint palette. Only this area of the screen is used for playback of the animations. The left hand array of icons allows for loading and saving of animation files, the talk option, print page, and the flip icon which executes your animation when clicked. The bottom row of icons allows you to delete a page, clear the current page, copy the current page to the next frame, and the page gadget, which allows you to single step forwards or backwards through the animation. Last is the array of palette icons, which allow you to pick from among the 8 colors for drawing or filling on the notepad.

Creating an animation is quite simple. You have the option of having

your page lined or unlined, and you can begin drawing by using the mouse. The program provides for the drawing of simple freehand curves by depressing the left hand mouse button. If you want a thicker line, then depress the right hand mouse button. On the other hand, by holding down the shift key and clicking on a region on the Notepad, you can fill the region in a solid color. The only other drawing option is to depress the alt key while drawing with the left mouse button depressed, which allows the drawing of straight lines. You can change pen color anytime by selecting a new color from one of the eight displayed in the palette. If you are not satisfied with a particular color, you can adjust its RGB values by depressing the shift key when you select the new color.

The next step is to select the copy icon which copies the current frame onto the next frame. You can add other items to your drawing or change colors. You can add text at any time by typing phrases for each frame and can have the computer read them back by selecting the talk icon. Those frames containg text are stopped on play back while the computer speaks the text before proceeding to the next frame.

Another option provided with Talking Animator is to push the CTRL key and the F10 function key. This will display the current image as a ghost on the next page, or if not seen (as it works only on certain background colors), simply double click on the clear button and the ghosted image in faint blue will appear on a white background. This option allows you to see the placement of objects from the previous screen, and it allows you to redraw the object in a new location. Although this is a nice feature, I would much rather be able to grab an object and merely drag it to a new position frame by frame. Also, there is no ability to manipulate or rotate objects, which would greatly facilitate the creation of an animation. Talking Animator provides help at anytime by merely pointing at an icon and depressing the help key, which causes the appropriate help file to be loaded into the Notepad and spoken by the computer.



In this animation demo, the mountains move in the background as the train rounds the bend

Overall, I found Talking Animator suitable for youngsters that are aspiring animators. They could learn about animation quickly, and produce simple products. Even so, I wonder how many with 512K Amigas would be satisfied with a movie limited to 5 pages?

I am also concerned that the animation files are much too large and should employ some technique for compression. Other techniques for manipulation of objects should be included, as well as a means for drawing polygons and the use of various brushes. Some form of tweening should be provided to allow a smoother transition from frame to frame. Instructional software must have a balance between ease of learning, educational apsects and a wealth of features. Talking Animator does emphasize the first two, but at the expense of features. In my opinion, this program must build on what is already present and add additional features to increase the level of interest.

Talking Animator $49.95

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7200 Hemlock Lane
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Mr. Dressup / Mr. Veggie

