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JUNE/JULY 1990

VOLUME 2, NUMBER 2

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- ★ Latest Reviews
- ★ Full '90 Release List

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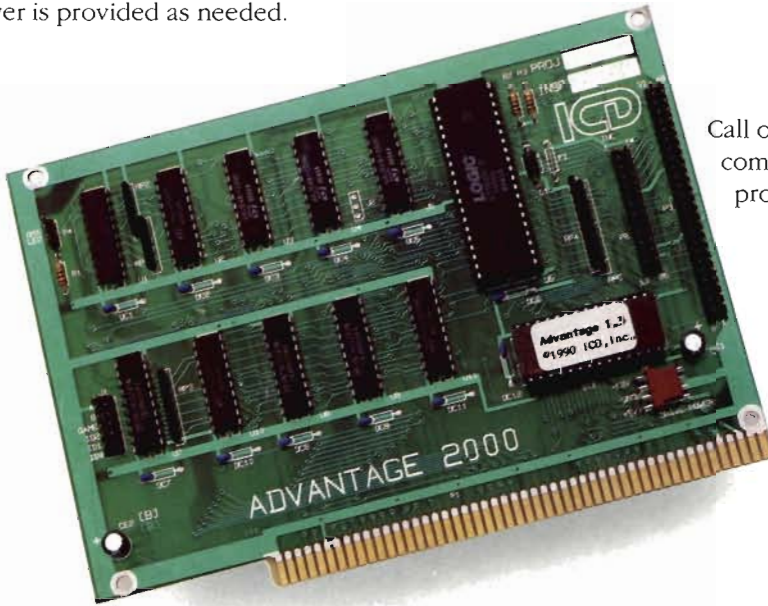


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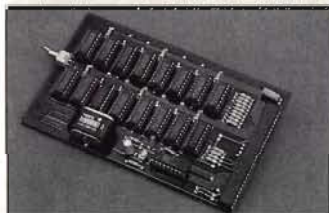
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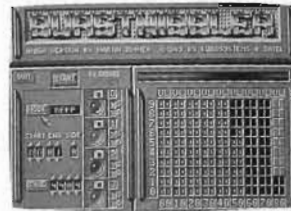
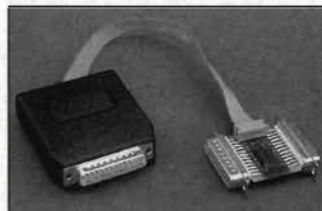
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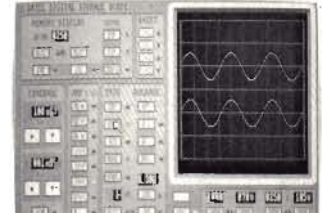
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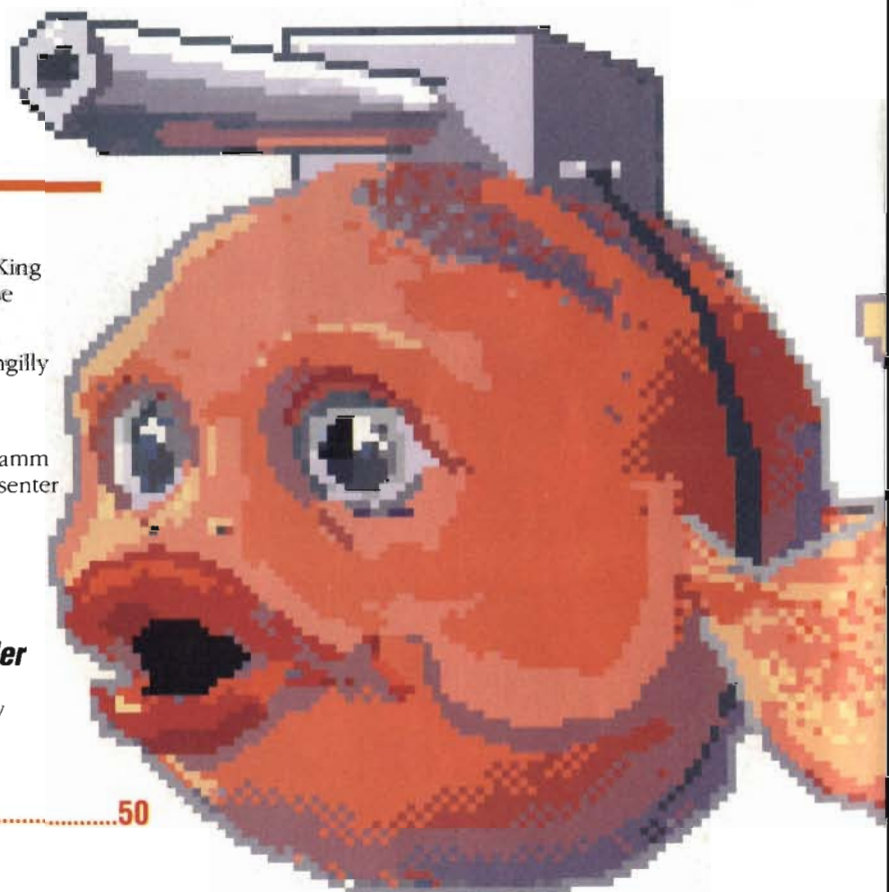
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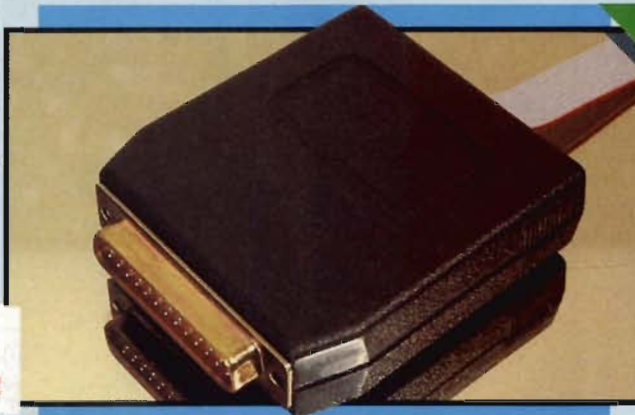
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Coming: TWO New Amiga Computers...

Commodore is about to take on the formidable marketing challenge of bringing out *two* hot new Amiga computers targeted for drastically different markets.

You'll see a full description of the specifications for the long-awaited Amiga 3000 in this issue's Alert Box report. Official launch date for this formidable Mac II rival was set for April 24. Priced at \$3,330 for 16MHz speed, or \$3,999 for 25MHz, the 3000 is the most affordable high-end video workstation ever made.

It also decisively overcomes most complaints about Amiga limitations for professional uses. The 3000 provides a high-resolution display without interlace flicker, as much as 2Mb of chip RAM and 16Mb of fast RAM on the motherboard, and true 32-bit data transfer.

CD-ROM

But the powerhouse 3000 is only the first half of 1990's Amiga releases. This June in Chicago at the Consumer Electronics Show, Commodore plans to unveil the ultimate electronic home-information appliance.

As described in off-the-record conversations by Commodore executives, this new machine is essentially a modified Amiga 2000 CPU box with a built-in CD-ROM player of the most widely accepted format. Included will be mass-storage CD-ROM software such as an interactive world atlas and a national phone directory. Yes, it also plays the distortion-free music of compact disk recordings.

Commodore is determinedly *not* marketing their CD-ROM as a super-duper Nintendo-killing 16-bit game console. But of course it could easily be that too, if high-quality CD-ROM entertainment software becomes available. No name and price have been set yet for this newest Commodore hardware. It is not a full-fledged computer as sold. However, upgrading would be simply a matter of plugging in an Amiga 2000 keyboard plus disk drives.

Third-Party Muscle

As if two new Amigas aren't enough, significant upgrade products — particularly in high-end video — are coming from a number of top developers. NewTek's \$1,595 Video Toaster, the complete special-effects board, is claimed to be finally in production and should hopefully be on sale by the time you read this. Gold Disk is demonstrating its ShowMaker, an easy point-and-click program for assembling video presentations from all Amiga sources. Active Circuits has been licensed to make an Amiga interface for Sony's 650Mb rewritable optical disks (\$4,995). ASDG's Art Department software will process magazine-quality 24-bit color separations. Digital Creations' DCTV digitizes and displays full-color NTSC video on the Amiga.

You'll be reading about all these 1990 developments and much more in AMIGA Plus, so stay tuned —

Nat Friedland

Nat Friedland
Editor, AMIGA Plus

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READER INPUT

Your letters to AMIGA Plus

Bridgeboard Trouble

I'm having trouble getting an A2088 Bridgeboard to work with my Amiga 1000. My hardware includes a Spirit Inboard 1.5Mb memory upgrade, Toolbox EEC 2121 interface box for Amiga 2000 cards, and the A2088D Bridgeboard with Janus Library 33.1 and Janus Handler 2.63.

The Bridgeboard appears to work and configure correctly. I can open the MS-DOS window and start a program. However, after I type in my first command, the MS-DOS window appears to freeze, and will not respond to further keystrokes. (The AmigaDOS window still responds.) Sometimes I can unfreeze it without rebooting the Bridgeboard if I close and reopen the window — but after doing this five or six times it becomes necessary to reboot the Bridgeboard.

Nelson Williams
APO NY

Here are some suggestions from Marion Deland, publisher of the Crossings newsletter for Bridgeboard users. (See listing in New Products.)

If the PC window comes up with just a cursor, but no prompt:

1. Check that you are using the correct program: PC Mono if Bridgeboard is set for monochrome (factory setting), PC Color if it's set for color.

2. Try the alternative RAM setting in PCPrefs — E0000 or D0000.

3. As a last resort, re-install the Bridgeboard software — several times if necessary.

If the PC window comes up with a prompt, for example a>, and freezes

only when you try to run a program:

If you're running in monochrome, check to see if you have set the program for CGA display. Use the "MODE CO80" command, run PC Color, then try the program again.

There are programs that clash with AMOUSE.COM, because they have their own mouse drivers. If you run AMOUSE.COM in your AUTOEXEC.BAT (the PC equivalent of the start-up-sequence), take it out and try again. — + EDITORS

What! Happened? Again

Michael Brown's review of **Who! What! When! Where!** is correct about the copy-protection scheme popping up more than once per session (AMIGA Plus #3). At first, everything was rosy, but to my dismay the word requesters started to pop up every 10 or 15 minutes.

Armando Cardenas
Camarillo, CA

According to Blue Ribbon Bakery President Melissa Jordan Grey, the over-active copy-protection is most likely due to improper installation. However, they are no longer selling Who! What! When! Where! in the copy-protected version. Also, Grey points out that the AMIGA Plus April/May 1990 review of Blue Ribbon Bakery's Bars&Pipes was mistaken in stating that it is impossible to do numerical MIDI editing. You can edit Bars&Pipes' MIDI data numerically, if you click on the Magnifying Glass icon in the Edit Window. — + EDITORS

PixelScript Price

PixelScript V1.1 sells for \$149, not the price reported on page 20 of the previous issue.

Southern Technologies Update

Southern Technologies, the large Dallas-based Amiga software distributor, has not shut down. It remains in business as Southern Technologies, a division of Newbeck Financial Corporation.

Newbeck bought the assets of Southern Technology Inc. (STI). Amiga developers owed money by STI have been sent a Notice stating that \$317,000 would be paid on estimated debts of \$975,000 in monthly installments over two years.

At the time that our February/March 1990 Alert Box report on Southern Technologies was written, the situation was highly confusing (even to our sources from major Amiga software companies who were directly involved). And STI's phones were not being answered when AMIGA Plus tried to contact them directly. Dealers and wholesalers can now reach Southern Technologies at (800) 647-7741.

ALERT BOX

Amiga 3000 Preview

Also shown: Workbench 2.0 and multi-media authoring software

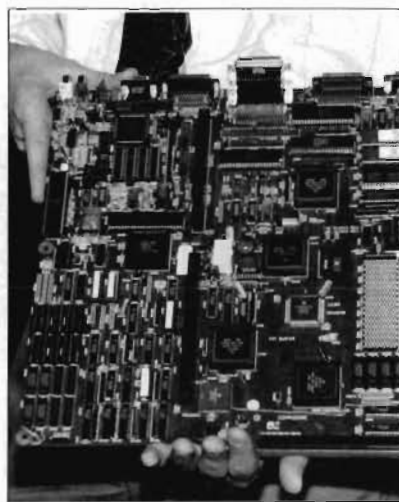
by Paul Miller

The Amiga 3000/16 with 2 Mb RAM and minimum 40 Mb hard-drive (and the bundled AmigaVision) will list for \$3,300. The 3000/25 will be \$3,999. Surprisingly compact, the new Amiga 3000's box has a footprint area similar to the old 1000's. Inside that beige plastic shell it packs a whole lot of power. Processing comes from no less than five new custom proprietary chips. In both the very aggressively priced 16 Mhz version (68030/68881 combo) and the 25 Mhz 030/882, the surface mounted processors are granted 32-bit wide data paths to both CHIP and FAST RAM, system ROMs, the integral SCSI dma controller, and the ZORRO III expansion bus (which is ZORRO II compatible). Speed freaks who balk at a mere 25 Mhz processor may take heart in the new 200 pin CPU expansion slot — CBM is thinking ahead to the 68040 (already in development), the 68050, 88000 RISC processors, and ultrafast RAM and data cache devices.

The three major VSLI (Very Large-Scale Integration) chips, Agnus, Denise, and Paula now reside on the 32-bit bus. While they remain 16-bit devices internally, all save Paula have been enhanced. Agnus now addresses up to 2 Mb of CHIP RAM (1 Mb of 100 ns RAM comes with it), which is thoughtfully socketed nearby. The data path is now 32-bits wide, doubling the speed at which non-blitter objects are rendered. Across the motherboard there are separate sockets for fast RAM — initially populated with another 1 Mb. With standard 1 megabit chips you can fill up to 4 Mb, with 4 megabit chips you'll make 16 (that's a total of 18 Mb on the mother-

board). Power users need not fear filling up the motherboard, as the 3000 can address memory space beyond a gigabyte.

The enhanced Denise supports new display modes including the native 640 by 480 31.5 KHz video display, standard 15.75 KHz NTSC and PAL modes with programmable selection of transparent color registers, a



Amiga 3000's mighty motherboard can hold as much as 18 megabytes of RAM.

special 1280 by 480 pixel 35 nanosecond resolution video mode, and pixel arrays up to 32 thousand by 32 thousand, effectively limited only by the outputs of video boards and monitors.

The Amiga 3000 also sports three brand new proprietary gate array chips, plus upgrades to two existing chips. The FAT GARY provides address coding and manages 32-bit bus access. FAT BUSTER is in charge of DMA arbitration for the motherboard, managing 16/32-bit addressing on the

ZORRO III bus and the CPU expansion slot. The chassis has four horizontal expansion slots, including 2 XT/AT capable, and an inline video slot. RAMSEY is a 32-bit RAM controller which supports static column ram, the 68030 burst mode, higher density DRAMs, and enables the coexistence of both 16 and 32-bit wide DRAM arrays. The Super DMAC is the built-in hard disk controller-on-a-chip, a variant of the 2091 SCSI controller, but with a 32-bit wide data path. AMBER implements the control logic for display enhancer circuitry.

No More Flicker

Combining both line and field buffers in video ram, the combination of AMBER and the display enhancer circuitry eliminates the flicker of an interlaced screen — up to now a major impediment to the Amiga's acceptance in the business market. Three video ports are now resident on the 3000 series — the familiar 23-pin RGB that supports 15.75 KHz NTSC and PAL, a new 9-pin 31.5 KHz VGA/Multiscan, and the internal video slot, which is now in-line with the ZORRO bus. The 9-pin slot will drive standard VGA or multiscan monitors, including CBM's handsome new monitor (\$799) with built-in adjustments for overscan control. CBM promises no interference to genlock devices, and compatibility to "virtually all" software applications.

In addition to de-interlacing, the device will distinguish and automatically display non-interlaced screens with scan-doubling to remove scan lines. One last bonus is a by-pass switch that disables the display en-

hancer and permits you to preview graphics created in de-interlaced display (like a hi-res Deluxe Paint screen) on your multiscan monitor in interlaced mode.

Workbench 2.0

The Amiga 3000's Kickstart ROMs are now 32-bit, and take up 512K. Nevertheless, Workbench 2.0 will work not only on 500's and 2000's but even on the 1000, by mapping the extra 256K of ROM code into expansion RAM.

While not all the rumored features have been completed (CG outline fonts, for example), this Workbench is distinctively new, with an elegant and professional look thanks to scalable and selectable bit-mapped screen fonts against gray scale screens with subtle bas-relief windows and icons. Workbench 2.0 will be compatible with most 1.3 software.

Commodore's quick preview did not provide hands-on access to Workbench 2.0. With only the brief demo and sketchy documentation to go on, I can mention some highlights — multiple preferences editors, allowing you to change the fonts in screens, windows, and icons, or your Workbench screen and window background patterns. You can now box and drag multiple items — even across windows. A new Startup drawer automatically executes any files inside (no more editing and assigning in your startup-sequence). Handy utilities include an enhanced Shell and Ed, along with ARexx, a backup utility, and "Commodities Exchange" for temporary reassignments between windows.

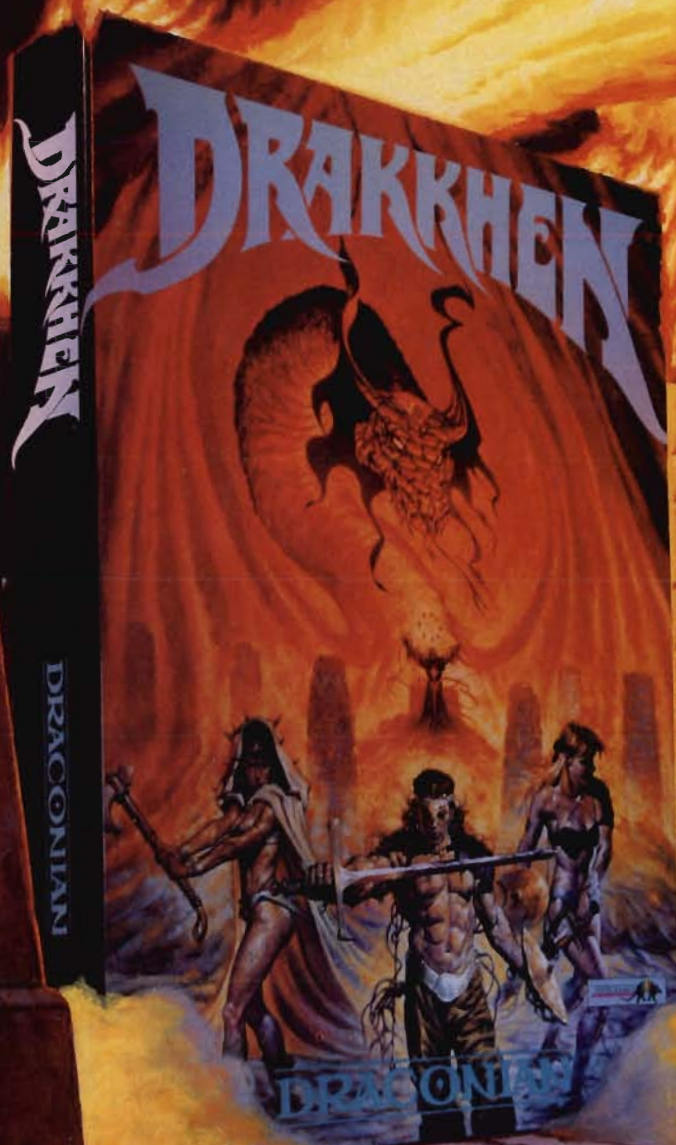
Bundled Bargain

Commodore also demonstrated AmigaVision, a multi-media authoring system. Irresistibly simple to use, it hardly needs a manual, and can combine graphics, text, animations, analog video (videodisc), and SMUS or 8SVX sounds. The clincher is a built-in, fully relational database (DBaseIII compatible.) ■

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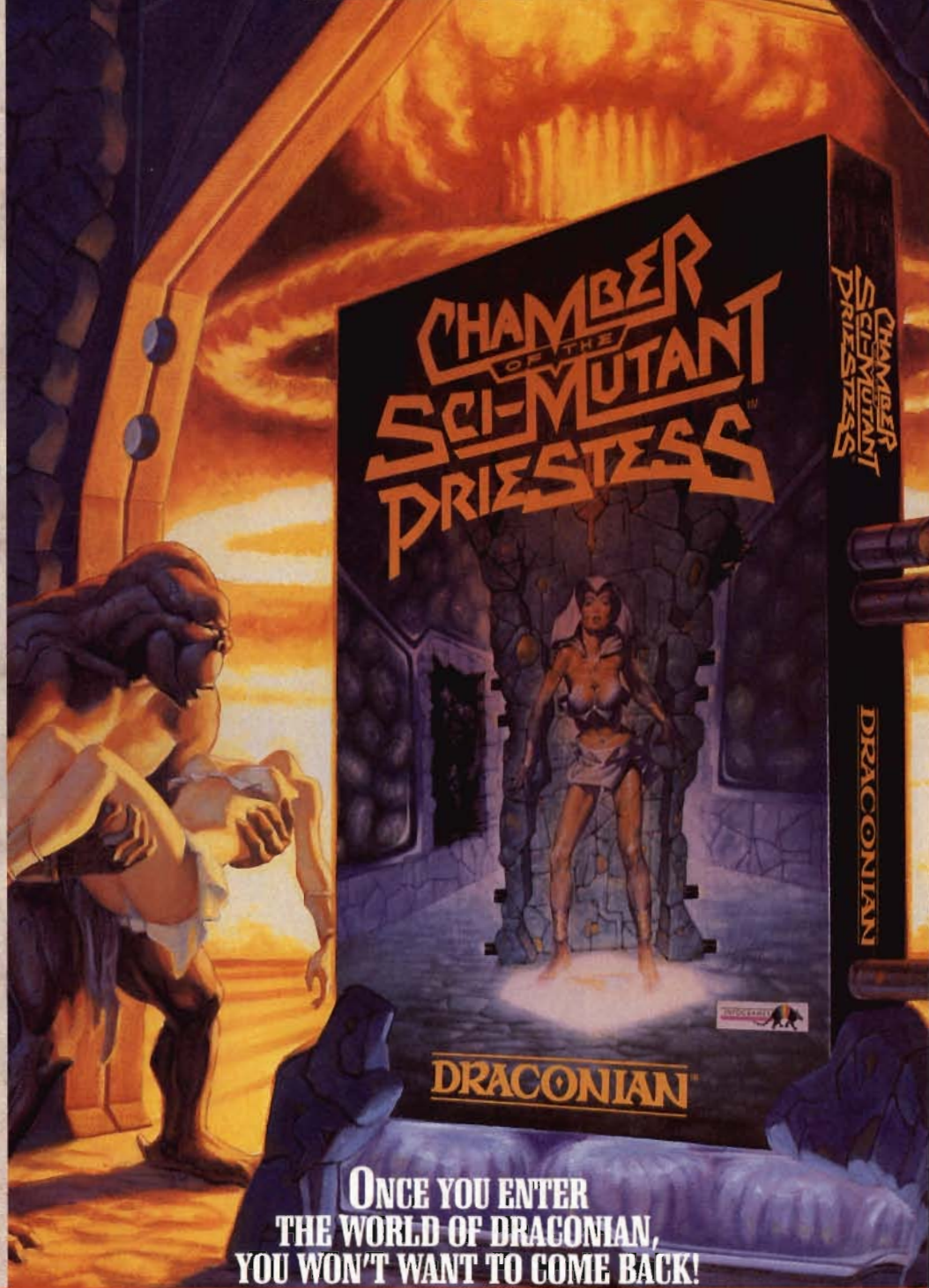
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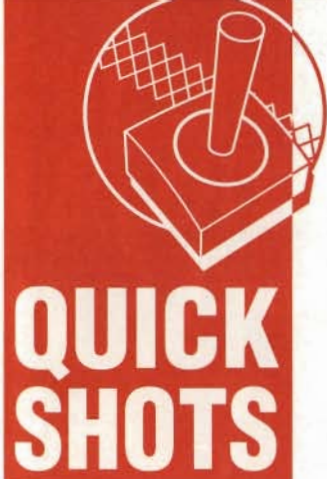
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QUICK SHOTS

Guy Wright's Game Review Column

Artura, Space Ace, Weird Dreams, Federation, Dr. Plummet's House of Flux, Romance of the Three Kingdoms, Day of the Viper, Batman

Artura

+++1/2

As **Artura**, son of Pendragon, you must free your kidnapped beloved by searching through four levels of mazes and gathering the 18 scattered fragments of the six Rune Stones. The deadly mazes are filled with traps, spiders, rats, warriors, and ghouls. But fortunately there are stores of food scattered about which will raise your strength and you have an endless supply of axes for throwing.