New PreSchool Learning Software from Kinderstreet

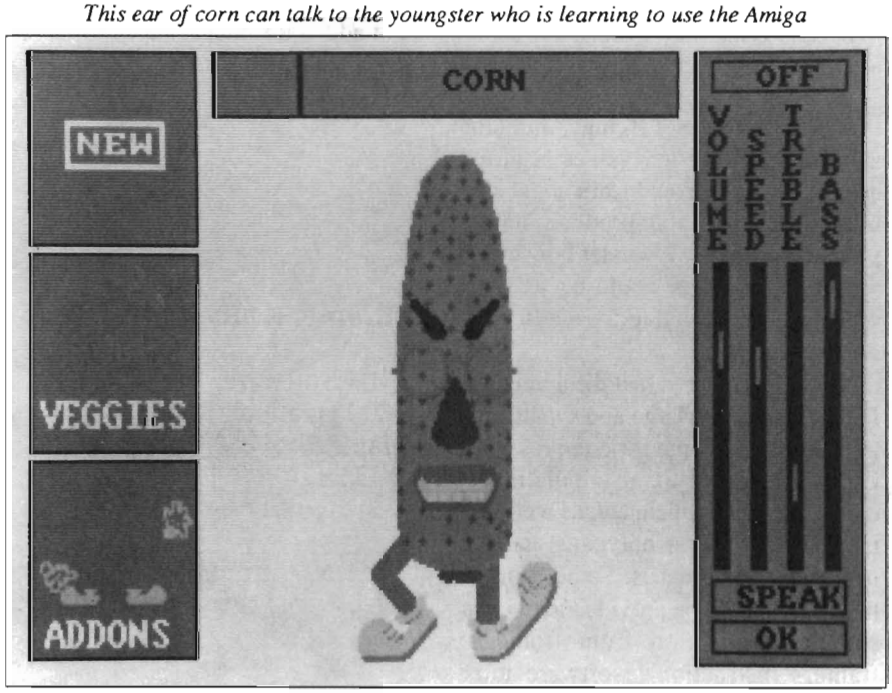
by Elaine White

As a parent and educator, I am always happy to see new software programs for children being introduced for the Amiga. At the November World of Commodore, Kinder Street Software introduced a group of four programs aimed at the very young child, specifically for age four and up.

The titles include Mr. Dressup, Mrs. Dressup, Mr. Fruits and Mr. Veggie. The educational aim of all four of these offerings is comfort with the computer. If you have a young child and would like him to become comfortable with menus, icons, the mouse, and getting around the screen of the Amiga, then at least one of these programs would be a good addition to your library. All four are designed to work exactly the same way and have essentially the same screens. Once a child learns how to run one, he knows how to run any one.

Mr. Dressup and Mrs. Dressup provide you with four animals and one person for which to choose articles of clothing. In the programs, the clothes are called "Addons." They include such things as underpants, undershirt, shirt, pants, socks, shoes, glasses and jacket. Mr. Veggie and Mr. Fruits give you the choice of five kinds of produce on which to put eyes, eyebrows, nose, lips, ears, glasses, arms and legs. There are five different styles of each Addon from which to choose. The child must move the pointer (using the mouse) to the icon for the style he likes, then use the left mouse button to select it. The child can also select a color icon, which calls up red, green and blue color sliders that he can use to change the colors of that Addon.

This ear of corn can talk to the youngster who is learning to use the Amiga

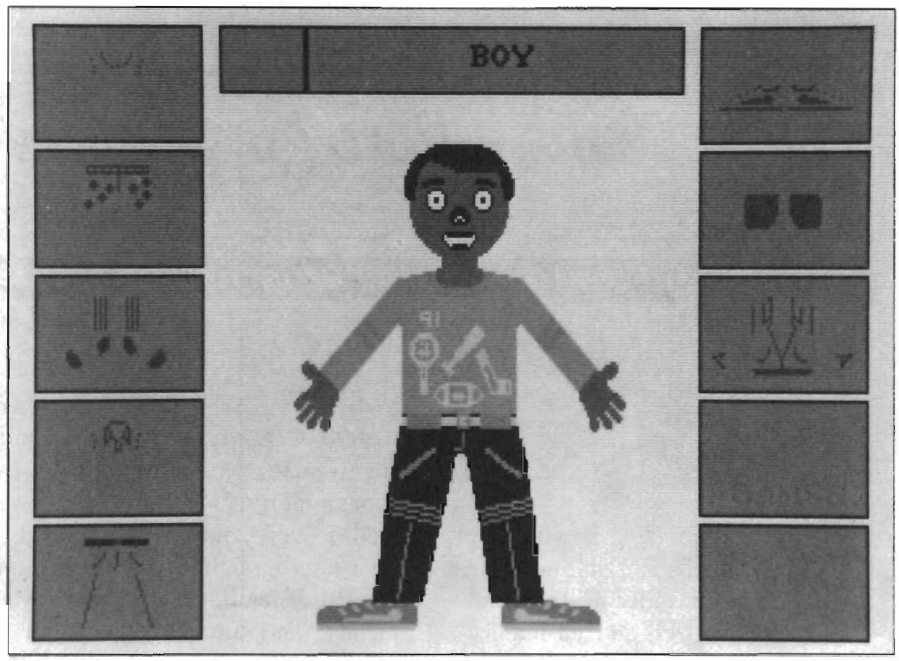


When the child has created a character that he likes, he can choose to print it. There are two print options. One option is to print the character as it is in full color. The other option is to print the character in outline form, which is then suitable for coloring. The outline form is nice and certainly a big plus for those who don't have access to a color printer.