Despite the vaguely Arthurian scenario, **Artura** is essentially a maze game requiring some joystick proficiency. Joystick control is pretty good — when you want your character to do something he will, without a lot of delay or joystick finesse. There is a fair amount of jumping at the right moment, timing, and puzzle solving required to get past certain obstacles, but nothing terribly frustrating or difficult.



Artura

Another nice thing about the game is that many problems have more

than one solution. The graphics are very good and the action is well-paced. The only flaw in the game is that you could just sit in one room racking up millions of points as an endless stream of bad guys pours through in a set order. You won't win the game this way, but you could impress friends with your high scores.

If you enjoy maze games with lots of jumping, climbing, and puzzle solving, then **Artura** is pretty good.

Space Ace

++++

Earth is under attack from the evil commander Borf, with his insidious Infanto Ray that reduces people to infants. As the courageous hero **Space Ace**, you must stop Borf and rescue your lovely companion Kimberly. You must jump, fight, and run through 40 different scenes, sometimes as the powerful **Space Ace** and sometimes as his childhood persona Dexter.

Space Ace was Don Bluth's follow-up to *Dragon's Lair*, the popular laser-disk arcade game, and the graphics on the Amiga version are amazing. Each of the 40 sequences is a different, fast-paced animated puzzle. You must pick exactly the right moments to move left, right, duck, jump, or use your weapon in each scene, or your character dies graphically. You start the game with three lives (not nearly enough) and work your way through each scene. You can save your position at the end of any scene, so you

won't need to start from the beginning each time.

The graphics, animation and sound are the real highlights of **Space Ace**. These qualities alone set the game far ahead of many others — so far ahead that ReadySoft games like this deserve their own category. The scenes can be a little frustrating to work through, because timing is so critical. Many times you don't know if you made the wrong move at the wrong time until the end of the scene. Once you solve a scene it's usually simple to get through it again and again. Solve the whole game and there isn't much sense in going back. However, as you pass more and more dangers (all spectacular!) playing from the beginning starts to feel like watching an action cartoon.



Space Ace

The game comes on four disks. There are occasional delays, but ReadySoft's quick-loading techniques are impressive and the waits are not that bad. In fact, the scenes move so quickly you appreciate a few moments' rest between them. Even if

you master every scene, this stand-out program is still worth playing just to show it off or watch it again.

Federation

++++

After the 21st Century, Earth was in trouble, with space colonies splitting off and lawlessness becoming the order of the day. Things have only slightly improved since then, and your



Federation

mission is to go out there and make something of yourself. Your father left you a slightly beat-up (but still spaceworthy) ship with weapons, and a computer to help you out.

You start off with a little money, no cargo, and no place to go. You can sign on with the Federation of Free Traders (quasi-military at best) or just head out to seek your own fortune. The game boasts 32,768 galaxies and over 8 million planets that you can explore. Each system has a main planet with an orbiting space station where you can outfit your ship, or buy and sell goods, with prices depending on supply and demand. If you sign on with the Federation you will be given increasingly difficult missions, from simple message running to search-and-destroy.

Getting around the universe is a little tricky at first and landing on a planet requires flight-simulator skills. There are a lot of ship controls to learn (three of the main keys were mislabeled in the manual) but it doesn't take long to learn how to get where you are going. You can save

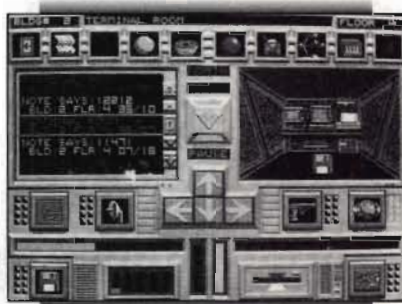
the game at any time.

Federation is a very good combination of space trading, combat and flight simulator with more than enough depth to keep you going for a long time. The graphics are very good, as in most Cinemaware games, but the game-play is much better than some. Perhaps the nicest thing about the game is the feeling of freedom. Since you can pretty much do as you please, plotting your own courses and even manipulating the market a bit, you get the sense that this universe is real rather than a construct — one of the key elements of any simulation.

Day of the Viper

++++

In the future a deadly Genetic Android Race has taken over a highly sensitive research base, and the government wants you to go in and reactivate the security computer. The program you need has been scattered



Day of the Viper

throughout the installation on 25 floppy disks. All you have to do is find the disks, find a disk controller chip to load the programs onto your hard disk, find the computer interface chip, find the main computer room, upload the program and reboot the main computer. No problem.

There are five buildings in the complex, each with five sub-floors, each with as many as 50 rooms. The entire complex is crawling with robots, traps, locked doors, corridors, elevators, power stations, plus many other items that might be of help — if you can figure out how to use them.

Rather than show up in person you send in the Viper, a remote-controlled attack android loaded with high-tech gadgets and weapons. One screen gives you a three-dimensional view of the corridor or room you are facing. By clicking on direction arrows you move through the complex.

Controlling the Viper takes a little practice, but soon you'll be zipping around the complex solving puzzles, fighting when you have to and exploring. As you go along, you can pick up new weapons, shields, energy crystals, chips, and miscellaneous items. This is essentially a maze game with a little bit of fighting and strategy, and you spend most of the time exploring a very large, detailed area. The graphics are pretty good, while the sound is fair. This game should keep you going for quite a while.

Batman

+++ 1/2

If you saw the movie you know the plot. The Joker is up to his old tricks and you, **Batman**, must stop him, battling through five levels of gameplay. First, at the Axis Chemical factory you must move through the various levels, fighting the Joker's henchmen with batarangs and your batrope. The second level sends you racing through the streets of Gotham City in the Batmobile, trying to get back to the Batcave. To solve level three you must find the three secret



Batman

ingredients that are in Smilex, the Joker's poisonous facial cream. On level four you pilot the flying batwing

around dozens of gas-filled balloons, trying to cut them free before they explode and kill the entire population. Level five takes you to the top of Gotham tower for the final confrontation with the Joker.

Essentially four arcade games and a puzzle, Batman requires a lot of joystick expertise and planning on almost every level. The graphics are very good, the action is well-paced and the problems are challenging. But if you aren't very good with a joystick, this game may be a little daunting. Finesse and timing are critical. While the connection with the movie is slightly stretched, this game comes a lot closer than others. The best thing about Batman is that they didn't sacrifice good gameplay for the sake of the title. Even if you didn't see the movie this game is a pretty good way to spend a few hours.

Weird Dreams

+++

In **Weird Dreams**, you become a patient on an operating table, fighting for your life. While the doctors and surgeons try to keep the body alive, you must journey through the patient's subconscious to salvage the pieces of his now-fragmented psyche.

Weird Dreams takes place in a disoriented mind, where fish fly through the sky, giant bees snatch cotton candy, flowers bite— and these are the relatively normal things. You begin the game slipping out of consciousness into the dream world, plunked into the middle of a giant cotton candy machine. You use the joystick or arrow keys to work your way through scene after scene, moving left or right, ducking, jumping, stabbing, or swatting with whatever weapons you might have — a stick, a fish, a ball, or whatever. Sometimes getting past an obstacle is just a matter of timing and sometimes you must solve a puzzle.

Weird Dreams has very nice graphics, minimal sounds and a clever plot. However, some problems detract from these good points. Joystick and key-

board response is frustratingly slow. With timing important in most of the scenes, you don't have much fine control over your character. If not for this major block, the game would be much more intriguing.

Dr. Plummet's House of Flux

+++

We aren't sure why you would want to, but to meet Dr. Plummet (world-renowned scoundrel, flim-flam artist, out-of-time hippie, genius, and inventor) all you have to do is hop into one of his custom-designed spaceships and head into the unknown realms in **Dr. Plummet's House of Flux**.

There are four missions, each with seven levels. Each level has a different screen, with strange objects, mazes, mountains, and other absurd obstacles, where you must rescue stranded astronauts while avoiding destruction of your own ship. You control the ship by rotating it clockwise or counterclockwise and using the thrusters. The ship has a small weapon, plus a force shield. But you only have a limited amount of fuel and a handful of lives — and aliens are shooting at you. Worst of all, physics and gravity don't always behave the way they should. Sometimes there is no gravity, sometimes heavy gravity, and sometimes gravity just goes a little bonkers. While you can use a joystick to maneuver your ship you might find you need the fine control the keyboard gives.

The game has very good graphics, few sounds, and interesting puzzles. If you liked any of the numerous lunar lander games of the early computer years, or the public domain game Grav Attack (basically the same thing minus a few extras) then you should like this one. Good graphics, lots of challenge, easy to learn, and pretty good fun. Nothing terrible, nothing fantastic, just a slightly better-than-average game.

Romance of the Three Kingdoms

++++

In 195 A.D. Emperor Dong Zhuo was assassinated, and China soon disintegrated into a number of small states run by governors and generals. Set in China between 189 and 215 A.D., **Romance of the Three Kingdoms** is a strategy game that lets you become any of 65 different generals in one of five scenarios. You control other generals, issue orders, and try to conquer your neighbors.

Going beyond most military strategy games, Three Kingdoms also involves a lot of governing and politics. In the main map, the country is divided into 15 regions and 58 states, and each state has its own attributes — flood probabilities, land quality, population, mineral deposits, etc. You must govern your territories as well as worry about hostile forces, and there are 20 different commands that you can give at the main screen such as move, send supplies, recruit troops, levy taxes, give gifts, develop the land, or try negotiations. Many commands bring up sub-menus of other commands. To keep the peasants from revolting you can give them gifts of rice or gold. If an enemy general is unhappy you might be able to persuade him to change loyalties (bringing all his troops with him). This is the part of the game that takes the most planning and time. It also gives the game its great sense of depth.

If you attack or are attacked, the map gives you a tactical view where you place your generals and supplies, terrain types, movement points, strength, numbers of troops, and a dozen other factors. The play system is fairly simple — move, attack, retreat, surrender, wait, or view — and there is not a lot of the careful strategic planning you find in most strategy-based war games. However, if you are patient and careful at the main map you may never have to fight on the tactical level.

There are a lot of things going on in Three Kingdoms, and the game is

fun to play once you get to a point where you don't have to look things up in the 100-page manual all the time. (There is an index.) The game's two weaknesses are the slow keyboard input used, and the abbreviated combat on the tactical level. All the

commands you issue are one or two digit numbers, with very little Amiga customization at all. The best thing about the game is that you should be able to spend a long, long time just exploring the situations, and enjoying the overall atmosphere of the era. ■

PIPE DREAM

+++¹/₂

Pipe Dream pits you against one of the most horrifying opponents imaginable — sewer sludge, or in this case, the dreaded *flooz*. As plumber in charge, you must pipe this gunk away as it flows from its source. You've got a well-filled pipe rack, with a variety of shapes (elbows, straights, and cross pieces) to place on the gridded playing field. Unfortunately, you can only take the bottom piece in your dispenser, whether it fits your pipeline or not.

A timer gives you a head start, but once the flooz starts moving you'll find yourself frantically fitting together whatever pieces come up. Using the joystick, mouse or keyboard, you position the cursor where you want the next piece to go, and then press the appropriate button to set the pipe in place. The joystick worked best for me, with keyboard next. Mouse control seemed to drag a bit.

To get to the next level you have to pipe the flooz through a specified number of pipe-lengths. As the levels get higher, so does the number of pieces you have to connect. The flooz flows faster and obstacles start to appear on the field. For every four levels you finish, you get a bonus screen and a password. The brightly colored backgrounds also change, some almost starkly utilitarian and others humorously fishy, with the vivid flooz going from fluorescent green to yellow to Pepto-Bismol pink.

Fortunately, a training mode with super-slow-flowing sludge lets you get started easily. For competitive play, **Pipe Dream** provides Basic One-Plumber and Expert One-Plumber modes. In Two-Player mode you must work with your opponent to keep the flooz moving, and at the same time try to get the flooz to go through more of your pieces than your opponent's.

The manual gives a lot of useful tips, but skimps on some subjects. **Pipe Dream** uses an exceptionally annoying code-wheel copy protection that lets you start playing even if you entered the wrong code. Just when you've gotten into your game, you'll be informed that you entered the wrong code, and must reboot and try again. There's no way to correct the code if you make a mistake while entering it, either. (The game does not multi-task.)

I also had occasional trouble with the joystick locking up after switching between control modes. The onscreen presentation is a bit quirky too, with a playing field set too low for the screen (PAL, perhaps?). No problems crop up while actually playing the game, but these small bugs make the programming seem a little shaky.

Overall, I found the game addictive enough to keep me returning time and again to try for a higher score or a higher level. Despite its excessive cuteness and minor glitches, I'd rate **Pipe Dream** as a classic strategy game, right up there with *Qix* and *Tetris*. Fortunately your attention's going to be focused on those pipes, not the pretty colors and relentlessly cheerful music. With all its color, and non-violent emphasis on planning and spatial perception, **Pipe Dream** makes an excellent game for children — and a challenging and addictive one for adults. — CAROLYN CUSHMAN

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512K, joystick required, copy-protected, no save game feature.

SPACE ACE \$59.95
ReadySoft, 30 Wertheim Court, Unit 2, Richmond Hill, Ontario, Canada, L4B 1B9. (416) 731-4175.
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FEDERATION \$49.95
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DR. PLUMMET'S HOUSE OF FLUX \$34.95
Microlusions, 17408 Chatsworth Street, Granada Hills, CA 91344. (800) 522-2041, California (818) 360-3715.
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ROMANCE OF THE THREE KINGDOMS \$69.95
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1Mb, keyboard, not copy-protected, save game feature, 1-8 players.

PIPE DREAM \$39.95
Lucasfilm (Electronic Arts, see Federation info.).

Deluxe Video III

Flashy desktop presentations are easier than ever

REVIEW BY STEVE KING

★★★★

This full-featured, mouse and menu driven, desktop video and presentation package has many new features that go beyond Deluxe Video II.

Deluxe Video III is a set of programs that combines graphics, music, digitized sounds and animations into multi-media presentations. While on its face it closely resembles Deluxe Video II, it has been almost completely rewritten with many new features. The software now supports all graphic modes, use of standard ANIM and ANIMbrush files, and control from the mouse, keyboard or joystick. Deluxe Video III can also create smooth scrolling backgrounds from superbitmap screens.

The heart of Deluxe Video III is DV-Maker — a program that creates a presentation called a "video." Each video has several hierarchical layers. Highest is the Video Script, which is a storyboard of the presentation containing several parallel tracks. The most important is the Video Track — a line running from left to right beneath a time bar. It has an associated requester which sets video parameters including timing, display defaults and certain control options (such as looping and user capability to interrupt the video and skip scenes).

The Video Track contains sequential video segments called scenes,

each having its own script. You add a scene to a track by dragging a scene icon from the top of the screen and placing it at the appropriate time spot on the Video Track line. Double-clicking on that scene opens another screen which displays all the tracks for that particular scene. Each track you add controls a different program function which can occur simultaneously with other functions.

Multi Tracks

Deluxe Video III supports 11 different tracks — Animation, ANIM-brush, Backdrop, Background, Box, Brush, Control, Device, Picture, Sound and Textline. The Video Script also supports a track which plays musical scores in the standard SMUS format. The sounds can be played through the Amiga using digitized instruments or through any external MIDI device.

Once you select the type of track you want to use and place it on the screen, you then drag an Effect Box icon from the top of the screen and place it on the track. This box has two arrows protruding from the bottom which rest on the track. The left-most represents when the effect is to start and the rightmost when it ends.

Each type of track has its own set of effects. Some are instantaneous, such as loading a sound or picture. Others such as picture transition effects can be adjusted and controlled. Still others have a fixed duration, such as playing a digitized sound. The basic

building block of the video is the picture track which loads and displays an IFF picture. This can be used as a backdrop against which other objects (called Parts) can be rendered. It has many different effects including fades, color cycling, scrolling and numerous definable wipes and slides. The Backdrop Track creates an on-the-fly solid colored background screen of user defined size, resolution and mode.

The Brush Track allows you to display a virtually unlimited number of brushes (generated by other paint programs) and define their movement on the screen. Using the Effect Requester which appears when you place the Effect Box on the track, you can position the brush either visually using the mouse or by typing in x-y coordinates. By adding another Effect Box, you can then move the brush both on and off the screen to create an animation effect. Deluxe Video III lets you attach brushes to other brushes so that when a particular brush moves, all of the attached brushes also automatically move relative to the master brush.

The ANIM Track plays an animation which has already been created by other programs and stored in standard IFF ANIM format. The ANIM-brush Track is more useful and takes an animated brush (created with Deluxe Paint III) and moves it on the screen in the same manner as a Brush. You can also alter the graphic

display options for each scene to activate double buffering for smoother (but slower) animations.

The Sound Track plays an IFF digitized sound. Its Effect Requester Box permits you to adjust its frequency and volume, determine how many times it will repeat, and whether it plays in mono or stereo. The Pan Effect smoothly moves the sound from one channel to the other.

The Textline Track provides an easy method for creating and placing lines of text on the screen using standard Amiga fonts located in any drawer or on any disk. The Effect Requester for this track provides many style and color options including shadowing. The Box Track creates a **solid color rectangle** containing an outline and optional **shadowing** which can then be used as a background or border for your text.

Control Choices

The Control Track, as its name implies, provides several ways to regulate the speed and sequence of your Video. The Keyto Effect causes the video to jump to another portion of the video depending upon which of eight different keys the user presses. The Joystick Effect reacts to the user moving the joystick or pressing the joystick button. The Wait Effect simply pauses the video for a given time. Finally, you also have the ability to jump to another scene when you click on a specific area of the screen with the mouse pointer.

The Device Track allows Deluxe Video III to communicate with and control external devices such as laser disk players and genlocks. While this track does not directly control these devices, it uses an ARExx compatible port to send messages to other programs which control the devices. Deluxe Video III, however, supplies only one driver for a Supergen genlock device.

Editing your video is simple. Deluxe Video III allows you to cut, copy, paste and move scenes. The Edit Menu also lets you copy a palette

from one track to another and turn animation sequences on and off. When you have completed your Video, or a scene, you may preview it by selecting the appropriate pull-down menu item. At this point, a control panel which functions much like a VCR remote control unit will appear at the bottom of your screen. By clicking on various buttons, you can skip scenes, rewind to the start of the Video, fast forward and reverse, and single step through the video.

Deluxe Video III has other powerful features worth noting. You can append different videos as well as transform sections of them into standard IFF ANIM files. You also have the ability to use a moving brush to

front of the scrolling background will produce the illusion of a car driving across the countryside.

More Programs

Deluxe Video III contains three other programs which facilitate the creation and playing of Videos. The first, DV-Mover, is a time-saving utility that moves or copies an entire Video to another disk. When you run DV-Mover, it searches for all the various parts of the Video and moves them as well as the script to a designated disk or directory. The second program is DVPlayer which, as its name implies, is a small program that merely plays your Videos. This program is in the public domain and can be distributed

**Deluxe Video III
flashy multiple
effects at work.**



wipe an underlying picture into view — an effect similar to wiping mist off of a window to reveal the view outside. This Pattern Effect also creates a full screen tiled background from a small brush image. You have the option of pre-loading specific parts into your Video, as well as discarding them at will to conserve memory. Finally, you can continuously horizontally scroll an oversized picture to create the illusion of movement. For instance, by scrolling a picture of a landscape, it will appear to move across the screen indefinitely. Placing a "bouncing" brush image of a car in

with your Videos. As in DV-Maker, the user has the option to display and use the Control Panel. The last program, InstantSlideShow, provides a simple way to display a series of IFF pictures by making a Video from a list of images which can then be used by either DV-Maker or DVPlayer.

Deluxe Video III comes with a 250-page spiral bound manual which is quite thorough and contains a good number of tutorials and examples. Each example is also saved as a Video on the disk. The package contains four non-copy protected disks with an Install program for hard disk drives.

UNHAPPY PRO USER

(The following viewpoint came in a letter from Roger Hand of Giant International Video, San Francisco. —+ EDITORS)

The Deluxe Video III interface is great. I hoped to use it immediately for a long video presentation. But I had to force myself back to using the script-based Director — because the end product created with DVideo III is just not up to par. Major problems for me are:

1. Choppy wipes in high-resolution (704x480).
2. No Dissolve and poor looking fades.
3. Can't Execute ANIMagic files.

I was going to ask for a refund, but the Deluxe Video III ability to define a brush path with the mouse is a handy utility that I probably will find indispensable sometime. So I'm left with a Deluxe Paint III enhancement that cost me more than the wonderful, very well thought-out DPaint III.

At least one megabyte of memory is required.

Summing Up

Deluxe Video III is a very powerful desktop video presentation package. As with any program of this nature, the more powerful it is, the more difficult it is to use. While the program is intuitively easy to comprehend, there will be many occasions when your Video will play incorrectly or stop because you didn't select the correct effects, or you failed to perform some necessary intermediate steps in the correct order. Luckily, Deluxe Video III has some excellent error routines which help you solve the problems quickly.

Some visual effects may prove disappointing, but you're likely to discover that this is due to limitations imposed by the Amiga rather than by the software. For example, it is almost impossible to achieve good spe-

cial effect transitions between two images with different color palettes. Moreover, moving transition effects involving memory intensive images (high resolution or HAM) are slow and often not as smooth as you would like. As with any Amiga video program, planning ahead is the key.

Deluxe Video III is not really for users looking for a true interactive hypermedia program. However, if you need a full-featured, mouse and menu driven, desktop video presentation package, Deluxe Video III with all its bells and whistles will certainly fit the bill. ■

Steve King is a computer professional who lives in the Philadelphia area and has written for many Amiga publications.