The speech capabilities of the Amiga are used in these programs with varying amounts of success. Statements like "Please select a pair of pants for me" are real child pleasers. I am pleased to see that the "Do you want to exit" statement is not only displayed, but also spoken for the non-readers. The characters also introduce

themselves when selected. But the Amiga speech gets confusing for both adults and children at times, especially with words such as vegetable and orange, where a better attempt should have been made to reproduce human speech rather than to settle for the generalized pronunciation rules of the synthesized speech.

There are also two games included with each program. One is a character match game, the other an Addon match game. The game can be set up to either display or say an object, and then the child must click on the matching object. Since there are only five to eight objects in a game, these games did not hold the attention of either child that I tried them with for more than a minute or two.



Preschoolers enjoy choosing clothes for the people and animals in Mr. Dressup

The instruction manual that comes with each program is excellent (the programs themselves are very simple, so perhaps that makes it easier to produce such a simple and clear manual). The manual describes everything that the program can do, and includes diagrams of all the different possible screens.

There are some things that bother me in these programs which seem to be due to a lack of attention to detail by the creator. The only major flaw in these programs is one that a child might be unlikely to uncover, but it took me only a few minutes before I inadvertently discovered it. The help screens, like the instruction manual, are easy to read and contain all the information anyone might need. The screens are set up in menu fashion with words that are in boxes to select for more information. There are a set number of boxes on a couple of screens, but not all the boxes are used. If you select an empty box, you are "helped" out of the program, and into a software error. If this were to happen to a child, I think it would be very upsetting. This is something that should be easy to fix, but shows either the lack of attention to detail, or insufficient debugging by the creator. None of these problems are major, and I still recommend these programs, but I hope to see these things corrected in future versions.

I tested these offerings in the real world with a four year old that had no computer experience, and a seven year old with Amiga experience. The four year old liked Mr.Veggie, and learned how to do the very basic things relatively quickly. The seven year old liked the Dressup programs best. Her favorite part of all the programs was creating the different colors, and she was very interested in saving her creations. Neither child was very interested in the matching games part of the programs, however. Although the attitudes and opinions of two children do not constitute a psychological survey, I would say that these are good programs for young children. If you purchase one of these, I would recommend one of the Dressup programs, as I think it would appeal to a wider age range. Kinder Street plans to develop more software using the same user interface. They hope to address the need for software which will work within school curriculae by meeting recognized educational objectives. This would certainly be a positive development for children, and a move towards placing more Amigas in educational settings.

Overall, these are basic educational software programs for young children, and are a fun way to introduce your little ones to the Amiga. I look forward to seeing more from Kinder Street Software in the future.

Mr. Fruits, Mr. Dressup
$19.95 each

Kinder Street Software
P.O. Box 658
Cherry Hill, NJ 08003
(609) 273-8999

System Programmer's Guide

A Useful Guide to the Programming Intricacies of the Amiga

by Walter Steuber

The Amiga is a wonderful machine all right, but learning the nitty-gritty of how it works is a major intellectual challenge. An enormous help in meeting this challenge has been the educational series of soft-cover books by Abacus. The newly-released Volume 6, "Amiga System Programmer's Guide," adds 437 pages of technical detail to the continuing story. Blitter, Copper, disk drives, libraries and other elements of our marvelous system are explained in a way which enables an apprentice programmer to handle them at a system level. A couple dozen programs (mostly in assembly language, but some in C) back up the text as illustrations of how to communicate with system elements. (The programs are also available on disk, so that the reader can avoid both the labor of typing them in and the anguish of eliminating typos.)