DELUXE VIDEO III \$149.95
Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. (415) 571-7171. Upgrade info: (800) 245-4525. Requires 1Mb.

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— Lou Wallace, *Amiga World*, May 1989

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Painting with F5

A Deluxe Paint technique you won't find in the manual

BY SYLVIA PENGILLY

Produce wonderful, almost shimmering textures, which are further enhanced by color cycling.

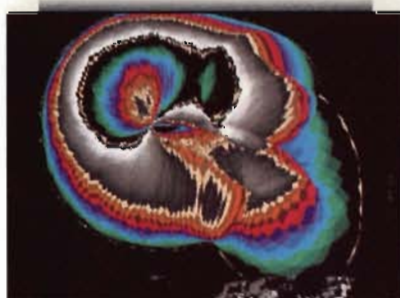
Although I'm a professional musician, I have long desired to create in the visual arts too. The Amiga and its amazing software such as Deluxe Paint (DPaint) let my creativity, which had been channeled only into music, also be expressed in visual terms.

As I worked with Electronic Arts' **Deluxe Paint III**, I found it to be a most powerful and complex program that demands considerable time investment to really understand all its potential. However, that time is well spent, and occasionally you even discover a technique not mentioned in the User's Manual. This is how I discovered the possibilities of DPaint's F5 key — the Shade selection in the Mode window.

I was experimenting with the F7 Cycle command, which uses the current brush shape to cycle through all the colors in the currently selected range as you draw. I selected the largest circular brush available, then made it even larger by pressing SHIFT H a few times until it was about the size of a quarter. I had created a palette that was all black, ex-

cept for the lowest four colors in the second column from the left, which were different shades of purple, and the top four colors of the furthest col-

oration to the segments of the spiral, which then cycled slowly and sensuously with the TAB key. Drawing faster caused the segments to be less



umn to the right, which were various shade of blue.

To create my Blue and Purple Spirals picture (*Figure 1*), first I selected the dotted freehand tool and began to draw. I found it worked best to move the brush rather slowly, producing a design reminiscent of a spiral. Drawing slowly seemed to give more defi-

ned and to cycle faster, which I did not like as well.

Last Hope

When I was satisfied with the Spirals graphic I saved it, but then I decided to experiment further. Using the same brush with Smear (F4) gave some interesting effects, but the re-

sulting image seemed too shattered. I didn't like the effect of F6 (Blend) either. So without much hope, I tried F5 (Shade) whose function has always been rather mysterious to me. Sometimes F5 does what the manual says it should do, and sometimes it doesn't! The results also seemed uninteresting within either of the two cycling ranges I had set up — black and purple, black and blue. However, using F5 with a color *outside* either cycling range produced a wonderful, almost shimmering texture, which was further enhanced by the Cycle function of the TAB key. You can see the results in Messed Up Spiral (Figure 2).

Now I was hot on the trail of uncovering the mysteries of F5. Still using the large circular brush and the dotted freehand tool, I borrowed a palette from a previously created graphic, pressed F5 and began to draw. To my surprise, the brush uncovered all the colors within the cy-

cling ranges, allowing me to create graphics such as Amoeba Shade (Figure 3). Next, I tried a palette spread from black to white with the same tools. The results reminded me of Kirlian photography, which is supposed to show the aura surrounding any living organism.

Kirlian Circles (Figure 4) uses both Symmetry and the Unfilled Circle tool. It's best to make very simple mouse movements, or your graphic may become overly complex. Remember also that you can abort the drawing operation by pressing the SPACEBAR, or you can halt the process, leaving the graphic in its current state, by pressing the ESC key.

Many more variants of the F5 technique are possible, as I'm sure that readers will enjoy discovering for themselves. A few things to remember are:

1. The F5 DPaint technique will only work with a color that is outside

any of the current cycling ranges.

2. Brush size is critical. I find I get the best results when using the large, circular brush described above.

3. All these F5 graphics are greatly enhanced by color cycling. ■

Sylvia Pengilly is Director of the Electronic Music Composition Studio at Loyola University in New Orleans.

DELUXE PAINT III \$149
Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. (415) 571-7171.

ON DISK

On this issue's AMIGA Plus Disk, you'll find find Sylvia Pengilly's F5 picture, Kirlian Red. To see this impressive DPaint III image, just double-click on the Kirlian Red icon in the disk's main window. Press TAB to pause the color cycling.



CHECKPOINT
TECHNOLOGIES

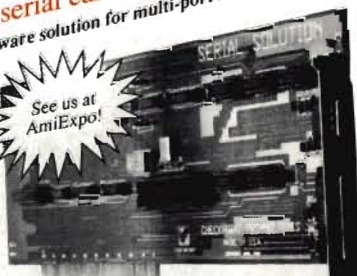
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CanDo

The new HyperCard heavyweight!

REVIEW BY ROB GRIFFITH

++++1/2

A very powerful, stable and user-friendly hypermedia program that could become the standard Amiga interactive database design tool.

I am not a programmer, but I often have ideas that I would like to express using standard Amiga graphics, sounds, menus and buttons. I've toyed with animation, and I like to compose Amiga music that my friends can simply listen to. But sometimes I want to create a work that my audience can interact with.

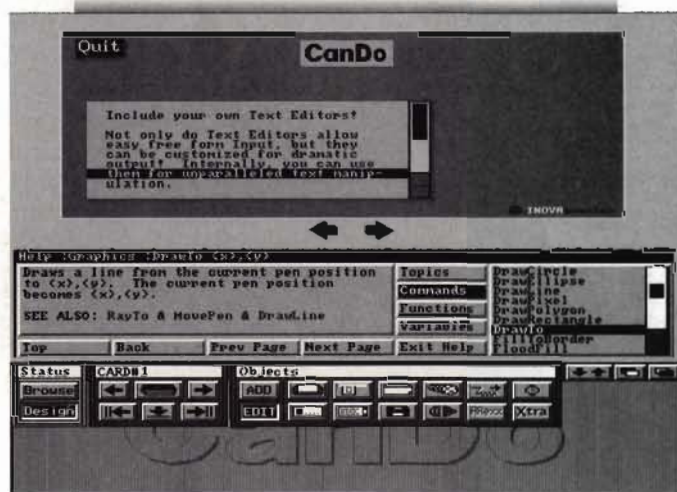
I am interested in foreign languages and I have ideas for creating interactive language instruction on my computer, but I simply don't have the programming skills to do it. Some of my friends enjoy making serious or entertaining interactive desktop presentations which include images and sound effects. And there are times when I want a customized central tool to control several Amiga programs. Several new programs have appeared on the market claiming these abilities. **CanDo** from INOVAtronics is the newest and perhaps strongest contender.

CanDo treats the Amiga screen as if it were one card in a deck. This card can contain various information

in the form of graphics and sounds. Using the Amiga mouse or keyboard, and at least 1Mb of memory, you can access this information or go directly to any other card in the deck.

You can create scripts with CanDo's powerful command language by simply clicking on a few buttons, and help for each command is just a few clicks away.

The Card Menu allows you to navigate to any card you choose in the deck. With the Misc. Menu you can temporarily remove the CanDo Main Control Panel from the screen.



Cards, Objects and Buttons

In CanDo's Browse mode, you can use your CanDo deck by clicking on navigation buttons. There is also an Edit Card Button which lets you add, delete, or edit cards.

In Design mode, you can create a new application or edit an old one. You begin designing your deck by using the Deck Menu in CanDo's Main Control Panel. Here you can start a new deck, or load one from memory.

Each card contains various Objects. An Object may be a button that you click with the mouse, a document, a window, a menu, an animation, etc. An Object can be added to a card or edited by clicking a button on the Objects Portion of the Main Control Panel. Probably the most commonly used object is the Button Object, so let's take a closer look.

If you enter Design mode, click on the Add button and then on the But-

tons button. A requester opens allowing you to add, delete, or edit a button. A button is just a "hit area" on the screen which, when clicked upon with the mouse cursor, causes the Amiga to perform an action. If you choose to add a new button, the Button Editor Requester will appear. This allows you to determine the size, position and style of the button.

Just as Button Objects can be defined with requesters, so can Windows, Timers, Sounds, and many other objects.

Simple Scripts

A card may contain various Objects, while an Object contains a Script. A script is a text file which gives instructions to the Amiga. For example, when you click on a particular Button Object, a script may be activated which tells the Amiga to type the words "Hello, World!" into a document on the screen. Actually, in the case of Button Objects, you can determine whether a click, a double-click, a release, or a drag of the mouse in the hit area activates the script.

The manual contains a list of the various script commands and what they do. But it really isn't necessary to understand this in order to create scripts, because the Script Editor contains several Editor Tool Buttons that allow you to add Scripting Commands without actually typing them in. Just clicking on one of these buttons adds scripting commands to the main portion of the Script Editor. For example, suppose you want to create a script that communicates with DOS. Let's say you want to open a new Shell. All you have to do is click on the DOS Editor Tool. A requester will appear allowing you to load a program file. You can find the Newshell command in the C: directory in this requester. If you load this, a script will appear which says `Dos "C:Run >Nil: <Nil: ""Workbench:c/NewShell""`. Without having to type or even understand this script, if you now exit from the Script Editor into the Main Control Panel and enter Browse

mode, and then click on the Button you just created, a new shell will open. (The C:Run and Nil: parts allow your CanDo application to continue to run even as you multi-task.)

Three features of the Script Editor make it particularly user-friendly. One is that if you press the HELP key, you will receive information about commands in your script. Second, if you type in something which has an illegal syntax, CanDo automatically generates an error message which tells you which line the error is on, and even moves the cursor to that line. Finally, if you try to run a script (by clicking on a button, for example), and your script is unworkable, the Script Editor automatically opens up with a message which tells you where the problem occurs and why.

If you want to get deeper into creating elaborate and unique applications, you will need to move beyond the Script Editor Tools. CanDo's scripting language lets you virtually write your own programs. This language is documented in the manual, and the commands are fairly logical and English-like. If you have any experience with programming, you will recognize the various elements which make up the CanDo scripting language. It consists of constants, variables, functions, expressions, strings, logical-flow commands, etc.

You can save and load your scripts as text files, which means you can create and modify scripts with an external text editor.

Another feature of the CanDo language is its ARexx interface. This allows you to control external ARexx programs from within CanDo, or you can run CanDo from an external ARexx script. (See *this issue's ARexx articles*. — + EDITORS)

Now that you have had an overview of the program, let me tell you about my experiences with it. I have been working with version 1.02 and I found it to be very stable for a new program. I had virtually no crashes or lockups, a welcome relief after my experience with early edi-

tions of UltraCard.

I also found the manual to be mostly comprehensible. Early tutorials help you get started.

I do have some criticisms, however. For one thing, although the manual is generally very clear and comprehensible, some script commands for the advanced user are poorly documented. As an example, there is a command called FileReadLine which reads a single line from a previously opened file into a variable. The question I had was, what happens after it reads the first line? Does it read that same line over and over? Or does it go to the next line? And when it runs out of lines, what does it do? Although there are some examples, they are very sketchy. Every command should return something — a string, a Boolean 1 or 0 (true or false), an error message, or something, but I couldn't always find this information in the manual.

Another area where I had problems was with the ARexx function. It was a real struggle to get this operating and the manual was not much help. But ultimately I did verify that CanDo is able to receive commands from an external ARexx script by creating a public message port, via a script command called ListenTo. (See *Dan Wolf's CLI Remote Commander article in this issue* — + EDITORS)

On the positive side, INOVAtronics supports a free CanDo BBS and also seems quite helpful to registered users via phone. I have to say that the CanDo users I have spoken with are quite enthusiastic about the product, and I agree with them. CanDo is a significant addition to Amiga software. It could emerge as a DPaint-like standard in the HyperCard category. ■

Rob Griffith specializes in Amiga MIDI and operating system software.

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Synthia Professional

Now: 16-bit sound editing with your Amiga

BY ROB GRIFFITH

++++

Synthia Professional lets Amiga musicians synthesize and edit high-quality 16-bit sounds — but learning to get the right sounds takes time. Not recommended for the inexperienced, impatient, or faint-hearted.

Increasingly, the Amiga needs to be able to communicate with 16-bit sound samplers. The Amiga can synthesize and even record sounds, but the sound chip will only generate 8-bit samples. Many other digital sound storage devices, such as CD's, samplers, and Digital Audio Tape players (DAT) now store sound in 16 bits, greatly improving the quality of the sound.

Synthia Professional allows the Amiga to synthesize and edit sounds with full 16-bit professional quality. Although the Amiga by itself can't play 16-bit sounds, with **Synthia Professional** the Amiga can be used for editing these sounds, which are then downloaded to a true 16-bit sampler.

Synthia Professional's functions can be accessed by using standard Amiga

menus. The file system loads or saves sounds in the most common formats on the Amiga — AudioIFF, 8SVX IFF, Soundscape, Sonix, and Raw. In the confusing world of incompatible Amiga sound file formats, **Synthia Professional** acts as a *very* handy conversion program. The most common Macintosh format, Sound Designer, is also supported — bridging a major

thia Pro's filing system also allows you to save the parameters you use to synthesize sounds.

Synthesis At Work

The synthesizer function is the most difficult to understand. **Synthia Professional** allows you to create your own original sounds by adjusting various parameters. A parameter could

In addition to drop-down menus, **Synthia Professional makes sound editing easier with its multiple window system that lets you keep your favorite sound-creating tools right at your fingertips.**



compatibility gap for serious Amiga computer musicians. Not only can sounds be saved and loaded, but Syn-

be a wave shape (such as a sine wave or a square wave), a number (which can be changed using the keyboard

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or the mouse), or a graphical display. Synthesis consists of adding electronic parameters together to create complex waveshapes. These shapes are then converted into sound. Basically, the more complex the waveshape, the more interesting the sound.

Synthia Professional takes advantage of several synthesis techniques. Subtractive synthesis, used by early synthesizers like the Moog, modifies a simple wave form with filters, oscillators, etc. Additive synthesis works by adding waves of various frequencies to each other to create complex shapes. In FM/PM synthesis, one wave modulates another to create a sound with a rich timbre, a method similar to that used in the Yamaha DX7 family of synths.

Synthia Professional can use all of these methods and more to create sounds. However, I must warn you that synthesis is a time-consuming study. Although the manual is very helpful, you can make some truly awful sounds with very little effort.

Once a sound's synthesizer parameters have been set, the effects function can be used to make it more interesting. There are effects which will modulate the pitch, volume, brightness, harmonic content, equalization, distortion level, amount of echo or reverb, and more. When all the synth and effects parameters are set, you must use the mouse to click on an icon called "Make". The Amiga then converts your parameters into a sound file. This process is CPU intensive, so it takes a minute...

MIDI Capabilities

Another powerful feature of Synthia Professional is the sample editing function. The editor displays a picture of the sound's waveform in a window. You can change the shape of the wave by drawing on it with the mouse, or alter part of the sound by marking a range. Once a range is marked with the mouse, you can cut, copy, paste, reverse, or edit it.

As if all this wasn't enough, Syn-

thia Professional also has powerful MIDI capabilities. Many 12-bit and 16-bit MIDI samplers support the Sample Dump Standard. Synthia makes use of this to allow you to dump sounds from your Amiga into your external MIDI sound module and vice-versa. Synthia can share sounds with the Korg DSS1, the Roland S330 and S550, the Akai S900, and the EPS sound modules. However, if you dump 16-bit sound into an Amiga, it can only play it as an 8-bit sound, so it will not sound as rich.

I had a few problems running Synthia Professional. Whenever I tried to boot it off my hard disk I got a message, "Audio device busy." I have to dismount the narrator.device to prevent this. Also, I was unable to load for editing some sounds I had recently brought back from Europe. Supposedly these sounds were in the Raw format, and in fact I was able to load these sounds into other sample-editing programs. The makers of Synthia Professional assured me that the program should load Raw format sounds. They were very helpful on the phone and asked me for a copy of my sounds so they could support them in a future upgrade.

All in all, I must say that this is a very powerful and useful program for the serious and experienced Amiga musician. However, if you don't have a 16-bit sampler, Synthia Professional might have more power than you need. Synthesizing interesting sounds requires a great deal of practice and patience. Although the manual is clear, with many helpful tutorials, don't expect to jump in and create a beautiful noise right away. Getting it right will take some time. ■

Rob Griffith has been playing music professionally before live audiences for over 15 years.



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A Far, Far Better Twang...

Synthia Strings

Article by Carolyn Cushman,
AMIGA Plus Associate Editor

Expand your library of MIDI instruments with the Plucked String module from Synthia, the high-performance digital synthesizer for the Amiga. Now that this highly recommended instrument creator has been upgraded to Synthia Professional by The Other Guys (publishers of Promise, the popular spelling checker from AMIGA Plus # 4), we obtained rights to part of the original Synthia for this issue's disk. As its name suggests, the Plucked String Design module recreates the effect of a plucked string, or the similar vibrations of percussion instruments. With the help of special effects, the possibilities are nearly endless. You can create drums, organs, bells, guitars — or new and original instruments never heard before.

Until the recent arrival of Synthia Professional (\$395), which is reviewed in this issue, **Synthia** was widely accepted by Amiga musicians as the ultimate IFF sound creation software. Formerly sold at \$99.99, Synthia is a high-performance digital synthesizer that generates IFF musical instrument sounds for use with all popular Amiga music, MIDI and video soundtrack programs, as well as sound digitizers. Synthia works with any Amiga software and hardware that supports the standard IFF sound format — including the full-featured Bars&Pipes demo on the *AMIGA Plus* April/May 1990 Disk.

Synthia provides no less than five different musical synthesis methods, plus an array of powerful special effects and players that works with each of the synthesizer modules. One of the most original parts of the program was the Plucked String synthesizer module, which creates hyper-realistic guitars and basses, plus many other unique and original percussive sounds.

Strings On Disk

Now you'll find this Plucked String synthesizer module on your *AMIGA Plus* Disk in the Synthia drawer. To use Synthia directly from the *AMIGA Plus* Disk, you'll need to double-click on the AssignSynthia icon (also in the drawer) to assign Synthia's support files to your system. However, it's best to copy the entire contents of the Synthia drawer onto another, freshly formatted disk named Synthia. This will give you extra room to save the instruments you create — and you won't need to use the AssignSynthia icon before starting the program.

The easiest way to make your new Synthia disk is to double-click on the *AMIGA Plus* Disk Synthia drawer, and then hold down the SHIFT key while you click once on every icon in the Synthia window, and drag them all to your new Synthia disk. Also, drag the Instruments drawer from the *AMIGA Plus* Disk main window to your new Synthia disk.

After you have Synthia correctly set up on your disk, simply double-click on the String icon. The Plucked String window will appear, full of sliders and boxes to play with. Click

on the Do Sound button at the top of the window to create Synthia's default sound, a basic rock guitar. To hear it, just press some letter keys on your keyboard, one at a time. (Make sure you have *both* your Amiga's audio outputs hooked up to your monitor.) Or, click on the Keyboard button to bring up an onscreen keyboard you can play with the mouse.

You can also load and play the sample instruments we've included on this month's *AMIGA Plus* disk. From Synthia, simply click on Load and select the Instruments drawer, then select one of the instruments that appears. Once the instrument loads, press a key on your keyboard to hear how it sounds.

If you then press Do Sound, the new sound will be mixed with your old sound (the default guitar), with the amount of new and old sound determined by the Mix In slider. When the slider is all the way to the left, you get only the old sound. With the slider to the right, only the new sound will be heard. (You'll find other "Mix" sliders as part of various Special Effects windows, as well.)

Synthia's sliders and buttons change your sounds in a multitude of ways — so many ways that it would be impossible to do more than touch on the main tools here. To really take advantage of the complex features provided, you'll need the Synthia manual, which you can order from The Other Guys along with the full program. (See special offer at the end of this article.) Full of simple tutorials and illustrations, the Synthia manual makes instrument creation much easier to learn and control. You'll create beautiful sounds rather than squawks, buzzes and hiccupping squeals.

Play Around

The best way to get started is to experiment. Most of the buttons require an existing sound to work on, so you need to Do Sound to get started. Then, whenever you make a change with the buttons or sliders, you'll need to click on Do Sound



again to hear the change you made. The only exceptions are the Hi-SPC button and the Repeat Coarse and Repeat Fine sliders, which act immediately on your sound.

Hi-SPC determines the number of Samples Per High Cycle — or the range of your instrument. (Each instrument can play five octaves out of a possible range of eleven.) High-pitched instruments require lower settings (2-4) while low-pitched instruments take the higher settings (8-16). You want to set the Hi-SPC *before* you start working on an instrument, since changing the settings will shift your notes up or down an octave, sometimes with odd effects.

A better way to shift your notes is to use the function keys F1 through

produce the distinctive tone of the instrument.

Synthia's waveform editors make it easy to alter a wave and add harmonics. Just click on the Waveform button near the top of the screen, and the Initial Waveform Design window will come up. Sliders at left let you add harmonics (the higher the slider, the louder the harmonic). Below, various buttons let you mathematically generate a waveform using these harmonics. (Try a sine wave with no harmonics for a pure, simple — even boring — tone.) If you like, you can actually draw your own waveform with the mouse.

This initial waveform becomes the basis of your new sound. The other various options act on this sound over

most instruments.

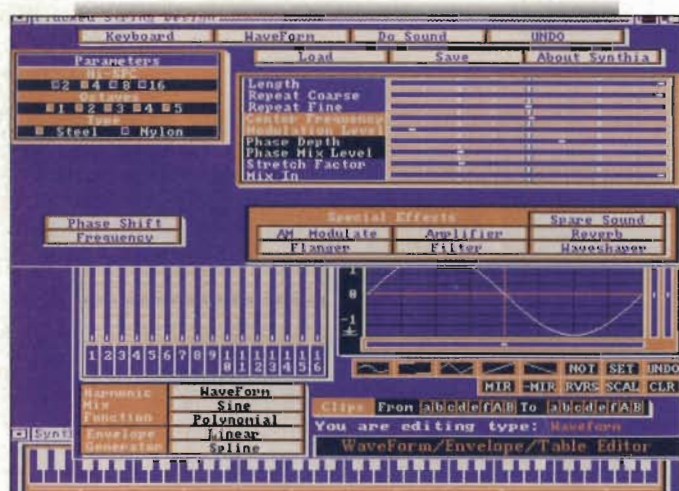
The Length slider controls how long your instrument will play a note. It also determines how much memory is needed to create the instrument. With Length to the left, the instrument will be small and will take up little memory. Positioning Length at right will produce instruments of maximum length — taking up about 32,000 bytes of memory each.

Sliders

IFF sounds have a finite length, so if you press a key and hold it down the note will eventually end. If you want to make the sound last longer, you must use a repeat loop, controlled by the Repeat Coarse and Repeat Fine sliders. Repeat Coarse determines the part of the sound to be repeated. With the slider all the way to the left, the whole sound will repeat over and over. If set to the far right, the instrument will play once only. In between, only part of the sound will repeat. Repeat Fine lets you fine tune the repeat loop, and remove any mild clicking. Fortunately, both Repeat options work immediately, so you don't have to click on Do Sound every time you make a fine adjustment.