The Amiga System Programmer's Guide (ASPG) is not for a beginning programmer. It is geared for someone who has already played around with the inner workings of a simpler computer, and who is conversant with both C and assembly language programming. A few of its explanations are directed specifically towards readers who have already threaded their way through the C64 system. The chips in the system (68000, CIA, Agnus, Denise, Paula) are given 36 pages of description---not enough information to make hardware modifications, but certainly enough to give a programmer the background needed to read and write directly to them. There are numerous small errors and typos in these hardware discussions, indicating to me that the authors are much more interested in the software aspects of the machine. They then proceed to spell out the coding needed for programs to write to (or read from) registers in the special chips. That is, they show the reader how to bypass the higher-level Amiga procedures and to deal directly with the chips at a machine level. Even if there were nothing else in the book, this section alone makes ASPG an invaluable contributor to understanding the machine.

ASPG teaches how to use the fifteen libraries that are built into the Amiga with many example programs in both C and assembler. (All examples are available on disk in both source and executable code.) Multitasking the Amiga has been explained in several other books, but in terms that have been tough to understand. ASPG presents a much clearer picture of this difficult subject. It explains very nicely how to use exec.library functions to establish a new task and make it cooperate with existing tasks. Amiga seems to be always reading something from a disk so, boring as he or she may find it, a system programmer has to get acquainted with the 33 functions held in the dos.library. ASPG backs up its listing of disk management functions with a section on disk layout and a tabulation of DOS error messages.

The final sixth of ASPG contains a few miscellaneous topics in system programming and subjects in which the authors have developed some special expertise.

Amiga System Programmer's Guide, in summary, is just right for a person who knows something about C and assembler programming, but who doesn't know the Amiga system. This person must be ready to spend a substantial amount of time with the keyboard and the book. Unfortunately, though, this book comes with some thorns. ASPG has more that its share of typos, ambiguities and omissions. It's a shame that these shortcomings exist in this otherwise informative manual on Amiga programming.

Systems Programmer's Guide $ 34.95
System Programmer's Disk $ 14.95

Abacus Software
5370 52nd Street SE
Grand Rapids, MI 49508
(800) 451-4319

Pro-Data *(continued from page 50)*

FIL uses labels to identify subroutines (rather than line numbers) and has its own compiler. Programs can be written using any text editor, and can be run compiled or uncompiled. The PDRdata disk contains source code for several example programs which can be used as templates for creating your own applications.

PROFIL supports user created menus. One of the sample programs contains a menu that can easily be modified for use with your own files. Although learning the PROFIL language is not necessary to access the powerful features of PDR, the ability to create powerful control programs adds significantly to the flexibility of this package.

Professional Data Retrieve, written by Data Becker of Dusseldorf, West Germany and Abacus of Grad Rapids, Michigan is a powerful, flexible, fast, and easy to use relational database management system. Although there are some weak areas in the documentation and one bug in the handling of the tab key, PDR can be used to create practical data files quickly and with a short learning curve. Relations between files are handled automatically, and data can easily be imported from, or exported to, other applications. Although IFF graphics can be included as fields within a record, these graphics are shown on a separate screen, and cannot be printed from within the program. The function keys can be assigned to commonly used actions, and a different assignment can exist for each file. Most actions in the program can be accessed by either mouse or keyboard and complex actions can be accomplished by using PROFIL, the PDR programming language. Although PDR is not copy protected in any way and has no trouble multitasking, you must have a minimum of one megabyte of memory available in order to run the program.