The Center Frequency slider lets you adjust your instrument's pitch. The algorithm used to make this module's distinctive "plucked string" sounds occasionally generates instruments that are out of tune, so Center Frequency lets you put them back in pitch. Once in a while, you might want to make an instrument out of tune deliberately. Capturing that honky-tonk piano sound requires a little creative variation in pitch. For further pitch changes, the Frequency button at the left lets you alter the frequency envelope, changing the pitch over time to create vibrato or slurs. The Modulation Level slider then controls how much effect Frequency will have, with more effect the further right you go. For a vibrato effect, try setting it one-fourth from the left.

Phase shifting can add richness to your sounds, making it sound as if more than one instrument is playing. Phase Depth and Phase Mix Level work with the Phase Shift button to duplicate your sound, playing the copy with a slight delay behind the



Create your own distinctive instruments with the special effects, waveforms and mouse-played keyboard of Synthia Strings from The Other Guys Software — On Disk!

F7. The default is F3, which uses T on the Amiga keyboard as Middle C. The Octave boxes let you selectively change certain octaves within your instrument's range. Only the octaves marked with filled-in boxes will be changed when Do Sound is selected.

Making Waveforms

One of the most direct ways to manipulate sound is to alter its actual waveform. Sound travels in waves, and the distinct tones of different instruments come from the shape of the sound waves they produce. Most instruments actually produce complex waveforms which are a combination of simple sine waves. The dominant wave produces the pitch, and the secondary waves, called harmonics,

time — making it fade away, or repeat in cycles, or adding effects. Changing the sound over time is referred to as "changing the envelope," and several of the Special Effects at the bottom of the screen will present envelope editors that operate the same way the waveform editor does.

Synthia's Plucked String module actually uses two different algorithms to generate instruments, selected by choosing either Steel or Nylon. Steel approximates a steel string that vibrates with a gradual harmonic loss. With Nylon, the higher harmonics of the instrument deteriorate rapidly, causing the instrument to sound softer, like a guitar with nylon strings. Overall, Steel is recommended for

original sound. Phase Shift controls the actual delay through an envelope editor. Points low in the envelope have short delays, while the highest points represent the maximum delay allowed by the Phase Depth setting. (Left for minimum delay, right for maximum.) The Phase Mix Level determines how much of a sound and the second phase-shifted sound will actually be heard.

The Stretch Factor helps recreate the varying degrees of resonance you would get from solid objects and strings. With the slider to the left, there is little "stretch" and your notes will die away quickly — good for emulating bells or blocks. To the right, your notes will have plenty of aftertones, as would the strings of a bass guitar, for instance.

Special Effects

The Special Effects give you even more control over your instrument's sound, with still more sliders and envelope editors. To get a feel for what they do, restart the Plucked String module and Do Sound. Then open one of the Special Effect windows (such as Flanger, Filter or Waveshaper) and click on that window's Do Sound button to hear the default effect. Then click on Undo, close the window and try a different effect. You can have more than one Special Effect window open at once and work, for instance, with Amplifier and Reverb at the same time.

AM Modulate stands for Amplitude Modulation. This special effect controls the loudness of a sound over its duration. Using an envelope editor you create a graph that represents the sound's loudness over its duration. The lower a point is on the graph, the softer the sound. For a sound that starts loud then tapers off, the graph would show a line starting up at the top left, falling to the lower right. The default setting displays a line going repeatedly from top to bottom of the graph, showing that the volume goes up and down several times per second, for a fluctuating tremolo.

As the name suggests, the Amplifier controls volume, but it can also add distortion or "clipping" to your instruments — for added realism in small doses, or some interesting weirdness at larger settings. Clipping

comes from volumes too large for your computer to handle, which end up sounding fuzzy, as in a guitar with a fuzzbox.

Although the Amplifier includes an envelope editor, using it can easily result in even more distortion. Simple amplification of your sounds is best achieved using only the three sliders labeled Amplitude, Envelope Volume and Mix In. Amplitude controls volume, and with the slider all the

Add distortion to your instruments for added realism in small doses, or some interesting weirdness at larger settings.

way to the right the sound will be four times louder than the original sound. Envelope Volume controls the effect of the Amplifier Envelope, with the amount of change increasing as the slider moves right. (For simple amplification of a sound, this slider should be all the way to the *left*.) Mix In controls how the amplified sound will be mixed in proportion to the original sound — for full effect this slider should be all the way to the right.

If you want to add a little atmosphere, Reverb lets you add in the sort of reverberations you'd get in a concert hall. Four sliders control the echoes. Delay controls the amount of time between your original note and its echo. Feedback determines the number of echoes (and echoes of echoes). Filter lets you control how much of the higher frequencies are echoed, for added realism. (Echoes in the real world tend to lose the higher frequencies.) The Level slider then determines the overall loudness of the effect when mixed with your original sound.

Flanger & Filter

The Flanger operates much like the Phase Shift, reproducing and slowing a sound for a multi-instrument effect. (According to the Synthia manual, the term comes from

an old recording studio practice of using two tape-reel recorders to play two sounds simultaneously, slowing one by putting light pressure on the rim, or flange, of one reel.) Like phase distortion, a flanger works by putting a delay between two versions of the same sound. Synthia's Flanger works by subtracting the delayed sound from the undelayed sound.

Unlike the Phase Shift option, this Flanger lets you change the delay rapidly through the duration of the sound. The distortion produced by Flanger becomes drastic, changing constantly to produce the roar that is characteristic of flanging. You draw or generate your changing delay using the Flange Phase Envelope editor. A smoothly curving wave produces smoother effects, while envelopes that jump suddenly generate a lot of noise, and are usually unpleasant to the ear. The sliders then control the Level (how much of the delayed sound will be subtracted from the original) and Depth (the maximum delay) of the flanging.

The Filter helps remove or reduce certain undesired overtones in your sound. A sound can be composed of several harmonic overtones that give the sound its distinctive color, or spectrum. By using a filter, you can control the amplitude of the various overtones, creating special effects like a "wow" guitar or "wa-wa" trumpet. Filters can also remove some of the noise and static often found in digitized instruments, cleaning up the sound.

Actually using the Plucked String Filter really requires some knowledge of audio filters. (The manual with its illustrations helps.) Four types of filters are supported — low pass, band pass, high pass, and band limit filters. A band pass filter will only pass the center frequency, and will reduce or remove higher or lower frequencies (the "sidebands"). A low pass filter will pass the center frequency and all sidebands below it. A high pass filter will pass the center frequency and all sidebands above it. A band limit, or notch, filter works opposite to a band pass filter, removing the center frequency. Filter Tuning controls the range of the Center Frequency, and for normal use should be left Off — otherwise your notes may be sharp or flat.

Waveshaper

One of Synthia's most complex features, Waveshaper lets you alter the basic shape of your sound — after you've created its waveform. The other options act on that basic waveform, filtering or modifying it, but they don't actually change its shape. With Waveshaper, you can create non-harmonic overtones, as in brass instruments. Or you can recreate the attack of instruments. The effects of waveshaping, however, can be very hard to predict. One of its most simple uses is creating distortion. To see how this works, select Table in Waveshaper, and note the simple wave created by clicking on Sine. Close the table window, then click on Do Sound in the Waveshaper window. The default guitar should now have a nasal twang.

The Waveshaper uses a special conversion table to make the new sound from the old. The Waveshaper Transfer Table Editor lets you draw a function that defines the alterations your initial waveform will undergo. Though this editor looks like the

waveform and envelope editors, the effects of the graph you draw are much harder to visualize — you are actually defining a mathematical function that will be used to convert your waveform, and the angle of your graph may mean more than its height or depth. Among the functions provided for your use are Chebyshev Polynomials, which help predict what harmonics each polynomial will produce when used in this table.

Spare Sound lets you store a second sound to be added or subtracted from your current sound, with adjustable delay. Use the Copy to Spare button to copy your current sound into the Spare Sound area, or use Swap with Spare to swap the two sounds. You can even swap the current sound with nothing — but you'll hear silence when you press the keys. (The sound you hear at any time will always be the current sound. Do Sound will only affect your current sound, not the spare sound.) Under Operations, select "+ Spare Sound" to add the sounds, or "- Spare Sound" to subtract the Spare Sound from your current sound. ■

Synthia \$49.95 Special

As a special offer for AMIGA Plus readers, The Other Guys software is selling its remaining stock of complete Synthia packages for only \$49.95 each (plus \$5 shipping). Formerly selling for \$99.99, Synthia was widely acknowledged as the most powerful musical sound creation software available for the Amiga. Now for just \$49.95 plus \$5 shipping, you can get the entire original Synthia — including the manual and disks containing four additional digital synthesis modules (Additive, Subtractive, Interpolation and Percussion) plus a universal SMUSmusic file player.

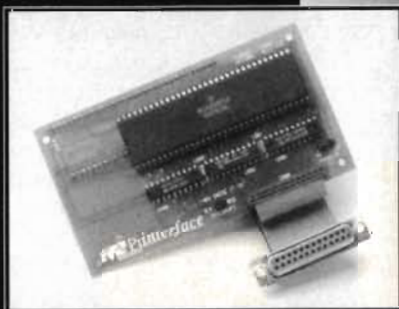
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A few of Spud's many expressions. With Performer, Spud can be made to wink, blink, nod or speak—just by pressing a key.

HIDDEN PERFORMER

Real-time animation secrets of Elan's hot-key graphics presenter

BY GENE HAMM

Like the Amiga, Elan Performer (reviewed in AMIGA Plus #4) suffers because not enough people know about all the wonderful things this super-slideshow software can do. Even the fine manual only hints at this software's hidden potential. With Performer's icon-controlled frame cutter and ANIMsplicer you can assemble animations from IFF images or break animations down into their IFF components. This alone would make Performer worth its modest \$59.95 price. But what really makes Performer a killer is that it lets you assign either IFF stills or ANIMs to different keys on the Amiga keyboard. This means you can create interactive animation in real-time.

I am an animator, and one of my biggest problems on the Amiga was making characters lip-sync to a dialogue track. One way is to digitize the audio and use a program like Photon Video Cel Animator to "read" the audio track, make an exposure sheet, animate to the audio and then try to fit it all on one disk. If you are trying to do more than a sentence, you run out of disk space or memory real fast.

But since I store my final animation on videotape, I don't worry about disk space. Videotape gives me two hours of storage.

I don't bother to store the dialogue on disk either. My dialogue track is on audio tape. I take the "Max Headroom" approach to dialogue.

I created a potato-head character called Spud. With Deluxe Paint III, I drew a series of mouth positions, eye blinks, and winks. These were drawn flat against a field of flesh color. Then I imported these images to Photon Paint where I picked them up as brushes and used the wrap-on and luminance tools to map them over an oval. A nodding "yes" was achieved by offsetting the X coordinates while keeping the same Y coordinates when picking up the brush. Shaking the head "no" was done the opposite way, keeping the X coordinates while offsetting the Y coordinates when picking up the brush.

So much for the drawing part. I then ran Spud through Performer. With the ANIMsplicer, I put together the drawing sequences for the "yes" and "no" nods. Next I assembled the blink animation and the wink.

Then I used Performer to assign the individual drawings and ANIMs to their own separate keys. Now by just pressing a key, I could make Spud wink, blink, nod "yes" or "no," or mouth any vowel or consonant sound.

Then I played the audio tape with Spud's dialogue and just practiced on the keyboard until I could make it look properly in sync. When I felt comfortable enough I videotaped the

result. Out of three or four takes, one was acceptable enough.

With this "Max Headroom" approach, any time I have close-up dialogue, I can use the same drawings over again with the performance creating the variety. And using a genlock, I can have Spud or any character conversing with a live actor on video.

The author demonstrates extreme facial contortions in a scene from the BugEye animation on this issue's disk.



Large Marge F/X

Special effects can also be achieved with Performer. On this issue's AMIGA Plus Disk, you'll find a short animation that approximates the Large Marge effect from "Pee Wee's Big Adventure." In the movie, this was where a real person suddenly metamorphosed into a grotesque bug-eyed, jaw-dropping, tongue-flapping cartoon take before your very eyes. Just double-click on the BugEye icon in the main window of the AMIGA Plus Disk to play the ANIM.

To create this effect, first videotape your actor doing the cartoon take, opening their mouth and eyes as wide as possible. Digitize the sequence with LIVE or another digitizer that grabs from videotape. Import the images into Deluxe Paint III and using the Pick function from the Color Palette, pick up colors from the digitized face and exaggerate the features

to cartoon extremes. When you have a good animated take that starts out normal and turns to grotesque absurdity, get out of DPaint III and move into Performer.

In the ANIMsplicer assemble the digitized metamorphosis into an ANIM, and then assign it to a key. On another key, assign a black field which will be dropped out when your genlock combines it with live video.

Genlock Performer over the video. Press the key with the dropout color on it. On your monitor you should only see the real actor. Have the actor do the "take" again in the same position as before. When the actor's take reaches as far as it can go, punch up the key with the digitized animation. Run it forward with the mouse and then backward, and punch up the dropout key again. The image should revert back to a normal actor.

Practice until it looks good enough to record on videotape. If you were creating just one effect, it could be done with DPaint III. Performer's unique strength comes in when you have several different animated effects that you can assign to separate keys and punch up at will. To make this work well, each animation should start with the same frame. That way each animation branches from the same starting picture and there won't

NEW IN PERFORMER 2.0

Now Performer 2.0 supports ARexx and can link with other programs that also support ARexx in order to add up to something more than the sum of all parts. Performer 2.0 tears down the Tower of Babel that kept programs from talking to each other. Now the best parts of software such as Digi-Paint 3, A-TALK III, CanDo, or Dr. T's music programs can be combined and controlled through Performer 2.0. It's as if you have one big super-program. And the controls are invisible to the viewer, since they happen off-screen.

Performer 2.0 supports NewTek's RGB format, so video applications are greatly expanded. And the splicing utilities are improved so you won't need to load all the frames in memory before playing your animation.

Coming up soon is Presenter, a whole line of specialized, but interlinkable tools for interactive audio-visual presentations. One tool supports MIDI and SMPTE, and can link with software such as Dr. T's SMPTE Box. This enables you to control images from a MIDI keyboard, triggering appropriate images or animations as you play a tune. With the SMPTE software, music or dialogue could be in perfect sync with the visuals.

Another tool will support touch screens, so you can create "hot" areas on the screen and use your finger instead of the mouse to interact with the Amiga. If you don't want to be that close to your Amiga, another Presenter tool will give you remote control over audio-visual presentations.

be any startling jumps to annoy the viewer.

Game Design

So far we have been discussing situations where the results of processing images through Performer wind up on videotape. But one of Performer's neatest tricks winds up on disk. By assigning IFF stills and ANIMs to various keys you can create your own graphic adventures on Performer.

Performer lets you take the "Max Headroom" approach to dialogue in your animation.

Let's say you wanted to create a simple Trivia multiple-choice question-and-answer game, where you lose as soon as you get one answer wrong. In DPaint III, create a few sets of question and answers. Each set consists of one question screen and four answer screens. On the question screen, show the question followed by the four answers — a, b, c, or d. Each letter refers to the actual Amiga key which stores the answer. On three of the answer keys, display the message "Wrong! Game Over!" On one of the keys display the message "Right! Next question!"

After the artwork is done, import it to Performer. Assign the first set to the keyboard, with the question on the Q key and the a,b,c, and d answers on their appropriate letter keys. This layout of keys is what Performer calls an environment. Save this environment, so anytime the game is loaded this layout will automatically appear. A whole environment can be hidden on one key, so the correct an-

swer key can hold the next question and its answers, and so on until your Amiga runs out of memory.

The Trivia game used IFF still images, but you could make an animated game of chance by creating a spinner in DPaint III. A spinner would be a pie chart divided into 12 pieces. Animate a 12-frame cycle. In each frame highlight the next frame over so you get the effect of the highlight rotating around the pie chart. On each slice is displayed a key for the player to press next. Import this ANIM into Performer and assign it to one key. When the player presses the key with the spinner on it, the object is to stop the spinner on the frame the player wants. To stop the animation the player can press the RIGHT ARROW key or the left mouse button. To get the spinner going again the player presses the RETURN key. With this system you can play a computer equivalent of board games.

Using the same technique as the spinner, you could create games in the genre of Dragon's Lair. In that game the object was to stop the animation at exactly the right point, or else you lost the game. Let's say you created a short piece of animation of your hero trying to jump over a pit. In the lower right-hand corner of each frame, you'd display a different key. The player stops the animation with the RIGHT ARROW key, looks down in the corner for the key display, finds it on the keyboard and presses it, presses the RETURN key to start the animation again, and sees an animation of the hero either making it across or falling into the pit. The key with the animation of the successful crossing would hide another environment of the hero moving on to the next cliffhanger. ■

Gene Hamm is an Amiga animation artist from Petaluma in Northern California.

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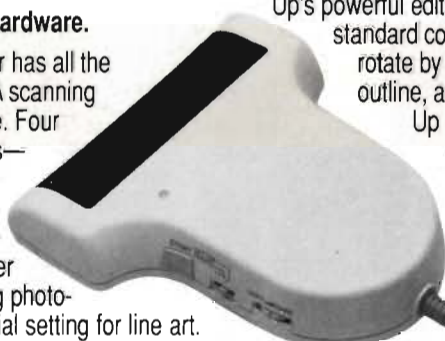


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OVER 60

New Games

Game of Harmony, Nuclear War, 688 Attack Sub, Genghis Khan, Dragon's Lair II, and more...

By Carolyn Cushman, AMIGA Plus Associate Editor

Data East Foursome

Data East's new Draconian line brings two animated fantasy role-playing adventures to the Amiga. In **Drakkhen** (\$59.95), your brave group of adventurers must find and resurrect the elu-

Untouchables (\$44.95) pits players against Al Capone and the mob.

Data East, 1850 Little Orchard Street, San Jose, CA 95125. (408) 286-7080.



THIRD COURIER delivers spy thrills in pre-Glasnost Berlin.

sive primordial dragon and so restore magic to the universe. In **Chamber of the Sci-Mutant Priestess** (\$49.95) you must rescue your lady love from the temple of the evil Protozorq.

For a slightly different sort of fantasy role-playing, armchair quarterbacks can take on **ABC's Monday Night Football** (\$49.95), the first of Data East's MVP Sports titles for the Amiga. Play offense and defense against the computer or another player — and hear Frank Gifford making the call on your key plays.

Continuing the Data East line of hot movie recreations, **The**

Accolade — Land, Air and Sea

Take to the air in **Strike Aces: International Bombing Competition** (\$49.95), a recreation of the 1984 competition between NATO and Warsaw Pact fliers that puts you in the pilot's seat of six accurate strike aircraft, including a Soviet MIG. Or make a splash in **Heat Wave: Offshore Superboat Racing** (\$44.95), a high-speed simulation of powerboat racing in Florida. For dry-land driving thrills, the **European Challenge** scenery disk (\$21.95) adds six

countries to **The Duel: Test Drive II**.

Fans of non-motorized sports can test their basketball skills with **Fast Break** (\$44.95), a simulation featuring three-on-three, full-court action with offensive and defensive pro-style plays. For owners of Jack Nicklaus' Greatest 18 Holes of Major Championship Golf, the new accessory disk **Jack Nicklaus Presents the International Course Disk** (\$21.95) offers the opportunity to play on precise

Game of Harmony (\$44.95) rewards players for *not* blowing things up as they use a spinning sphere to maneuver multi-colored orbs around obstacles and mazes. For two players, there's the Harmonic Convergence, a mode in which players work together to free the game screen of orbs.

Accolade, 550 South Winchester Blvd., Suite 200, San Jose, CA 95128. (408) 296-8400.

Cinemaware's WINGS is the easiest-flying combat simulator.



simulations of three Nicklaus-designed championship courses in Australia, Japan and England.

A role-playing spy thriller, **The Third Courier** (\$49.95) takes you to the city of Berlin on a vital mission. For added realism, you can tailor your own character's traits. A strategy arcade game for the new age, **The**

Jigsaw Puzzlemania

You won't lose any of the pieces with these puzzles — **Jigsaw Puzzlemania** presents over a dozen puzzles, cut randomly into traditional jigsaw shapes for ever-changing challenges. You can even load in your own art and sound effects for personalized play.



\$29.95. Artworx, 1844 Penfield Road, Penfield, NY 14526. (716) 385-6120, (800) 828-6573.

Typhoon Thompson

Save a kidnapped baby from troublesome Sea Sprites in Broderbund's **Typhoon Thompson** (\$34.95), a funny, fast-paced game that requires lightning reflexes and smart thinking as you pilot your jet sled over (and under) the surface of this water-covered planet, trying to outwit those pesky sprites.

\$34.95, 1 MB required for enhanced stereo sound. Broderbund, 17 Paul Drive, San



Rafael, CA 94903. (415) 492-3200, (800) 521-6263.

Tunnels of Armageddon

Jockey your rocket through 20 stages of twisty, trap-filled **Tunnels of Armageddon** in this mind-numbing race to save the world. If you manage to complete the game, you can randomize the tunnel configuration to create whole new challenges.

\$39.95. California Dreams, 780 Montague Expressway, #403,

San Jose, CA 95131. (408) 435-1445.

Stik-Gripper

Give your joystick the arcade feel with **Stik-Gripper**, an all-steel device designed to clamp your joystick solidly to your tabletop. Stik-Gripper allows one-handed joystick operation, excellent for games requiring both keyboard and joystick control — especially flight simulators.

\$18.95. Duggan DeZign Inc., 300 Quaker Lane, Suite #7, Warwick, RI 02886. (800) 843-1223 (orders), (401) 826-2961.

Cinemaware

Relive the glory of the WWI flying aces in **Wings**, an interactive movie recreation that actually incorporates a combat flight simulator — one that will put novice flyers in the air without endless hours of practice. (Price not set at press time.)

Expanding their screen horizons to television, Cinemaware presents a lineup of all-pro

TV SPORTS BASKETBALL is full-court, full-team, and full-league.

sports that let you both coach and play. **T.V. Sports: Football** includes a 28-team league, a 16-game season, and post-season playoffs. **T.V. Sports: Basketball** features full-court, five-on-five basketball with a roster of 12 players to choose from for each of 28 teams. **T.V. Sports: Baseball** includes a 26-team league, a variable length season, different levels of difficulty, instant replay, an All-Star game, and more.

\$49.95 each. Distributed by

Electronic Arts, 1810 Gateway Drive, San Mateo, CA 94404. (800) 245-4525.

Champions of Krynn, Dungeon Masters Assistant

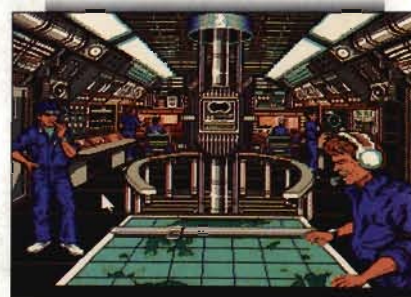
For authentic Advanced Dungeons & Dragons fantasy role-playing thrills, Strategic Simulations, Inc. presents **Champions of Krynn** (\$49.95), an adventure set in the Dragonlance game world. For those who play AD&D games off the computer as well as on, **Dungeon Masters Assistant, Volume 1:**

Electronic Arts, 1810 Gateway Drive, San Mateo, CA 94404. (800) 245-4525.