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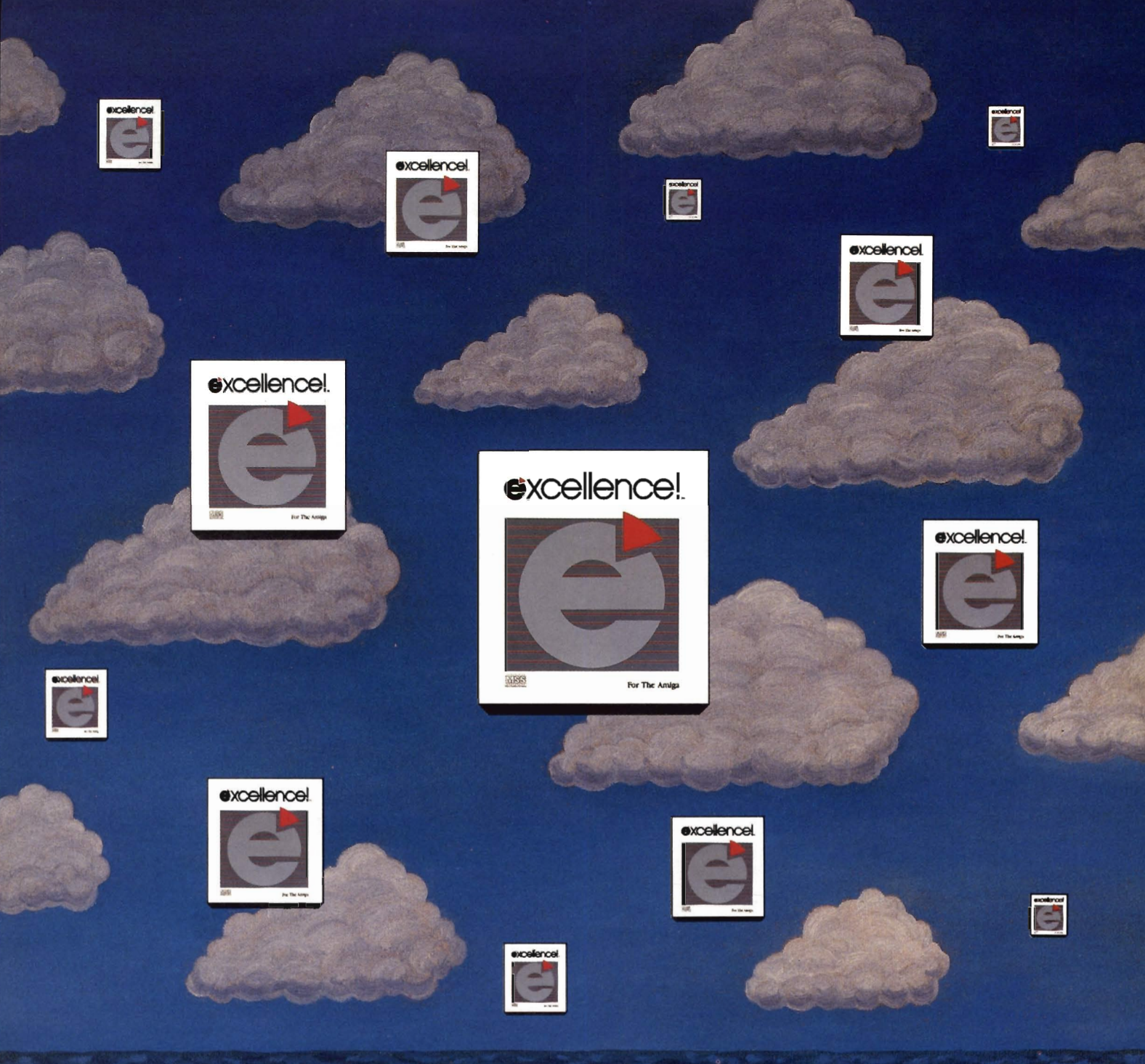

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The most powerful ray-trace program of its time. This easy-to-use package creates spectacular results. A flowchart-like menu takes you step by step when designing complicated scenes. Opticks also multitasks nicely while it creates its breathtaking images. Many unique features make Opticks the obvious choice!