Nuclear War, Might and Magic II

Based loosely on the popular card game, **Nuclear War** (\$49.95) from New World Computing combines humor, strategy and action in a contest for global supremacy that involves such wide-ranging factors as nuclear strikes, propaganda attacks and even space aliens. Also from New World, **Might and Magic II: Gates to Another World**

688 ATTACK SUB plunges you into ultra-realistic underwater war.



Encounters (\$29.95) provides a handy database of over 1,000 encounters and over 1,300 monsters and characters. **Dungeon Masters** can easily modify monsters or add their own.

SSI distributed by Electronic Arts, 1810 Gateway Drive, San Mateo, CA 94404. (800) 245-4525.

(\$59.95) is a fantasy role-playing game featuring a high-level combat system and animated 3-D graphics.

New World distributed by Electronic Arts, 1810 Gateway Drive, San Mateo, CA 94404. (800) 245-4525.

The Fool's Errand, Aquanaut

From Miles Computing, **The Fool's Errand** (\$49.95) tells an epic story of a fool in search of wisdom, a story intertwined with over 80 puzzles of logic, graphics, words, and more. **Aquanaut** (\$39.95) sends you on an undersea investigation with three levels of strategy and arcade action, including an undersea city of merpeople.

Miles distributed by Electronic Arts, 1810 Gateway Drive, San Mateo, CA 94404. (800) 245-4525.

Altered Beast, Turbo Out Run

From Sega come two new hot arcade game conversions. As the **Altered Beast**, you must use your shapechanging power to battle your way through five levels of vicious foes and rescue the goddess Athena. In **Turbo Out Run** you get to run a hot road rally in your Ferrari, and even customize your machine for an individual driving experience.

\$49.95 each. Distributed by

Iron Lord, Pro Tennis Tour, Puffy's Saga, B.A.T.

Ubi Soft presents a diverse collection of upcoming games to be distributed by EA. In the adventure-arcade game **Iron Lord** (\$39.95) you must conquer a medieval country by finding some answers and proving your talents at archery, arm wrestling, swordplay and dice-throwing. You can test your backhand in four major world tournaments in **Pro Tennis Tour** (\$39.95). More standard arcade-style mazes and traps await irresistible Puffy and his girlfriend Puffyn in **Puffy's Saga** (\$39.95), but you'll need some sharp strategy to help them escape this Alien World. For more alien worlds, **B.A.T.** (\$49.95) makes you a member of the Bureau of

Rescue hostages, raid drug labs, destroy missile sites and more in **D.R.A.G.O.N. Force** (\$49.95, 1Mb required), a strategic simulation from Interstel that puts you in charge of this elite military team.

Introducing a new role-playing system, **The Hound of Shadow** (\$39.95) sets you to unraveling a supernatural mystery inspired by H.P. Lovecraft's dark tales of the Cthulhu Mythos. You create your own character for the game, and can even use that character in other upcoming *Timeline* adventures, getting credit for your character's past experience.

Replay the conquest of the New World in **Gold of the Americas** (\$39.95) from Strategic Studies Group. As France, England, Spain or Portugal you carve out your new empire through exploration, coloniza-



TANK BATTLE is one of five games in a single \$49.95 package.

Astral Trouble-Shooters, trying to stop the evil genius Vrangor from destroying the planet Selenia with his bacterial warheads.

Ubi distributed by Electronic Arts, 1810 Gateway Drive, San Mateo, CA 94404. (800) 245-4525.

Yet More Electronic Arts

A hit comedy/mystery adventure game on the IBM-PC, Lucasfilm Games' **Maniac Mansion** comes to the Amiga with improved graphics, animation and sound effects. You'll find plenty to keep you busy as your team of teens searches the mad scientist's creepy Victorian mansion for Sandy the cheerleader. (\$49.95)

tion, war, piracy and even honest investment.

688 Attack Sub (\$49.95, cluebook \$12.95) is a submarine simulation in which you command top secret U.S. Los Angeles class or Soviet Alfa class submarines, on a series of peacetime and war missions. Digitized photos and sounds (from sonar pings to whale songs) bring the depths to life.

Electronic Arts Distribution, 1810 Gateway Drive, San Mateo, CA 94404. (800) 245-4525.

The Colony, Star Trek V

Mindscape takes off with two new science-fiction adventures.

DIET RIOT is featured in the Future Classics Collection.

Cruise the galaxy and outwit the Klingons in **Star Trek V: The Final Frontier**. Spectacular graphics and animation make the role of Captain Kirk more exciting than ever before. In **The Colony** you explore the corridors of a deserted underground complex, battling aliens as you search this sophisticated 3-D world for survivors.

\$49.95 each, Colony Hintbook \$5. Mindscape Inc., 3444 Dundee Road, Northbrook, IL 60062. (312) 480-7667.

Courtroom

Sharpen your reasoning ability or just enjoy the dramatic atmosphere of the **Courtroom** with this educational and entertaining game based on the actual Rules of Evidence employed in legal procedures. Would-be lawyers can sharpen their skills at either prosecution or defense.

\$49.95. Fairbrother & Soepar-Mann, 5054 South 22nd Street, Arlington, VA 22206. (703) 820-1954.

Genghis Khan, Bandit Kings, Nobunaga's Ambition

Japan's best-selling historical

simulation developer has been winning major awards in the U.S. for their IBM games. Now Koei brings these colorful strategy challenges to the Amiga. The simulations draw on classic literature and history of China and Japan, combining military, economic and diplomatic elements. As **Genghis Khan** you can unite and lead the Mongols, or try your hand as one of the Khan's Eurasian rivals. The upcoming **Bandit Kings of Ancient China** lets you play an Asian Robin Hood, leading the bandits of Lian Shan Bo against a corrupt minister of war. The first Koei hit, **Nobunaga's Ambition**, moves to 16th Century Japan for a simulation based on the Shogun-era feudal wars.

\$59.95 each. Koei, 1350 Bayshore Highway, Suite 540, Burlingame, CA 94010. (415) 348-0500.

Future Classics Collection

With five games in one package, there's something for everybody in the **Future Classics Collection** of arcade-style games. Battle your way through three distinctly different sorts of mazes in **Diskman**, **Diet Riot** and **Lost 'N Maze**, maneuver falling



OVER 60 New Games

3-D blocks in Blockalanch, or go for a blitz in the explosive Tankbattle.

\$49.95. Live Interactive Video Entertainment, 30151 Branding Iron Road, San Juan Capistrano, CA 92675. (714) 661-8337.

Ghostbusters II, Beyond Dark Castle

For arcade action, take on a



VINDICATORS is Tengen's hot new coin-op tank conversion.

slew of nasty and slimy ghosts in the movie re-creation, **Ghostbusters II** (\$39.95). More nastiness awaits as Bold Prince Duncan returns to the dark and gloomy castle, on a new quest in **Beyond Dark Castle** (\$34.95).

Mediagenic, 3885 Bohannon Drive, Menlo Park, CA 94025. (415) 329-0800.

Singe's Castle

A stirring sequel to Don Bluth's famous animated adven-

ture game, **Dragon's Lair: Escape from Singe's Castle** brings Dirk the Daring back to rescue Daphne from an evil shapeshifter. With selectable difficulty levels, a help feature and new, faster loading, playability should be greater than before.

\$69.95. Distributed by Media Technology Limited, 15235 Shady Grove Road, Rockville, MD 20850. (301) 926-8300.

WWF Wrestling

MicroLeague Sports now adds **WWF MicroLeague Wrestling** to their line of sports strategy games. Defend your title as Hulk Hogan, or be the foe and decide which moves to

their ultimate battle tanks against 14 alien space stations. Also in the works are the space adventure **Blasteroids** and two maze-filled, robot-blasting games, **Escape from the Planet of the Robot Monsters** and **Xybots**. **Hard Drivin'** puts you behind the wheel of a high-performance stunt car, while **Toobin'** send you riding down rivers through time and space. Try a futuristic kind of football in **Cyberball**, or play cops and robbers in the fast and funny **APB**.

\$49.95 each. Tengen, 1623 Buckeye Drive, Milpitas, CA 95035. (408) 473-9400.

Sorcerian, Code Name: Ice Man, Conquests of Camelot, The Colonel's Bequest

Sierra On-Line celebrates its 10th anniversary with several new adventure games. In **Code Name: Ice Man** you must rescue an American ambassador from terrorists, using the futuristic submarine simulator included in the game. **Conquests of Camelot** sends you from the court of King Arthur to the Holy Lands, in search of the Holy Grail. From Japan, **Sorcerian** features 15 separate role-playing adventures full of quests and magical battles for the characters you create. For some old-fashioned mystery, **The Colonel's Bequest** casts you as a college coed in the Roaring Twenties, investigating strange happenings at the Dijon family mansion.

\$59.95 each. Sierra On-Line, P.O. Box 485, Coarsegold, CA 93614. (209) 683-4468.

Track 2, Stable Owners

Owners of SportTime's Omni-Play Horse Racing simulation can now add the **Track 2** module (\$14.95) and visit a turn-of-the-century track with a whole new stable of 128 horses. With the **Stable Owners** option module (\$19.95) you can build a

stable, hire jockeys, and enter your horses in the races of your choice.

SportTime, 3187-G Airway Avenue, Costa Mesa, CA 92626. (714) 966-1311.

Knight Force

Travel through time and space to collect the magic amulets of power in **Knight Force**. Outstanding backdrops and animations add to the experience as you battle your way through obstacles, guards and the evil sorcerer's clones.

\$44.95. Titus, 20432 Corisco Street, Chatsworth, CA 91311. (818) 709-3693.

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Tengen Goes Amiga

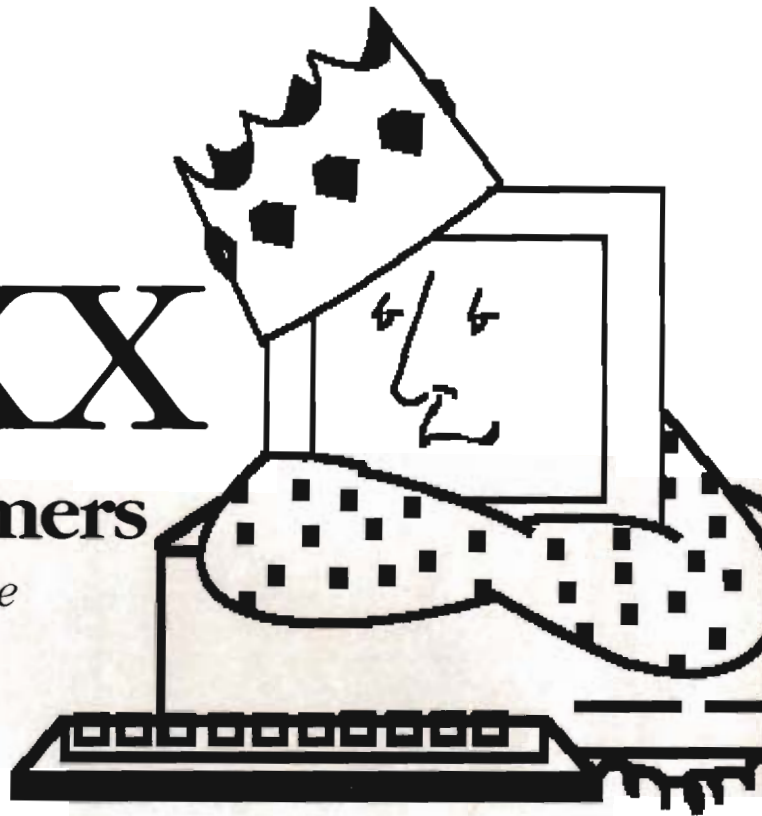
A noted name in the Nintendo market, Tengen now plans Amiga versions of several of their top arcade games. First out, **Vindicators** lets players pit

ARexx

for Non-Programmers

A little bit of knowledge will give you a lot more Amiga power

By Rob Griffith



The ARexx language is such an important contribution to the Amiga operating system that Commodore plans to include it on Workbench 1.4. Already many commercial programs support ARexx — such as Digi-Paint 3, Microfiche Filer Plus, A-Talk III and CygnusEd Professional — and come with useful ARexx scripts. Many additional scripts are available in the public domain. Fortunately, you don't need to understand a great deal about ARexx in order to use it. But a rudimentary understanding of the language will significantly increase your Amiga capabilities.

An ARexx program is a text file that consists of instructions to the Amiga. Any standard word processor or a simple text editor (such as MEMACS in the Tools directory of your Workbench Extras disk) can be used to create an ARexx program. Written by William Hawes, ARexx is the Amiga implementation of the simple but powerful REXX language used on many larger computers for linking together the actions of multiple programs. The multi-tasking Amiga is actually the first personal computer powerful and sophisticated enough to make practical use of REXX.

If ARexx is installed in your Workbench — as explained in the "ARexx User's Reference Manual" which comes with the language — then an ARexx program can be run simply by entering the CLI or the Shell and typing **rx filename** at the prompt. (Of

AREXX FOR NON-PROGRAMMERS

course, **filename** here stands for the name of the text file containing the ARExx program.) It is advisable that you have at least a basic knowledge of AmigaDOS before you attempt to work with ARExx.

An ARExx program can be run from the CLI, or from within a "host" program that has an ARExx port. (The ARExx word for port is ADDRESS.) An ARExx port is like a pipeline that can send or receive ARExx commands between a host program and the outside world.

This means you can do several useful things with ARExx. You could create an ARExx program that runs from the CLI, but does not communicate with any host programs. An example of this is the MONTH.REXX program that comes with the ARExx language. This program simply opens a calendar month on the Workbench screen. You could also create an ARExx program that runs from the CLI, but sends commands to a host program through its ARExx port. For

example, anything you can do with the mouse or keyboard from within Digi-Paint 3 can also be done from outside the program by sending a command as part of an ARExx script. Finally, you could send ARExx commands from within a host program. For example, you could send an ARExx instruction from the host program A-Talk III to the host program CygnusEd Professional, or to the CLI.

All this means that Amiga programs and the CLI can now interact with each other much more powerfully than ever before.

Starting Syntax

ARExx is a language with its own alphabet, words, and sentences. The sentences of the ARExx language are called clauses. The ARExx language reads a clause, executes it, and then goes on to the next clause. Ordinarily, one clause sits on one line of the text file. But several clauses can sit on one line, or a clause make take more than one line. There are 5

types of clauses:

1. Null Clauses— These consist of a blank line or a comment line. They cause no action to occur. A comment line begins with /* and ends with */. All ARExx programs must begin with a comment line. Here is an example of a comment line:

/* A comment line */

2. Label Clauses— These perform no action except to mark a place in a program. A label clause ends with a colon. Here is an example:
start:

3. Assignment Clauses— These consist of a variable symbol followed by an = sign followed by an expression. Expressions include four types of tokens which will be explained in detail later— strings, symbols, operators, and parentheses. Here are three simple examples of assignment clauses:

result = (3 + 4) * 5

day = week * 7

a = "Enter your first name:"

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4. Instruction Clauses— These begin with a keyword and perform an action. There are 32 defined keywords at this writing. They perform functions like displaying the result of an expression to the screen, telling the program to branch to a different clause, or other useful ARExx functions. They are discussed in detail in the "ARExx User's Reference Manual." Here are some examples:

```
/* ECHO displays a result, in */
/* this case, Hello, world!, */
/* to the monitor. */
ECHO "Hello, world!"
```

```
/* PULL reads your input from */
/* the console (the keyboard and*/
/* monitor), and */
/* assigns it to a variable, in this */
/* case, the variable name. */
PULL name
```

5. Command Clauses— This is the ARExx capability which allows two host programs to communicate with

each other. A command clause sends an instruction from an ARExx program to a host program or the CLI. A command has no meaning within the ARExx language itself. Rather, it has meaning to the host program. For example, Microfiche Filer Plus has a whole set of internal commands which allow you to manipulate files and databases. These commands can be part of an ARExx script. When the script is run, the commands will be sent via the Microfiche ARExx port into the Microfiche program. ARExx can also send commands to the operating system of the Amiga which allows you to enter AmigaDOS commands as if you were in the CLI. Here is an example of an ARExx program containing a command clause which would send a message to the CLI:

```
/* ADDRESS tells ARExx to */
/* send commands as if they were */
/* coming from the CLI */
ADDRESS command
/* Instruction clause */
```

newcli

/* This is the command clause */

Variables

The alphabet of the ARExx language consists of the standard ASCII character set that most Amiga text editing programs use. The "American Heritage Dictionary" defines ASCII as: 1. The proposed standard for defining codes for information exchange between equipment produced by different manufacturers. 2. A code that follows this proposed standard. A(merican) S(standard) C(ode for) I(nformation) I(nterchange). For practical purposes, just think of ASCII as being the characters on your keyboard.

Like all computer languages, ARExx deals with variables. One thing making ARExx relatively friendly is that these variables are typeless. Some languages such as C require you to pre-declare what type of data a variable represents. For example, integers are a different type of data than

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floating-point numbers (with decimal points), and both are different than a character data type. Before a variable can be used in a C program, it must be declared as an integer type or a floating point type or a character type of variable. If a floating-point number is associated with an integer type of variable, problems can arise. In ARExx, it is not necessary to declare data types. The program figures out the type of data it is dealing with by context.

Tokens

ARExx words are called "tokens." Like the word "cow," which represents an animal that says Moo, every ARExx token represents a value. There are several types of ARExx tokens:

1. Comment Tokens— These are strings beginning and ending with `*/` characters.
2. Fixed Symbol Tokens— These begin with a number (0-9) or a period. The value of a fixed symbol token is just itself.
3. Variable Symbol Tokens come in three subtypes— Simple Symbols don't begin with a number and have no periods. Stem Symbols have one period at the end of the symbol name. Compound Symbols have one or more periods in their interior.

Stem Symbols and compound Symbols are very useful because they allow the programmer to join various types of data into one symbol. For example:

Name.Address.Telephone

4. String Tokens— These are surrounded by `" "` or `' '`. A string of zero (0) length is called a null string. A string's value is the string itself. Strings followed by B or X are binary or hex respectively.

Operators

There are four types of operators in the ARExx language.

Arithmetic Operators are used to add, subtract, and perform other arithmetic operations. For example: `4 * 5` uses the arithmetic operator `*` for multiplication and results in the number 20.

Concatenation Operators join two strings into one. Example: `"I love" | "my Amiga!"` uses the concatenation operator `|` and results in the string `"I love my Amiga!"`

Comparison Operators compare two values and result in a Boolean value of 1 (TRUE) or 0 (FALSE). Example: `56 > 23` uses the comparison operator `>` resulting in the number 1.

(Boolean) Logical Operators compare Boolean values (1 or 0). There are four— NOT(`~`), AND (`&`), OR (`|`), or Exclusive OR (`^`, `&&`). Examples: `1 | 0` uses the logical operator `|`, and returns the number 1. `0 | 0` also uses the logical operator `|`, but returns the number 0.

Special Character Tokens

`:`— A colon indicates a label. Labels are often used to branch to another part of the program.

`()`— Parentheses are used to indicate priorities. The Amiga does what is inside the parentheses before it does what is after the parentheses.

`;`— A semi-colon is used to terminate a clause. If you want several clauses on the same line, separate them with a semi-colon.

`,`— A comma is used to continue a clause on more than one line.

Functions

Another element of the ARExx language is the function. Functions consist of a symbol or string followed by parentheses `()`. Within these parentheses there may be arguments. Functions can perform complex operations and make the task of programming much easier. It is possible to create your own function as you write the program. These are called internal functions.

Built-in functions are part of the ARExx language and are documented in the "ARExx User's Reference Manual." If there is a function clause in an ARExx program, ARExx will search in the program itself or in the Built-in Function Library. If it can't be found in these two places, ARExx can also look in External Function Libraries, Function Hosts, and External ARExx Programs. If the function is still not

found in any of these places, ARExx will return an error message. Here are some examples of functions:

ADDRESS()

```
/* Here is a function that returns the */
/* current host address                */
/* If you want to see the current host*/
/* address typed                      */
/* to the console, though, you can   */
/* use the keyword                    */
/* "SAY" like this...                */
```

SAY ADDRESS()

```
/* Here is a function that tests */
/* whether a file */
/* exists. The filename is the */
/* argument within */
/* the parentheses. */
```

EXISTS

```
("workbench:s/startup-sequence")
/* If this file exists, the function will */
/* return */
/* Boolean value 1, which means */
/* TRUE. If the */
/* file doesn't exist, value 0 will be */
/* returned, which means FALSE.*/
```

Error Trace

One other aspect of the ARExx language is very helpful in getting you started. You can trace the program line-by-line as it executes. This allows you to see exactly what is happening, so if something goes wrong or doesn't work, you can find out where the problem lies.

When ARExx is unable to execute a line of script, it returns an error message. This message tells why the program failed at this point— for example, insufficient memory or function not found. It also tells you the severity level of the error. The significance of this severity level depends on the program. If you want to trace the results of a program, a useful tool is the keyword TRACE. ■

Rob Griffith demonstrates his Amiga versatility with two more appearances in this issue.

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Shoot-'Em-Up Construction CONTEST

There's something fishy on this AMIGA *Plus* Disk — our Grand Prize Winner, FINNEY

By Carolyn Cushman, AMIGA *Plus* Associate Editor

When we announced a contest for games designed with the Advantage (Accolade) **Shoot 'Em Up Construction**

Kit, we were hoping to get some truly flashy and original scrolling action games. What we got exceeded our wildest expectations. Judging wasn't easy, since each entry had to be rated for its graphics, playability, entertainment value and originality.

Our Grand Prize winner, **Finney**, earned top scores in all categories, with spectacular graphics and a totally unexpected premise. Finney is an indomitable goldfish who escaped cap-

tivity by leaping down a drainpipe while his bowl was being cleaned. Now our fishy hero must battle through a fiendish labyrinth of plumbing. He's got to stick to the safe tubes and open waters, while avoiding or overcoming the deadly worms, beetles, augers, cats and more. He has only two defenses against this murderous armada — a head-mounted machine gun he found at the start of the labyrinth, and your fast reflexes.

Piloting Finney through the maze of pipes is a major challenge. You need analytical pattern-recognition and strategic thinking, not only your quick joystick trigger. Frankly, we felt

we had to make some of Finney's worst enemies just a bit easier to kill. Otherwise it seemed near-impossible for the machine-gunning goldfish to make his way back home to the quiet lagoon where his beloved Finetta awaits.

You can meet Finney on this issue's AMIGA *Plus* Disk — just plug in



Finney blasts beetles, flying fish, and squirmy worms as he swims for home.





WINNERS

your joystick and double-click on the bold fish-face icon to start playing. (You'll need to click on the screen again when it tells you it can't find an unneeded sub-file we got rid of.)

Finney author Richard Wenzel of Truro, Nova Scotia, Canada writes: "Ever since I had a C64, I always wanted to write a game. Last Octo-

ber, I happened upon the Shoot 'Em Up Construction Kit in a software shop. I picked it up — then put it back. At \$19.95 it couldn't be much. Shortly afterwards, my copy of *AMIGA Plus* arrived with the review and sample game on disk. How wrong I was! I wasted no time ordering the Kit and wasn't disappointed."