Highlights of Opticks

- Unique surface mapping actually maps surfaces rather than colors.
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- 24 bit file save for output to external imaging devices (Slide recorders, hi-res graphic boards, etc.).
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- Import objects from VideoScape 3d™ or 3-demon™.
- Flexible controls allows the simulation of surfaces like plastic, metal, and glass.
- IFF HAM display and save.
- Stop and resume a ray-trace in progress.
- Render to disk in any screen (X-Y) resolution.
- and much, much more!

Room picture: Image designed and rendered on a 512 K Amiga. Displayed on a Targa™ system.

ATREDES BBS V1.1

Written specifically for Amiga, Atredes is the most advanced bulletin board ever written. Atredes has the power to use most standard drawing function over the modem (including IFF brush, freehand, line mode, box modes, floodfill, etc). Atredes is only limited by the size of your system. 255 access levels, full text parser, personal file transfers, and support for the new skypix™ protocal.

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- Compiled menus allow full customization of the system. Allows you to arrange Atredes into multiple isolated sub-systems. (NEW!)
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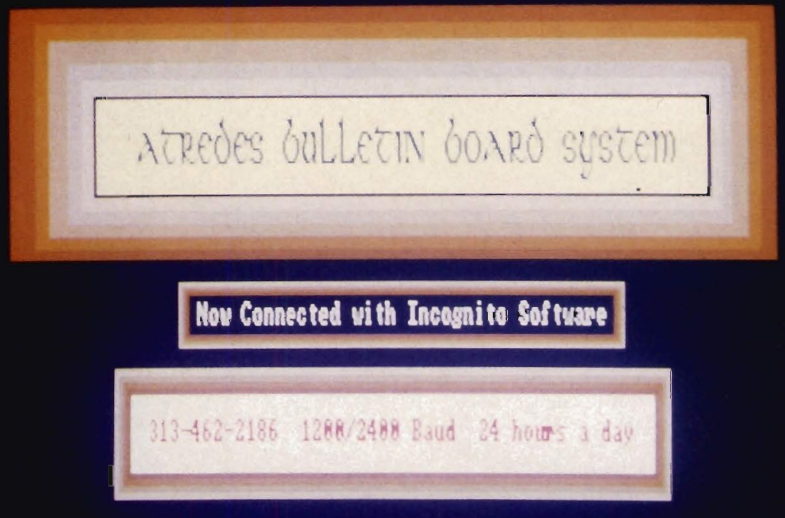
- Command Stacking. (NEW!)
- Full SkyPix gadgets. (NEW!)
- Includes SkyPaint, a fully integrated drawing package for designing SkyPix online graphics!
- Built-in terminal
- An Elsewhere menu selection allows control to be passed to other programs. (i.e. Online Games, Databases, etc.)
- You can create online questionnaires (Multiple choice). (NEW!)
- Remote control over most functions.



Actual graphics as viewed over the modem.