As Grand Prize Winner, Wenzel gets a copy of *every* Amiga title currently available from Accolade Software, whose hits include *Test Drive*, *Mean 18*, *Grand Prix Circuit* and *HardBall* — and Antic Software, makers of *PHASAR*, *GFA BASIC*, *Zoetrope*, and the 3-D Design Disk series.

Runners Up

The three runners-up each get their choice of any three titles from the Accolade catalog plus any three titles from the Antic catalog! Runner-up games will be appearing on future *AMIGA Plus* disks, as room permits.



Tim Quarry's hungry Toad in his favorite pose

The first runner up is **Toad**, by Tim Quarry of San Francisco. The on-

ly non-scrolling game we received, *Toad* pits a portly amphibian (with deadly eye-beams) against fish, underwater litter, a variety of insects and even alien invaders. Plenty of humorous touches (including some well-chosen sounds) enhance *Toad*'s delightful graphics.



Nightwing, a space shoot-'em-up by Jim Gleaves

Awesome starscapes, fractal backgrounds and exotic aliens made **Nightwings**, from Jim Gleaves of Rohnert Park, California stand out among the numerous space-battle games we received. It didn't score highly on originality, but for graphics and playability *Nightwings* ranked among the very best.

Third runner up, **Air Ace** was one of many games featuring air battles, but for professional-quality graphics it was truly superb. Bob Grace's *WWI* game sends you flying across lush terrain in your bi-plane, crossing incredibly detailed forests, trenches, fields and cities, strafing and bombing enemy forces as you go.



AMIGA^{plus} ART & ANIMATION CONTEST

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AMIGA Plus is holding an Amiga Art Contest with lots of big prizes for the best Amiga work in *either* single-picture art or animations!

Grand prize in the animation division is a LIVE! special-effects video digitizer from A-Squared Distributions. A 40-megabyte Supra hard disk featuring the high-speed WordSync SCSI interface is grand prize in the picture division.

The rest of the prizes are the same for both divisions: Second prizes are GeniScan hand-held scanners from Datel. Third prizes are KaraFonts libraries of flashy headlines. Fourth and fifth prizes are the winners' choice of any single Antic Software 3-D object Design Disk. All prizes will be in correct format for the winner's specific Amiga system.

All winners and runner-ups will also get a free copy of their entries, included on a broadcast-quality video cassette to be produced and distributed by Philadelphia Video Lab.

Rules

Winners will be announced in the AMIGA Plus October / November 1990 issue. The Art Contest will be judged by AMIGA Plus and Philadelphia Video Lab on the basis of artistic quality and originality. All entries must fit on a single Amiga disk. If your entries are *not* in standard Amiga IFF

or ANIM file formats, your disk must include the necessary point-and-click display programs.

Entries must be the original creations of the artist, produced on an Amiga computer. You are allowed to include some digitized elements in your images, if the overall graphic effect is primarily your own original artwork. All entries can be reproduced and distributed by the judges, and will not be returned.

Send your entries to: Art Contest, AMIGA Plus, 544 Second Street, San Francisco, CA 94107. Entries must be received no later than June 25, 1990. On the disk *label*, be sure to legibly print your name, address, phone number and art title(s).

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CONTEST WINNERS

Honorable Mention

So many other entries boasted striking features that we can't list them all. However, several games in particular deserve Honorable Mention:



Stryke the European countryside in Air Ace by Bob Grace.

From Simon and Deborah Buckner of Citrus Heights, California, **Skyscrapers** pits players against drug dealers in a slick car chase that occasionally detours into space. Flynn Leek of Davis, California sent in **Have a Nice Day**, a space battle with a difference that lets you shoot down Happy Faces with the amazing "no" ray. In **A Nightmare on Videogame Street** John Kolesar of Concord, California created his own tribute to the "good ol' days" of videogames, as a skateboarder races through scenes from Pacman, Space Invaders, Tron, Tempest and more, throwing quarters at various enemies from the past. Michael McCormick of Indianapolis, Indiana, produced **Dead Things With Poor Attitudes**, a sorcerous trip through a cemetery filled with fun opponents like zombies, hell hounds, and skeletons. For those in favor of ecological backlash, **Rhino's Revenge** by Curt Heckel of Newport News, Virginia lets you direct a thick-skinned, fast-paced rhino on a rampage, out to squish all those hunters with their nasty guns. ■

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BY JOHN MASSENGALE, AIA

An Architect Rates Amiga CAD

*X-CAD Professional with X-Shell,
UltraDesign, Homebuilders_CAD,
IntroCAD, Aegis Draw 2000*

The Amiga's powerful graphics capabilities would seem to give it considerable potential for CAD (Computer-Aided Design).

Nevertheless, CAD on the Amiga has not had a good history. The early software was either non-existent or weak, and by now the Amiga's high-resolution monitors have become low-resolution in comparison with the high-priced Macintosh and IBM solutions. Amiga users still have a very short list of CAD programs to choose from. But taken together, this software is a promising start, serving a variety of purposes...

CAD offers features that many Amiga owners could use. CAD programs are "object oriented," meaning that the object shown on screen is only an approximation of the infinitely more precise, mathematically-defined object it represents. Objects can be placed on top of each other without losing any part of the object below—unlike "pixel-oriented" paint programs like Deluxe Paint or Digi-Paint, where painting over an object erases it.

Paint programs are also limited in resolution by the actual pixels of the monitor screen. The highest resolution on the standard Amiga monitor is approximately 75 X 60 dots per inch (dpi), and output generally consists of a printed approximation of those bit-mapped pixels. Yet many laser printers, inkjets and even some dot-matrix

printers now routinely print 300 X 300 dpi.

By contrast, work done in CAD is accurate to thousandths of an inch. With a good plotter, prints produced from CAD are accurate to hundredths of an inch. In fact, one of the lowest-priced Amiga CAD programs, IntroCAD, could use an output device with a resolution of well over one million dots per inch, if such a device existed.

Engineers and architects obviously like such precision. But anyone who wants a drawing that can be precisely scaled (changed in size), or wants to work with exact dimensions, or merely wants to avoid "jaggies" will also find a CAD program more useful

drawings. A builder can quickly sketch plans and elevations coded with construction information such as cladding material. The program then estimates the cost of building the house with those materials and details. The contractor can try different combinations and gauge their effect on the final price.

Of the CAD programs tested, the original Homebuilders_CAD is the only one lacking a high resolution display, because it was not intended to be used as a design tool. Moreover, its standard printouts are just screen dumps with a rather crude appearance. However, an add-on program called **HomeBuilders_Print** (not

you change construction parameters such as stud spacing and joist sizes.

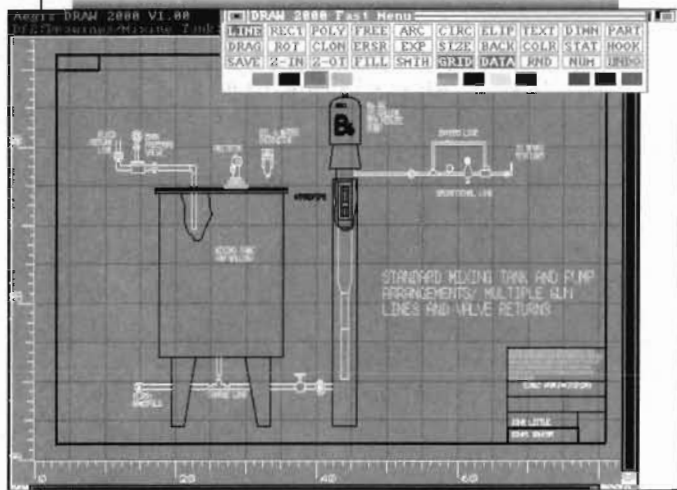
Amiga CAD programs tend to be very weak when it comes to three-dimensional modeling, but Homebuilders_CAD provides what is in many ways the best way to construct accurate perspectives on the Amiga. I have used Homebuilders_CAD to construct a drawing of a house in perspective, which I then traced by hand to get better line quality, because Homebuilders_CAD quickly and easily made a base drawing which would have been difficult and time consuming to produce in any other way on the Amiga. With the new Homebuilders add-ons, the original should be even better.

Moreover, Homebuilder's primary purpose—giving contractors detailed information about several facets of a proposed job—is unique on any computer. For that reason, Homebuilders advertises primarily in non-Amiga magazines, and one of every four sales is made to a customer who buys an Amiga run it on.

IntroCAD

Well-named, **IntroCAD** is a highly-intuitive CAD program with simple pull-down menus and quite a bit of power. From Progressive Peripherals, at \$79.95 it's a good choice for those who want to just dabble with CAD, perhaps for creating accurately scaled files to transport to paint programs. But it does not have many of the features which professional CAD users will expect.

This is not to say that IntroCAD doesn't come with many useful tools. To begin with, all the basic "primitives" are there—the lines, boxes, polygons, circles and arcs which all CAD programs use for constructing objects. The primitives can be manipulated with tools which erase, move, clone, resize, rotate, and so on. The Snap tool lets you position precisely to a grid or to an object. A powerful Zoom tool lets you magnify the image to get a very exact view of what is being drawn, overcoming the inherent



Most features of Aegis Draw 2000 can be accessed by keyboard, menus or the "Fast Menu" which contains the most common commands in click-on boxes.

than a paint program. All Amiga CAD program output can be saved as IFF files for transfer to paint programs.

Homebuilders_CAD

Homebuilders_CAD is an unusual CAD program with a very specific market—contractors or homeowners who want to price houses or additions to houses they are building. Ironically, however, it is also in some ways the most innovative and flexible of the Amiga CAD programs, with features that all Amiga CAD programs could benefit from.

Homebuilders_CAD has a generic kit of parts such as doors and win-

available in time for testing, but due out soon) provides a 640 X 400 screen display and higher-quality prints on dot-matrix and laser printers as well as plotters.

Interestingly, the low-key Homebuilders_CAD offers several useful design tools which the other Amiga CAD programs don't have. For example, it is easy to insert doors and windows into walls already drawn—a very complicated proposition with IntroCAD and Aegis Draw. Another useful add-on, **HomeBuilders_Choice** provides a parts library and a building parameter editor, supplying different windows, for example, and letting

resolution problems of a computer monitor. The standard Group and Ungroup functions are particularly easy to use because of IntroCAD's point-and-click interface.

Best of all, within 15 minutes, most Amiga users will be able to use 90% of the program without needing to refer to the slight, but good, manual. Contained on a single floppy (without its own Workbench), IntroCAD boots relatively quickly and makes multi-tasking easy.

IntroCAD has weaknesses, the biggest being a lack of scales, the lack of refinement possible in defining grids for the grid snap, the absence of pattern-fill or color-fill tools, and its lack of "layers"—a feature contained in virtually all CAD programs because of its usefulness. Display limitations and the absence of different scales make it hard to position lines precisely without frequently zooming in for closeups. (At deadline, *Progressive* released **IntroCAD Plus**, a more powerful version of the IntroCAD reviewed here. In addition to "layers" and pattern fills, new features include user-defined fonts and keyboard macros, a script language, full ARexx compatibility and 68020/68881 support. For a limited time *Progressive* is offering this upgrade to original IntroCAD owners for \$75. — + EDITORS)

Output quality varies. If you have a plotter, IntroCAD will give you excellent output. With other printers, the situation becomes more complicated. I have an NEC P-5XL, a four-color, 24-pin, wide-carriage dot-matrix printer that can give a 300 X 300 dpi print. IntroCAD's driver for it gives very fine output, but wrongly scaled. To fix it you must change the driver's vertical/horizontal ratio, a complicated procedure not covered in the manual.

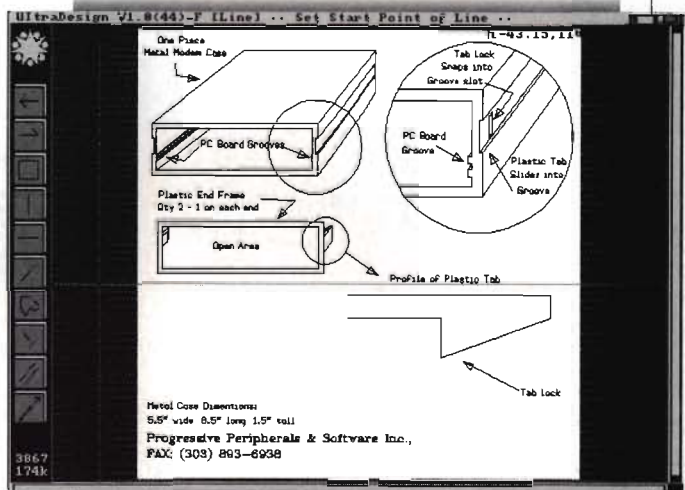
Aegis Draw 2000

Aegis Draw 2000 is a big improvement over its earlier incarnations, Aegis Draw and Aegis Draw Plus. (Aegis Development has gone out of business, but the new publisher, Oxxi, provides technical support.)

While slightly more difficult to use than IntroCAD, Aegis Draw 2000's controls are still very intuitive. It has considerably more features than IntroCAD—but at slightly more than three times the price. Aegis Draw 2000 is also so easy to learn that you hardly need the well-written manual.

Most features can be accessed by both keyboard and menus. Finally, the ESCape key can call up a menu

A graphical click-on menu at the side of UltraDesign's workscreen changes with different operations.



for numeric keyboard entry, a valuable feature which makes real precision possible. Numeric entries are accurate to 1/1000th of an inch.

Other Draw 2000 features include automatic dimensioning and construction of lines which will adjust to changes in the drawing, pattern and color fills, and a system for creating reusable parts—all in an environment immediately familiar to Amiga users.

With all its power, screen refreshes (the automatic redrawing of the entire screen) can be considerably slower than in IntroCAD for complicated drawings. However, Draw 2000 will take advantage of 68881 and 68020 chips for those who have them, sometimes doubling the speed of drawing.

Draw 2000 does just about everything a great many Amiga owners will ever want. Nevertheless, it has several shortcomings for architects and engineers. As in IntroCAD, it is impossi-

ble to break lines when moving a door or window in plan. Draw 2000 requires you to erase the entire wall, move the door or window and redraw the wall.

Non-professional users without a plotter will find printing Aegis Draw 2000 designs rather difficult. As with IntroCAD, it's impossible to scale dot-matrix or laser printouts, even though scale drawings are one of the main

purposes of CAD drawings. Printouts are limited, moreover, to 8 1/2 X 11 inches.

The X-CADs

There are several X-CADs sold today. Although they are all related, they have significant differences, each with its advantages. The first, **X-CAD Designer**, was published by Taurus/Impex, and distributed in America by Haitex Resources. Though technically discontinued, copies can still be found, along with a graphic interface for it called **X-Shell**.

Newer versions of X-CAD are distributed internationally by CadVision International (the authors) and in the U.S. by American Software. Unfortunately, one of the new versions is still called **X-CAD Designer**, which causes a certain amount of confusion with the old product. The new X-CAD Designer is less expensive and less

powerful than the old X-CAD Designer, although it has some new features which make it significantly easier for CAD newcomers to use.

CadVision also publishes a more powerful, and more expensive, version called **X-CAD Professional**, which is currently the state-of-the-art Amiga CAD program. Grafx Computing, the makers of X-Shell for the old X-CAD, also make a graphic interface for X-CAD Professional, known as **X-Shell Professional**.

All versions of X-CAD can be difficult to learn. Fortunately, Grafx Computing now sells a technical support service for all X-CAD and X-Shell products. It does a good job, but costs 60 cents per minute.

The old **X-CAD Designer** is a handsome product that works very well. As fast and powerful as virtually all personal computer CAD programs were just a few years ago, it should appeal to anyone familiar with those old AutoCAD-type programs. Amiga owners not familiar those programs will probably have a great deal of trouble learning Taurus/Impex's X-CAD Designer.

Like all versions of X-CAD, X-CAD Designer lets you break lines without destroying the primitive, and you can easily discover and use vector coordinates. For architects and engineers, those features make X-CAD immeasurably superior to all other Amiga CAD programs except UltraDesign.

New X-CAD Designer

CadVision's new **X-CAD Designer** is the only version of X-CAD to support the pull-down menus that Amiga users are familiar with. Those menus, some new commands and a revised manual make it the easiest version of X-CAD for a novice to use. Moreover, the command list was reduced enough so that it will run on an Amiga 500 with 1Mb. It is a good buy at \$149.95.

The revised manual added step-by-step examples for various operations. Though the examples are clear, the manual is weak on explaining the

principles behind the examples. Unfortunately, this inexpensive version cannot use X-Shell, with its more intuitive methods and better manuals.

CadVision's X-CAD Designer shares with all other versions of X-CAD (and X-Shell) a system of sheets, viewports and (fewer) layers. Also present in the new X-CAD Designer, but missing in the Taurus/Impex version, is a very useful "Undo Last" command. Oddly, X-CAD Designer has an Isometric grid system, a feature missing from all other versions.

Professional X-CAD & X-Shell

X-CAD Professional is CadVision's updated version of the old X-CAD Designer. With the help of Grafx's **X-Shell Professional**, this is currently the top of the line in Amiga CAD two-dimensional drafting programs.

X-CAD's menu system covers less of the screen at one time than X-Shell's menus do, but X-CAD's system requires time for successive requester boxes to appear on screen. I personally prefer the look of X-CAD's interface, but I find X-Shell easier to follow because Grafx Computing has combined commonly used operations in a convenient way. They even have an add-on product called **X-Plan** which offers a menu specifically for operations involved in drawing architectural plans. With tools for drawing and editing stud and block walls in one operation, and libraries of doors, fixtures, appliances and the like, it is a very useful tool for architects.

X-CAD has another potentially good but mystifying feature, the ability to put menus on digitizing tablets such as Summagraphic and Cherry. The problem is figuring out how to create the menus. If you just want to use the tablets to enter freehand graphic information, X-CAD and X-Shell Professional have built-in drivers for both drawing pads.

X-CAD Professional and X-Shell Professional both translate files into DXF (AutoCAD) format, very useful because of AutoCAD's two million

users. Both programs also translate files into the format used by Gold Disk's Professional Page and Professional Draw. X-CAD Professional and X-Shell Professional can save files in Sculpt-Animate 4D format.

UltraDesign

Progressive Peripheral's new **UltraDesign** was released shortly before this review went to this press, leaving only a short time to test it. Fortunately, UltraDesign's operation is quite intuitive. The software has some excellent features combining power and ease of use.

That is not to say that UltraDesign is perfect. Like many first releases, it has some errors and omissions.

UltraDesign feels like IntroCAD's big brother, with similar graphics and pull-down menus, and even the screen-wide crosshairs. In addition, most features have keyboard commands.

A pull-down menu supplemented by keyboard commands provides easy selection of endpoints or midpoints on a line. Other Line Menu options let you automatically draw parallel lines in one step, or add lines parallel to an existing line.

UltraDesign draws lines rather slowly. The full-screen crosshairs often jerk across the screen, and it would be nice to have the option of turning them off. Curiously, zooms and refreshes are quite rapid. Presumably the 68020/68881 version of UltraDesign is significantly faster, although I did not have that version at deadline.

Using the Circles and Ellipse Menu led to the discovery of a more serious problem. Circles, arcs and ellipses are very easy to draw, and there is a tool for finding their centers. But there is no option for freehand or spline curves. Even IntroCAD has a primitive freehand option, and professional CAD programs are often rated on the number of ways they can draw spline curves.

UltraDesign has a utility called
(Continued on Page 87)

NEW PRODUCTS

Digi-Mate 3, Pro Video Post, Time-Code Reader Generator 102, HAM-E, and more...



By Carolyn Cushman, AMIGA Plus Associate Editor

DESKTOP PUBLISHING

Pixelations Products

Pixelations' **PostScript Printer Utilities** (\$65) is a disk of six utilities designed to make using PostScript on your Amiga easier, plus a free PostScript font, Alison. Volumes 6 and 7 have been added to the **Typographers' Ornaments** (\$65 each) collection of Amiga Encapsulated PostScript clip art, and two new disks bring the total of **Typeface Volumes** (\$65-75 each) to six, each with three or four PostScript fonts.

Pixelations, Inc., P.O. Box 547, Northborough, MA 01532. (508) 393-7866.

Palumbo's PageStream Fonts

First in a new line of fonts for PageStream marketed by Dennis Palumbo, Font Disk #1 includes three professional PageStream fonts — Gallya Ornamented, Kooper Black and Plaebill. Also included are dot matrix printer fonts, metric information files, downloadable PostScript files and PostScript header files, and screen fonts in 12, 24 and 36 points.

\$29.95 till 6/1/90. Dennis Palumbo, 104 Barrymore Blvd., Dept. B, New York, NY 11010. (516) 352-5605.

Texture Guides

Get the most out of Turbo Silver's Textures modules with Bradley Schenck's **Turbo Silver Texture Guides**. This on-disk, point-and-click tutorial illustrates the various effects possible with different Texture parameter settings, with helpful comments from the winner of the 1988 Badge Killer Demo contest.

\$24.95. Impulse, Inc., 6870 Shingle Creek Parkway #112, Minneapolis, MN 55430. (612) 566-0221.

TEXTURE GUIDES for Turbo Silver helps you get better effects.

the InterFont structured text system — owners of either program can upgrade for \$20. A special Converter Module for Mindware's PAGErender 3D can read and write PAGErender 3D facet files from any coordinate system. (\$34.95, available direct from Syndesis only.)

Syndesis Corporation, N. 9353 Benson Road, Brooklyn, WI 53521. (608) 455-1422.

Abacus Video Guide

Written by AMIGA Plus Con-



VIDEO

Digi-Mate 3

Animate your Digi-Paint 3 HAM images with **Digi-Mate 3** from Mindware International. Animations are in standard AN-IM format and can be run from RAM, hard drive or even floppy disk. Processing features let you replace colors or convert animations at the click of the mouse, going from color to black and

white, HAM to half-brite or low-res, non-overscan to overscan, Deluxe Paint III to Videoscape or vice versa.

\$39.95, requires 1Mb and ARexx. Mindware International, 110 Dunlop W, Box 22158, Barrie, Ont., Canada, L4M 5R3. (705) 737-5998.

InterChange Enhancements

The popular 3-D modeling utility **InterChange** has been upgraded to version 1.5, and now includes a VideoScape 3D 2.0 Converter plus a new Sculpt Converter for Sculpt 4D. InterChange 1.5 is available separately for \$49.95, or as part of

tributing Editor Guy Wright, the **Amiga Desktop Video Guide** from Abacus explains how to harness the Amiga's video power, with a practical introduction to VCRs, genlocks, scanners and more.

\$19.95. Abacus, 5370 52nd Street SE, Grand Rapids, MI 49508. (616) 698-0330.



Pro Video Post

For the serious Amiga video user, **Pro Video Post** provides enhanced video tiling and post-production features including audio cues, voice prompts, screen manipulation techniques and real-time digital video effects routines — plus software control of SuperGen and Magni's 4000 series genlocks. Use keyboard controls to reduce, enlarge, rotate, tilt, reverse, combine or repeat your full, high-resolution overscan screens.

Designed for use with the Amiga 2000, this complex program requires a minimum of 1 MB of enabled chip RAM and 2 MB fast RAM.

\$399.95. Shereff Systems, 15075 SW Koll Parkway, Suite G, Beaverton, OR 97006. (503) 626-2022.

VidGen Upgrade

Microft's **VidGen** background graphics generator has been upgraded to support Pro Video Gold (720 X 480) and Broadcast Titler (736 X 480). PAL versions are also available.

\$149.95, upgrade \$5 for registered owners. Microft Software, Ltd., P.O. Box 1072, Exton, PA 19341. (215) 642-7638.

MIDI

Dr. T's New & Upgraded

Upgrade versions 3.0 are out for both Dr. T's keyboard-controlled sequencers, **KCS** (\$275, 1Mb required) and **Level II** (\$375, 1Mb required). The programs now take advantage of the Amiga's Intuition and expand on the Amiga's multitasking capabilities with the new MPE (Multi-Program Environment) — plus an improved, Amiga-specific manual. In addition, they now support the new SMPTE reader/generator **Phantom** (\$250, A500 and 2000 only), a combination of hardware and software that includes a built-in MIDI interface with two parallel outputs. By adding the industry-standard SMPTE time-codes, Phantom lets you accurately synchronize your music with video and other events.

Once you've written your music, print it out with **Copyist DTP** (\$325) scoring software, an upgrade to Copyist Professional. This scoring software supports IFF files and Postscript printers, and comes bundled with the Adobe Sonata font — generally

accepted as the standard by music pros. If you have enough memory, you can have KCS and Copyist DTP in memory together and transcribe your music directly from one to the other, thanks to the interactive MPE. For less ambitious scoring, **Copyist Apprentice** (\$99) offers dot matrix print only, no IFF support, and can only translate files from KCS to Copyist format, not back to the sequencer — but sells for a bargain \$99.

The entertaining and educational **Music Mouse** by Laurie Spiegel has also joined the Dr. T line, making this fun tool for computer-assisted improvisation more widely available than ever before. (\$79)

Dr. T's, 220 Boylston Street, Chestnut Hill, MA 02167. (617) 244-6954.

Bars&Pipes Add-Ons

Blue Ribbon Bakery introduces two add-on packages for that plumb-fine music program, **Bars&Pipes**. **Musicbox A** contains 17 new Tools and 1 Acces-

sory (a color palette editor!).

The Internal Sounds Kit contains SpareKeys and the Amigo-Phone (as seen in the demo on our February/March 1990 *AMIGA Plus* Disk). These two Tools let you enter and play music on your Amiga without a MIDI hookup. For some neat

sounds to play with, the Kit includes over 85 IFF sounds from ECT SampleWare.

\$59.95 each. Blue Ribbon Bakery, 1248 Clairmont Road, Suite 3D, Decatur, GA 30030. (404) 377-2277.

HARDWARE

TCRG-102

This Time-Code Reader Generator lets the Amiga produce synchronized graphics, sound and MIDI events. The **TCRG-102** reads and generates SMPTE (NTSC), EBU (PAL) and FILM (24 fps) time codes. Useful software utilities allow you to control and monitor the TCRG-102, and provide limited control of other programs using time code values.

\$799.95. Microllusions, 17408 Chatsworth Street, Granada Hills, CA 91344. (818) 360-3715, (800) 522-2041.

curate RGB, critical for quality work in the video field. Even so, HAM-E is compatible with the Amiga's current screen handling, so no special "show" programs are needed to view images formatted for HAM-E.

\$300. Black Belt Systems, 398 Johnson Road, RR1, Box 4272, Glasgow, MT 59230.

Electronic Color Splitter

Digitize beautiful color images from still video with the **Electronic Color Splitter** (used in conjunction with either the Digi-View or Perfect Vision digi-

TRCG-102 Time Coder synchronizes graphics, sound and MIDI.



HAM-E

See more colors on your monitor with the **HAM-E** video enhancer and its extended 8-bit HAM modes that allow an extra 258,048 colors to appear on-screen. Just unplug the Amiga monitor, plug in the HAM-E, then plug the monitor into it. HAM-E's output is 256-level ac-

tizer). Great for use with video still cameras, camcorders or freeze-frame VCRs, this color splitter will take any stable composite (NTSC) or S-VHS video signal and separate the signal into the red, green and blue components needed by Digi-View — no b&w camera with color-wheel required.



COLOR SPLITTER
digitizes RGB
directly from
composite
images.

\$150. MicroSearch, 9896 Southwest Freeway, Houston, TX 77074. (713) 988-2818.

Sharp JX-600

For real desktop publishing pros, the **JX-600 Commercial Color Scanner** from Sharp offers color scanning in resolutions of 30 to 600 dpi, with 24-bit color. Originals can be up to 11 X 16.5 inches in size, and the standard unit even works with slides and transparencies.

\$14,995. Sharp Electronics, Sharp Plaza, Mahwah, NJ 07430. (201) 529-9500, (201) 529-8200.



Inexpensive
MASTER SOUND
sampler with
editor and
sequencer.

Master Sound

A new, inexpensive sound sampler for the Amiga, **Master Sound** lets you record sounds from cassette, CD or microphone, then edit them with the Master Sound Editor. With Master Sound's Sequencer and Demo programs you can put as many 20 samples together and play them back while displaying your own IFF pictures.

\$69.95. MicroDeal, 576 S. Telegraph, Pontiac, MI 48053. (313) 334-8729.

Computers, Etc!

If you have extra RAM, hard drives and other peripherals drawing power from your Amiga 500, you might consider a Heavy Duty power supply from Computers, Etc!. Their basic **HD150** (\$129.95) sports a 165 watt switching power supply with all the connectors ready to be hooked up to your A500. The **HD150DL** (\$179.95) deluxe model adds three external A/C outlets and an internal cooling fan.

With the **Bridgeboard Speaker Kit** (\$24.95) you can now get sound from your PC emulator (what sound there is). The kit comes complete with pre-assembled hardware and easy do-it-yourself installation instructions.

Computers, Etc!, 4521-A Bee Ridge Road, Sarasota, FL 34233. (813) 377-1121, orders (800) 634-5546.

Bridgeboard Crossings

Amiga Bridgeboard users will get plenty of MS-DOS tips from Marion Deland's monthly newsletter. Crossings supplies reviews, hardware compatibility updates, news, and a regular column comparing AmigaDOS and MS-DOS.

\$40 for 12 issues. Deland Editorial Services, 345 East 93rd Street, New York, NY 10128.

correction and data compression protocols (MNP classes 2-5 and CCITT V.42bis) that let you communicate at very fast rates with no errors. However, since the SupraModem 2400 Plus automatically determines the kind of modem on the other end of the phone line and adjusts accordingly, all you have to do is set your terminal to 9600 baud and then forget about baud rates and protocols.



SUPRAMODEM
2400 PLUS
automates fast,
no-errors
transfers.

Hard Drive Video

To help demystify hard disk installation and setup for the Amiga 2000, TeleGraphics International has a new instructional video tape, **Amiga Hard Drives: The Complete Guide**. Basic concepts such as partitioning, formatting and autobooting are covered, as well as professional tips for optimizing your hard disk performance — a disk of useful utilities is included. Two popular SCSI controllers are highlighted, the GVP A2000-2/2 and Commodore 2091, and for Bridgeboard owners JANUS drives are discussed.

\$49.95. TeleGraphics International, 605 Dock Street, Wilmington, NC 28401. (919) 762-8028.

Supra Updates

An external Hayes-compatible modem, the **SupraModem 2400 Plus** (\$199.95) features special error

A number of hardware and software upgrades are now available at low cost to owners of SupraDrive Hard Disk Systems. Hardware enhancements include new autobooting interfaces for both Amiga 2000 and 500 computers. New utility software disks, **SupraBoot** and **SupraTools**, are included free with every interface upgrade, or can be purchased for \$14.95. Write or call for further upgrade information.

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

Pre-Formatted Disks

A.V.G. Studios' Amiga-formatted 3 1/2 inch disks come ready to run — no tiresome formatting required.

\$12.95 for 10, \$110 for 100. A.V.G. Studios, 1028 Marie Avenue, Machesney Park, IL 61111. (815) 633-4470.

APPLICATIONS

Momentum Check, Momentum Mail, T.A.C.L.

Balance your checkbook and track your expenses easily with **Momentum Check** (\$29.95). **Momentum Mail** (\$29.95) makes mailing-list management easy and affordable, and lets users define label setups for custom printing. For would-be game creators, **T.A.C.L.**, The Adventure Construction Language (\$99.95), lets users combine IFF graphics, sound, vector graphics, fancy text styles and more in commercial-quality adventure games.

Micro Momentum, P.O. Box 372, Washington Depot, CT 06794. (203) 567-8150, orders (800) 448-7421.

C.A.P.E. 68K

Significant improvements make **C.A.P.E. 68K** version 2.5 faster than ever. This Complete Assembler Programming Environment includes three new utilities — the HLink linker, the PMD disassembler, and the HProf profiler — to help increase your programming efficiency, while new documentation makes CAPE easier to learn and use.

\$89.95. INOVAtronics Inc., 8499 Greenville Avenue, Suite 209B, Dallas, TX 75231. (214) 340-4991.

WE Editor

Designed for visually-impaired users, the **WE Editor** provides a simple line-oriented editor that "speaks" the text when requested, rather than displaying it. The editor includes block operations, search-and-replace, and a spelling checker. By using the X command, users

can execute other programs while running WE, and hear the output — letting blind users access those handy housekeeping commands like DIR, LIST and DELETE.

\$49.95. Prairie Dock Software, 6947 N. Oriole Avenue, Chicago, IL 60634. (312) 775-0816.

Hard Disk Slammer

Tired of all the hassles of installing software on your hard disk? **Hard Disk Slammer** makes it quick and easy — no in-depth knowledge of Amiga-DOS or Workbench required.

\$37.95. Zammoth Software, 3533 West Fourth Street, Mansfield, OH 44903. (419) 529-8431 (evenings).

International BibleReader!

For the **BibleReader! New International Version** Bible, EasyScript! added new enhancements to the BibleReader! program that let the reader show or hide NIV footnotes. Text files are in ASCII format, and included features make it easy to search quickly for specific words or phrases, or print selected passages. With the Speech option your Amiga will even read the Bible to you.

\$77.95 (7 disks). EasyScript!, 10006 Covington Dr., Huntsville, AL 35803. (205) 881-6297.

Context Bible

Another New International Version Bible in the works, **The Context Bible** has been formatted to work with the Thinker hypertext format. Users can jump to any book, chapter or verse just by clicking on it — or use

HyperText to link text with personal notes, pictures, sounds, ARexx macros and more, for a truly personalized reference Bible.

Neuralink, P.O. Box 16311, Lubbock, TX 79490. (806) 793-0423.

THE ACCOUNTANT

An improved point-and-click interface makes **THE ACCOUNTANT** Version 2.0 easier to use and "more Amiga-like." Other improvements to this full-featured business package include the rebuilding of monthly payroll data files, the ability to

A colorful scene from the Art Matrix two-hour **FRactal Video**.



apply hand-written checks against A/P invoices directly from the check register, and the use of optional 8-color screens.

\$299.50, 1Mb required. KFS Software, 15580 58th Street North, Clearwater, FL 34620. (813) 584-2355.

EZ-Grade

Keep track of students, grades, absences and more with **EZ-Grade, the Electronic Teacher's Gradebook**. EZ-Grade includes printout options for individual and group progress reports, plus charts and graphs that make it easy to evaluate the progress of a student or class.

\$59.95, 1Mb required. Integral Software, 2721 Embassy Row, Indianapolis, IN 46224. (317) 297-7369.



Fractal Video

Art Matrix has released a two-hour video, **Mandelbrot Sets and Julia Sets**, a computer-animated tour of these mathematically-generated shapes that includes the classic 30-minute segment, *Nothing but Zooms*. Extensive documentation, available separately, explains the

fractal concepts for audiences ranging from the very young to the serious student, plus elegant b&w illustrations.

Write for flyer & free postcard. Art Matrix, P.O. 880-AP, Ithaca, NY 14851. (800) 729-3889, (607) 277-0959.

Mail-Order Fractals

For fractal buffs everywhere, Printed Expressions offers postcards, posters, jewelry, t-shirts and more, all printed with colorful fractal designs.

Write for catalog. Printed Expressions, Box 4115, Ithaca, NY 14850. (607) 277-3066.

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PHASAR 4.0

New power from the #1 Amiga personal finance software!

REVIEW BY MARION DELAND

Where does the money go? — PHASAR 4.0 keeps track

If the approach of April 15th made you vow to keep more accurate financial records in the coming year, PHASAR 4.0 may be your salvation. A home accounting program, PHASAR 4.0 helps you keep track of your checkbook and credit cards, set up budgets and see where the money really goes, using simple single-entry bookkeeping, the kind you use to keep track of your checkbook. You can also organize your taxes and analyze your savings or loans. There's even an address book module. (PHASAR comes from Antic Software, a separate division of the company that publishes *AMIGA Plus*, but the editors made it clear that they wanted an objective review when offering me this freelance assignment.)

If you have the popular PHASAR 3.0, this is an upgrade, with improvements — including some very practical uses of artificial intelligence. It now looks and behaves more like an Amiga program, though its non-Amiga origins are still evident. A lot of small improvements make the program easier to use, including sorting of transactions. The maximum number of accounts (250), categories (999) and transactions per month (1500) has

been increased — depending on memory available. If you have data files created with PHASAR 3.0, you will need to convert them for use in PHASAR 4.0, but it's an easy process.

Using PHASAR

To run PHASAR 4.0, you should have 1Mb of memory, although a 512K version is available on request.

PHASAR 4.0 helps you keep track of your checkbook and credit cards, set up budgets and see where the money really goes.

PHASAR tries to make it as easy as possible for you to enter your day-to-day transactions and keep them up to date.

The second program, PHTAX, helps you figure out your taxes. It can't be held responsible for the accuracy of your records, or give you advice on tax strategies, however. PHTAX can do a loan or savings anal-



Two programs make up the PHASAR package. PHASAR itself helps you organize and keep track of your finances. You enter all your accounts — checking, savings, credit cards, etc. — and divide up your income and expenses by categories. Then

ysis using a module that was part of the main program in PHASAR 3.0.

The first time you run PHASAR, you need to create a new "register" file. Next you set up your accounts, followed by income and expense categories.

Entering Your Records

Entering transactions is the most tedious part of keeping your records on a computer, but this is where PHASAR really shines with its useful artificial intelligence. When the program asks for a date, for example, you can try anything that makes sense, and it will probably work. You can use a slash, a comma or whatever to separate the numbers in a date — PHASAR will figure it out. If you make a mistake, PHASAR will try to guess what you meant to do.

PHASAR tracks your most frequent transactions for you. Once you've entered the first few records you can cut down the work by selecting from a Frequent-Payee list generated by PHASAR, or use the Fast-Paste screen button to enter an entire "frequent transaction" at once. If you want to split a transaction between several categories, you can do it easily.

Seeing Results

PHASAR understands that confirming (their word for reconciling) your

checkbook with your bank balance at the end of the month is not fun, and does its best to help. If your numbers don't add up, the program politely offers options such as "Enter missing transactions," and "Accept balance." When you get it right, PHASAR congratulates you.

Also, reports summarize your finances. You can view these reports onscreen or print them out — but you can't save them or export them to another program. The cash-flow reports are better. You can see at a glance a summary of your income, expenses and cash flow (the difference), both actual and budgeted.

For controlling that cash flow, PHASAR lets you budget each category or account separately. The manual doesn't explain this section well — you learn by experimenting.

PHASAR 4.0 will plot trend vs. budget amounts on a useful but unexciting bar chart, obviously designed to display in simple IBM graphics. You can't save the charts as IFF files, but you can print the screen with a CON-

TROL sequence (mentioned only in the keyboard equivalents chart at the beginning of the manual).

PHTAX

PHTAX is a separate program that gets its information from your original PHASAR.REG file. I found PHTAX difficult to get a handle on — it's not well explained in the manual. It was worth the effort, however, because it adds four functions — tax planning, customized reports, loan analysis and savings analysis. PHTAX lets you figure out your taxes at any time during the year. So if you pay quarterly estimated tax, as I do, you can find out if you're on target.

The program provides templates for Form 1040 and Schedule A. You can use them with preprinted forms or you can create your own forms. (Antic Software hopes that program users will create forms, especially state tax forms, and release them on bulletin boards.) These forms work like spreadsheets, with "hidden" formulas which tell PHASAR how to get

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May 1989

Features: Desktop Video Power; Mac Emulator; IRS Tax Spreadsheet
On Disk: Happy Guy Animation; Mastermind; Kamikaze Chess
Reviewed: Lattice C++; Cracking the Amiga Shell

June/July 1989

Features: Artificial Reality; 3-D Modeling; Amiga Fonts
On Disk: ClipArt Fonts; Woodland; Triptych; Fun Paint; Backgammon; IFF2GEO
Reviewed: Amiga Dos Inside and Out; Spreadsheet Roundup

August/September 1989

Features: Lucasfilm Amiga Games; Pixelations' PrintScript; Pro Video Goes Amiga
On Disk: WordHunt; Fractals; Sounds Library; 3-D Tank
Reviewed: Appointment Schedulers; GFA BASIC 3.0; Desktop Budget

October/November 1989

Features: Developing Art Styles; DiskANIM; Promise Spell Checker
On Disk: Tass/DiskANIM; Pointers; Promise; Space Cadet
Reviewed: A-Max; Elan Performer; M; Thinker; ANIMagic

December/January 1990

Features: Expert Choices '89; Games Design Contest; Icon Power Secrets
On Disk: Type Attack; Amiga Hawk; Gone with the Windows; Christmas Art; ICON
Reviewed: Transcript; Pen Pal; Ultracard; BMB Memory Boards

February/March 1990

Features: Amiga Online; High-Speed & Internal Modems; ASDG/Sharp Color Scan
On Disk: PHASAR 3.0; PrintPal; Ball Bench; Basic Art Coder; OneLiner; scANIMs
Reviewed: Digi-Paint 3; PAGERender 3D; Gravis Mousestick; Caligari; Easy!; Boing Mouse; Spritz; Protext; DOS2DOS; EClips

April/May

Features: Graphics Pro Secrets; T-shirt design; ProDraw; Industrial Animation
On Disk: Bars&Pipes Demo; PhasArTax '89; Baffle; BindStartup; AmiBarCode; IFF2C/IFF2Script; ProDraw art; Auto Scripts
Reviewed: Bars&Pipes; DeskJet+; IMGScan; Star XB-2410 printer; MAC-2-DOS

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The Antic Amiga Plus Public Domain Library presents **DevDisks** by **DevWare**. **DevDisks** are the public domain library of choice for the serious Amigaophile. Each Disk is chocked full of nothing but the best programs. The first two letters on each disk indicate the orientation of the disk; **DD#** intermediate to advanced - often contains source, **WB#** general interest - most programs can be run from the workbench, and **FD#** games and entertainment. Order our disk based catalog and receive a coupon for a **FREE** volume on your next purchase.

Featured Disk

WB19: General Interest - On this disk is, **DiskSalv V1.42** a disk recovery program for all Amiga file system, **FixDisk V1.0** another file recovery program with features **DiskSalv** doesn't have, **3DLook** a program that gives a 3D appearance to your **WorkBench**, **Clean V1.01** a program to de-fragment memory, **Tracer** Originally prepared and released as a commercial product by **Rapide**, allows one to take a picture in 16 gray level format from a Digitizer system, then hand outline or Trace any part of that image.

FD5: Tactical Games - **BattleForce(3.0)**: A game that simulates combat between two or more giant, robot-like machines. Simple words can't begin to give you the feel of piloting a 30 - 40 foot tall, fire breathing, earth shaking colossus that obeys your every whim. **BullRun** - A Civil war battle game, **Metro** - you play the role of a city planner. Build wisely and your system will be a success, but poor planning will lead to disaster and financial ruin. Very good Amiga version of **Kingdom**, **Golden Empire**, etc. Very very habit forming.

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

FD7: PACMAN - This disk contains several pacman type games including: **PacMan87**, **MazMan** and **Zonix**, also **Connect 4** - A checker type game, **CRobots** - ("see-robots") is a game based on computer programming (excellent), **Tiles** - A very good solitaire game played with three layers of picture (difficult).

FD8: Games! - This disk is full of games, game hints and a few game editors (cheat programs) including: **Antepenult** - The best PD Ultima type going, **GameEditors** - **Crystal Hammer**, **BardsTale**, **TV Sports Football**, and **FaeryTale**, **GameHints** These are: **Zak McKracken**, **Shadow Gate**, **FaeryTale**, **Space Quest II**, **Dragon's Lair**, and others.

FD9: Moria - a very well done port of an UNIX based character adventure game. This has great graphic controls, multiple spells, similar to **Larn** and **Hack**. Takes up the whole disk. Play time several days!

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

FD11: Las Vegas and Card Games - **Las Vegas Craps** - The best Las Vegas Craps simulation every written for any computer. Contains extensive HELP features, **Thirty-One** - The object of the game is to collect three cards of the same suit, with a point total of 31 points. This is done using rummy-style turns, **Calc**, **Sea** - Two interesting solitary card games, and **VideoPoker** - This game simulates the electronic poker machines found in Las Vegas casinos, but with an important added feature: it provides guidance on proper playing strategy.

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

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

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

FD15: RayTracing #2 - Learn about raytracing the inexpensive way with **DKBTrace** and **DBW_uRAY** (micro raytracer). This disk requires knowledge of the CLI. Source code included.

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

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

FD18: Arcade Games - includes **Bally** a qix type clone, **Billard** a pool game, **Pacers**, a pacman game with screen editor, also **Ej**, a lunar lander type clone, and others.

FD19: Arcade Games - Raiders a space raiders clone that can be 3d compatible, **Frenzy** a shark feeding nightmare, **VollyBall** a good implementation, and **Jar** impossible to describe but fun game.

FD20: Tactical Games - **MechForce(3.65)**: A game that simulates combat between two or more giant, robot-like machines. Simple words can't begin to give you the feel of piloting a 30 - 40 foot tall, fire breathing, earth shaking colossus that obeys your every whim. This game is the full featured update to **BattleForce(3.0)** on FD5.

FD21: Arcade Games - This disk contains **Trek** - startrek shoot em up, **Blood Money Demo** - normally we don't include demos in this case we made an exception. This is the first level of this great arcade game, very playable demo. If you can beat the demo, buy the commercial version! **Boomerang** - two player shoot em up, **Crystal** - arcade adventure game, and push.

FD22: Arcade Games - This disk has **MoonBase** - The best

lunar lander game we have seen in a long time, very challenging. Also **BongGame** - a maze type, donkey kong type game.

FD23: Text Adventure Games - This disk is loaded with three great game, **Adventure** - this is the version of the first game ever written on a computer! This version is greatly enhanced, **THE** true classic even the genera was named after this game, **JackLand** - In the words of the arthur "This is a text adventure, set in the COMPLETELY FICTIONAL Atrashi Computer Company, owned by the COMPLETELY FICTIONAL Jack Trammeler and run by assorted members of his COMPLETELY FICTIONAL family. (P.S.: Did I mention that this story is COMPLETELY FICTIONAL?)", Also **World** and a adventure graphing/mapping program.