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Software

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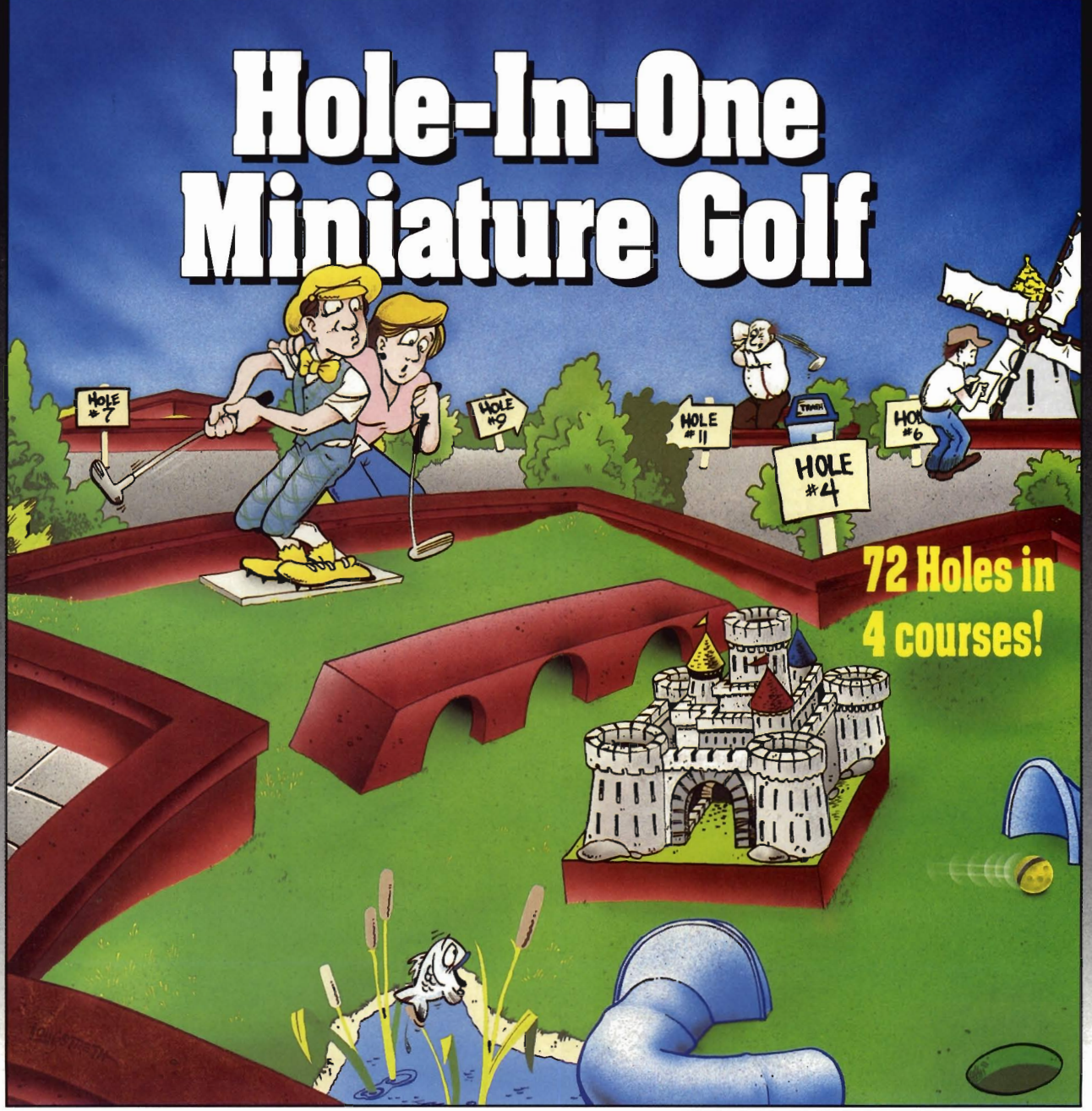
Hole-In-One Miniature Golf

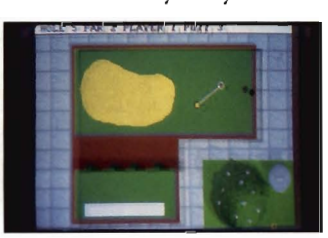


Hole-In-One Miniature Golf combines digitized sound, quality graphics and superior playability with realistic ball play to give you the best miniature golf game made!

Utilizing the mouse (point and click) interface, DigiTek Software has created a game that will challenge adults yet is so simple to play that children can play as easily as adults from the very first game. This game supports up to 4 players making it one of the few games that the entire family really can enjoy together.

Hole-In-One Miniature Golf is 72 Holes of pure fun in 4 separate courses that give you classic miniature golf as well as hilarious fantasy holes. The digitized sounds of the crowds, the ball, and special effects all add to the fun and realism.

Another revolutionary game from the company that brought you Vampire's Empire, Amegas, and Hollywood Poker — DigiTek Software!



Amiga versions shown here.

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