WB1: GRAPHICS and PLOTTING - Several neat graphic and mathematical plotting routines are included: **Plot** - a three dimensional mathematical function plotter. Can plot any user defined function, all aspects controllable. **Scenery** - This generates fractal landscapes. The pictures it generates might remind you of somewhere you've been even though they are entirely random. **Surf** - **BezSurf** is a program for producing bezier surfaces of revolution. It produces awesome pictures of objects one could turn on a lathe. Can also map if image files onto any surface that it can draw. And others.

WB2: General Interest - contains, **Galaxy** a program that represents the collision of two galaxies, **Larn** - an adventure/action game similar in concept to **rogue** or **hack**, but with a much different feel. Try it, you'll like it!, **StarChart** - a program that lets you display and identify about 600 stars, galaxies and nebulae visible in the Northern hemisphere.

WB3: General - This disk is crammed full of programs, including: **FastDisk** - optimizes the chaotic disk structure, **Introducer** - create your own scrolling demos!, **Plans** - Plans is a high speed, versatile drafting program, **Zerg(v1.00)** Zerg is an Ultima type clone with a nominal plot, and **ARP 1.3** with **Ash**.

WB4: Telecommunication - This disk contains several excellent pd communication programs. **Access (1.42)** - A very nice ANSI term program based on **Comm v1.34**, but with the addition of transfer protocols, **Comm (1.34)** - Last version of one of the best public domain communications programs ever made on the Amiga, **Handshake (2.12a)** - **Handshake** is a full featured VT52/100/102/220 terminal emulator, and **JRCComm (0.94a)** another great full featured com.

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

WB6: Fonts #2 - **ShowFont(4.0)** This program allows you to quickly and painlessly view all 256 characters in a typical font. AmigaDOS fonts (some up to 56pts).

WB7: Clip Art - This disk is loaded with black and white clip art. Art includes, trees, watches, tools, women, computers, etc.

WB8: File Management - Great disk. **UtilMaster** - From your workbench move, copy, delete, read, show, edit, arc, run any command, and much much more! **Atree** - similar to **UtilMaster** but hierarchical tree displayed. Also **Macchit** - a must have mouse and keyboard enhancer, and **Go** - an ancient chinese game.

WB9: Icons - Truly a multitude of various types and kinds. Also includes **IconMaster**, **IconLab**, and others great utilities to help generate icons.

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

WB11: Business - **Clerk(4.0)**, finally a full featured business accounting PD program for the small to medium company. Includes receivables, payables, end of month and much much more. This version comes with the full user doc!

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

WB13: Printer Drivers and Generator - over 70 different drivers, and if these don't do it, **PrnDnGen** an easy to use program to make your own.

WB14: Video and Anim Utilities - on this disk are several utilities to manipulate anims including cutting, pasteing, and combining and more. For the video enthusiast we have included multiple slides, video titling and other useful utilities. Also on this disk is a full featured video cataloging program.

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

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

WB17: General Utilities - Includes several interesting programs, **DiskX** - Great disk sector editor, **Snap** - Cut and paste text between different windows, **Clean** - defragment memory, also on this disk - calendar generator, diet program, workbench scrolling text, scale converter, and many more.

WB18: Word/Text Processors - This disk contains the best editors that we could find. Includes, **WordWright(v2.2)** a full featured word processor with mail merge and outlining capacity, **Dme(v1.35)** a great programmers editor with strong macro features, and **TextED(v2.8)** an enhanced Emacs type editor.

WB19: Artificial Intelligence - This disk will be of interest to old hands and new in AI both programming and concepts. contains **Eliza** - an AI personal psychologist, a true classic, **Critters!** - a bug gone smart AI experiment, and lots of articles on the subject. This disk submitted directly to us by **Arthur T. Murray**.

DD44: ARP and DiskSalv - On this disk you will find the complete **ArpRel3.0** This is the official AmigaDOS Resource Project (ARP) release 1.3. ARP makes many improvements to AmigaDOS and makes your system easier to use from the CLI (See also dd45), and **DiskSalv 1.3** - By far the best disk and file recovery program available. And others.

DD45: AREXX PROGRAMS - This disk contains several useful arexx programs and examples including, **AllZoo**, **EMake** - **McC(2.0)**, **SpeechToy**, **StarTrek**, **TxEid-SpeechToy**, **TxEidref**, **Txref** **Txref2**, and the complete **RexxArplib2.3**. Also included, **SoundUtil** - C source code routines for using the audio device, by **Robert Peck**, **IconMaster** - great icon generating program, **PopCLI4** - The latest of a must have utility, **ArpUserDocs1.1** - Finally, the documentation for the 3.1 release of **Arp** which replaces most 1.3 AmigaDOS commands (see dd44).

DD46 - JazzyWorkBench - Several well done utilities to jazz up and improve your Amiga Workbench environment made for those of you who hate CLI. Includes: **JazzBench**, **MyMenu**, **SimGen**, **Tapestry**.

DD47: Pascal - This disk contains everything needed to program in pascal. Includes, **A68K (1.2)** 68000 assembler, **Blink** linking software and **PCQ (1.0)** a modest Pascal sub-set compiler.

DD48: Programming Languages - Includes **AmigaIcon** a high-level programming language with extensive facilities for processing strings and lists, and **LLISP(2.0)** An experimental programming language combining some of the features of **Common Lisp** with an object-oriented extension capability.

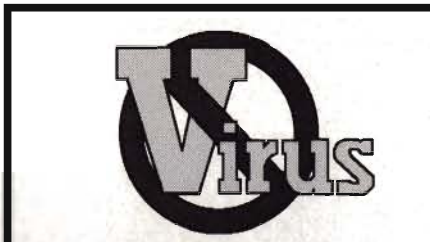
DD49: C Compiler - contains **zc(1.01)** fully K&R, **zcc(1.0)** front end, **A68K(1.2)** assembler, **Blink** linker.

DD50: AREXX #2 - a must have set of tutorials on **AREXX** and several useful examples and utilities for **AREXX** development.

DD52: Scientific - This disk contains several great programs and C source routines for the scientist and science student. Includes **Elements** - an incredibly well done periodic table program with source, **Scientific plotting** - over 600K of **Lattice C** source routines that can be included in your own programs, and **FFT** - **fft C** source.

DD53: Programming - This disk contains a complete forth implementation for the amiga. Also on this disk is **DevKit** - a collection of C and **AREXX** routines to aid in your software development.

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



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its information.

To get this information from the PHASAR.REG file, you need to set a tax code for each category. One tax code can cover several categories.

The PHTAX program can also be used to create customized reports from the information in your PHASAR.REG file. To do this, you create a new form, with empty spaces, or "cells," for text, numbers, dollar-amounts, etc. This reporting function isn't easy to understand. The manual does provide a tutorial that helps you build a net worth statement step by step. (Net worth statements from previous versions of PHASAR can't be carried over.)

The Savings and Loan Analysis part of the manual is confusing — made more so by a picture of the wrong screen. Fortunately, the program is fairly self-explanatory.

Summing Up

It's easier to manage PHASAR with a hard disk than with floppies. Much easier. There are also lots of warnings

about making backups. Take them seriously.

The manual gets good marks for effort, lower marks for practical usability. For example, I discovered the Quick-Start Guide — an appendix in the back of the book — only after I got started. The manual also varies in style and readability.

Unfortunately, the manual is one of those three-way affairs, alternating Amiga information with sections on the IBM and Atari versions. In the generic sections, the manual favors IBM, with a chart translating the keyboard commands.

The manual takes you step-by-step through both PHASAR and PHTAX. The Reference Guide explains everything in the context of the menus and sub-menus. There is a reasonably complete and well-organized index — a rarity these days.

There's also in-context help available from the HELP key. This consists of keyboard options like "List common transactions" and the ever-present calculator (not a mock-

keypad, just a type-in line, but sometimes it comes in handy).

PHASAR 4.0 is essentially a database application, so would you be better off with a general database management program like Superbase or Microfiche Filer? Certainly they could do the job, but setting up the files would take a lot of time, and unless you were an expert at database design you wouldn't be able to create the streamlined transaction entry that PHASAR 4.0 offers. I think PHASAR 4.0 is a real boon to those of us who want to use our Amigas to make our lives more efficient as well as more creative — and my tax accountant is going to love me! ■

Marion Deland is a well-known Amiga writer, consultant and newsletter publisher living in New York City.

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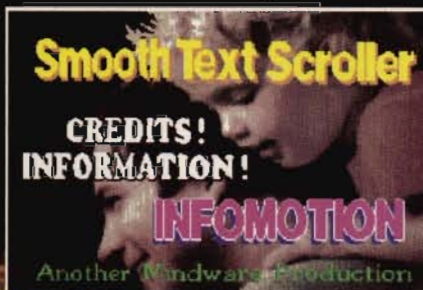
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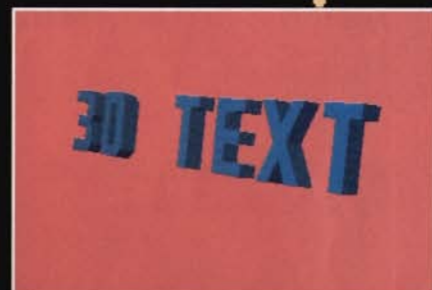
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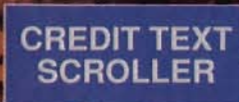
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ON
DISK

Using Your AMIGA Plus Disk

Most files on this FULL disk can be run just by double-clicking on their icons. Every article in this magazine with a Disk Symbol on its first page has a program or picture file on the AMIGA Plus Disk.

QUICK-START INSTRUCTIONS for Amiga newcomers

1. Turn on your Amiga and insert your Workbench 1.3 disk.
2. When the Workbench has loaded, insert your AMIGA Plus Disk into any drive.
3. MAKE A BACKUP COPY of your AMIGA Plus Disk and then store the original in a safe place! First, open the write-protect tab on the original AMIGA Plus Disk. If you have multiple drives: Simply hold down the left mouse button and drag the AMIGA Plus Disk icon onto its destination disk icon. If you have a single disk drive: Click on the AMIGA Plus icon with the left mouse button. Then use the right-side mouse button to select Duplicate from the Workbench menu at the top of the screen, and follow the prompts.
4. Double-click on the AMIGA Plus icon to see the disk contents — including the Instructions file, which you can read by double-clicking on the scroll icon, then using the SPACEBAR to scroll forward and the ESCAPE key to quit. After you have read these instructions, you will be given the opportunity to print the text by typing y (for Yes) at the prompt.

5. SPECIAL INSTRUCTIONS may be needed for some programs. Any extra steps for loading and running specific programs are explained in the Instructions scroll on this issue's disk, as well as in the program articles in this magazine. Again, usually all you'll need to do is double-click on an icon in the AMIGA Plus Disk window and follow the prompts.

ON THIS ISSUE'S DISK

Synthia Strings

The Plucked String module from The Other Guys' Synthia synthesizer software lets you create IFF Instruments to use with your favorite Amiga music software. To get you started, some sample sounds are included on disk. (See Special Instructions on disk or in article to start Synthia.)

Finney

Something's fishy here, and it's the winning game from our Shoot-Em-Up Construction Kit Contest, ready for you to play! In Finney, you are a lone (but well-armed) goldfish trying to swim through plumbing hell and return home — there's plenty of deadly obstacles along the way. Just double-click on the fish-face icon and click again when you're prompted about a "missing" sub-file. See additional instructions on disk or in article.

CLI Remote Commander (JAH)

Dan Wolf's CLI Remote Commander is an ARexx utility that allows you to send commands to your ARexx compatible applications from the CLI or from a script. To help you test JAH, we're rerunning our old friend FRED, from AMIGA Plus #4. Works from the CLI only, see instructions on disk or in article.

Colliding Galaxies 3-D (GC3D)

See universes crash in Colliding Galaxies 3-D, Jim Lawrie's fascinating astrophysical

simulation. Just double-click on the GC3D icon.

ScreenStars

A flashy and amusing interstellar screen blanker by the AMIGA Plus technical staff, ScreenStars automatically turns your Amiga screen into a starship windshield — until you touch a key or the mouse. Just double-click on the starry icon.

BugEye

This ANIMATION by Gene Hamm demonstrates some classic animation effects (in the style of animation great Tex Avery), as discussed in Gene's article about the "Hidden" powers of Elan Performer software. Just double-click on the BugEye icon to show the picture. Use the TAB key to toggle the color cycling, ESCAPE or the right-hand mouse button to quit.

Kirlian Red

This IFF picture by Sylvia Pengilly illustrates the Deluxe Paint color cycling techniques described in her article, "Painting with F5." Just double-click on the Kirlian Red icon to show the picture. Use the TAB key to toggle color cycling, ESCAPE or right-hand mouse button to quit.

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TIGER Cub

Dr. T's mighty \$99 musical prodigy

REVIEW BY HAL BELDEN

++++

For the price, this bouncing baby TIGER is hard to beat—perhaps the best sequencer yet for MIDI hobbyists and novices. Can use Amiga sounds and even prints musical scores!

To meet a rising demand from Amiga users just starting out in MIDI, Dr. T's decided to scale down their powerful new music composition software, TIGER (The Interactive Graphic Editor). The result is **TIGER Cub**, an easy-to-learn music program at a surprisingly low price, with notation printing added to make the bargain even better.

Even if you're a total beginner, don't panic—the manual takes a very straightforward approach, starting with the basics of hooking up your keyboard and that inevitable early question, "What's a MIDI?" For more experienced users who just want to make a little music, TIGER Cub lets you do the job without worrying about too many technical details.

Making Music

TIGER Cub has three main screens—tape recorder, graphic editor, and QuickScore standard notation.

The program opens on the record-

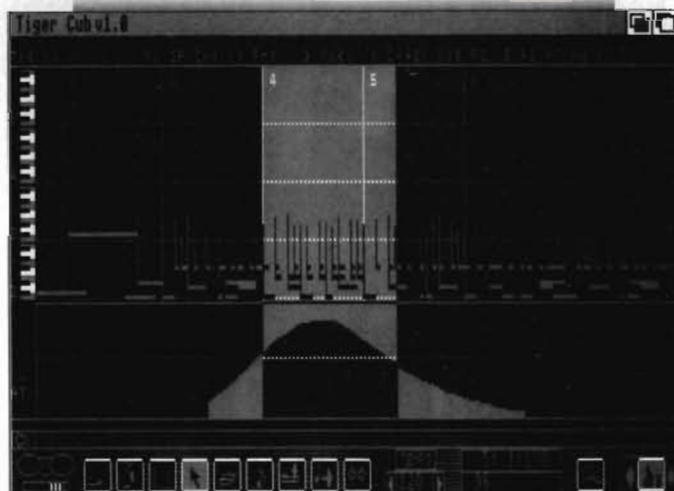
ing screen, which shows the 12 tracks you can record, using simple gadget controls like you'd find on a standard tape recorder. Also on this screen you'll find tempo and location read-outs, as well as buttons that control track merging, controller filters, channel thru, cue, cue point and track erasing.

You can have one MIDI channel per track, or record a track on multiple channels. Each track displays a name, a channel number, an instrument name, solo, group (you can

pull-down menus for editing and setting your preferences for displays. You can cut, paste and copy your music, or quantize it (smooth out your note lengths) with or without "swing." Looping, step entry, velocity scaling, and song pointers are also supported. You can even use a fill command to pad out a specified number of measures with a particular piece of music. You can load standard MIDI files and can also use up to four Amiga IFF sounds in your sequence.

Included in the program are names

Dr. T's new TIGER Cub is a scaled-down version of their powerful TIGER (The Interactive Graphic Editor) MIDI software.



group a number of tracks to use them as a unit) mute toggles, and a comment field.

At the top of the screen are the

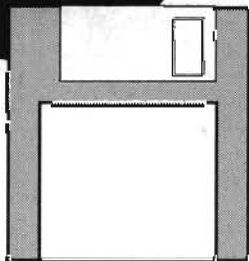
of the factory sounds that come with a variety of popular synthesizers such as the Roland MT-32 and D-110, Yamaha TX81Z, and Kawai K-1.

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Graphic Editor

Once you've recorded your music, you can edit it from the graphic editor display screen. This object-oriented graphic screen scrolls as you play the sequence. Each note is represented by a horizontal line. The longer the line, the longer the duration of the note. Volume is shown by a vertical line attached to the note. A vertical keyboard at left indicates pitch—the higher the line, the higher the pitch. You can also enter notes onscreen by clicking on the piano keys. As an additional nice touch, you can hear each note on the editor screen if you click on it.

Gadgets at the bottom of the screen let you select the various editing tools. A locator tells you where you are in the song. You can edit notes one by one or highlight a group of notes and edit them as a group. You can move notes with the mouse, or change a note's duration by dragging its tail left or right.

The Display menu lists controllers such as note velocity, tempo map, volume or pitch bend. Choose one, and a window appears at the bottom of the editor screen. By simply drawing in this window with a pencil icon, you change or add controller information to your sequence—you can even edit while TIGER Cub is playing. Seven such controller names are listed, plus a selection just called "controllers" where you can enter a controller number (listed in the manual) like 7 for volume or 64 for sustain, and edit the values for these controllers.

Also available from this screen is a window listing drum sounds—MT-32 and "standard" drum set are included—where you assign MIDI note numbers to whatever drum sounds you have available. You can also enter your own list or shift the overall octave if you wish.

QuickScore

The notation screen is actually a separate program called QuickScore,

which loads and reads data from the sequencer, using MPE (Multi-Program Environment), Dr. T's proprietary format for sharing data between their programs. It's optimized to transfer MIDI data at highest speeds.

QuickScore is a truncated version of Dr. T's Copyist program, and looks very similar. You can't edit notes in QuickScore (that must be done back in the graphic editor), but you do have a few preferences to set.

When you call up QuickScore, it automatically reads the sequence data and shows you the first track in standard musical notation. You can look at all the tracks onscreen as an orchestral score, you can change the clef (treble, alto, bass or drum) for selected staves, and you may split a staff (if one track was a piano, for instance). You can specify stems up, down or both, and you can enter a quantize value, key or time signature, and a transpose value. You cannot have any time signature changes (promised for a later version) and you cannot have any text or lyrics.

Once you've adjusted the settings to your liking, you can then print out the music using the program's drivers. The program supports up to 24 staves.

At Finale

TIGER Cub is a most impressive program, especially at only \$99! Also impressive is the 384 PPQ (Pulses Per Quarter-note) resolution it boasts which, along with Dr. T's KCS, tops the Amiga sequencer field. The manual is very helpful for the beginner and features a lot of basic MIDI information that's tough to find from other sources. I highly recommend this program for the novice or MIDI hobbyist. ■

Hal Belden of San Jose has been in music retailing for 19 years.

TIGER Cub	\$99
Dr T's Music Software, 220 Boylston Street, Chestnut Hill, MA 02167. (617) 244-6954.	



COLLIDING GALAXIES 3-D

The gravitational interactions simulation!

Tired of just playing games? Want to sink your teeth into some fascinating astrophysics? Here's a chance to do some real scientific experimentation with your Amiga — while you destroy entire universes.

By Jim Lawrie

Colliding Galaxies 3-D is based on a BASIC program that appeared in the December 1988 Astronomy magazine. I rewrote the program in C and Amiga-ized it. I did not add menus or make it work with many colors. In fact, I use the Workbench screen and merely open a window upon it. The four colors provided are ample for the display and leave more RAM for computing the galactic interactions.

I am interested in the science of astrophysics. Just looking through a telescope at galaxies is not very interesting to me. I want to know why they look the way they do. This program helps me to understand galaxies a little bit better, as well as allowing me to experiment with their computer models.

My basic model consists of two galaxies. The target galaxy has stars in circular orbits. The intruder galaxy is given an initial position, velocity and mass relative to the target galaxy. The number of stars around the target galaxy can be varied by selecting the number of rings of

stars and the number of stars per ring. The stars fill a fixed-width band around the target galaxy and are meant to represent a small subset of the billions of stars in a galaxy's disk. The more stars you use, the longer it takes to calculate each time-step, but the more realistic the image. I find anywhere from 100 to 300 stars to be sufficient.

Some simplifications are made to speed up the simulation. The only particles which are assigned mass are the two galaxies, and all the mass is concentrated at the center of the galaxy. This is done because most of the mass of a galaxy is at the center. Less than 10% of a galaxy's mass is in the disk stars. The intruder galaxy has no stars in its disk at all.

Finally, the stars do not interact with each other. All these simplifications are made to allow the model to produce realistic images in a reasonable amount of time. For example, if I use a model with 100 stars and the two galaxy masses, I must compute 200 separate forces per

COLLIDING GALAXIES 3-D

iteration. By simply allowing each of those 100 stars to have mass and interact with each other, I now must compute almost 10,000 separate forces for each iteration. Add more stars and the computations increase exponentially.

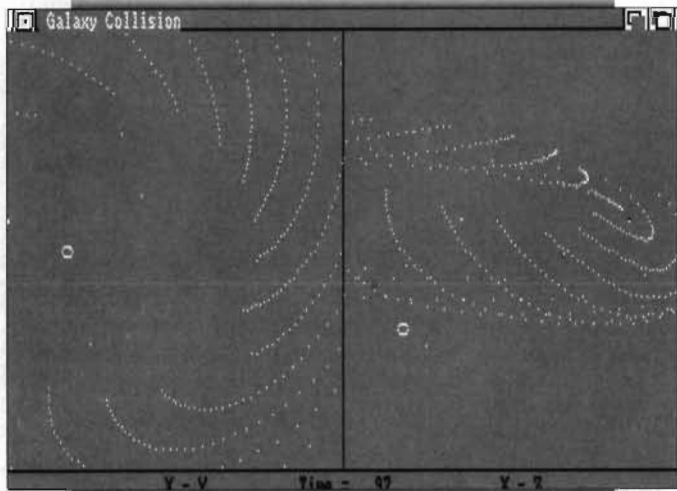
Listed below is the set of canonical units and their translations used by this program. Canonical units are used for simplifying calculations and translations between two sets of measuring units. For example, one velocity unit is always one distance unit per one time unit.

G	Universal Gravity Constant	1
t	time unit	1.2 Million Years
d	distance unit	500 Parsecs
m	mass unit	20 Billion Solar Masses

Using the Program

Colliding Galaxies 3-D can be started by simply double-clicking on its icon in the main window of this issue's AMIGA Plus Disk.

You will first be asked to respond to a series of questions about the starting conditions of the model. If any problem with the data is found, such as too many stars for the allowed space, you will be informed and asked to try again.



Simulated stars scattered in the wake of a passing Galaxy

At any point during the running of the simulation, you can type P to Pause the program. This allows you to perform a screen dump to a printer or file. Pressing the P key again continues the simulation. To exit the program, simply click the left mouse button on the upper left part of the screen.

At the bottom of the display is a status line indicating the current number of time steps. At left is the X-Y plane, which is the view from the north pole of the galaxy.

The target galaxy consists of a white circle. The intruder galaxy is a smaller orange circle. Each star consists of a single white pixel. The stars are initially placed into

circular orbits about the target galaxy within a band stretching from 10 distance units (5,000 Parsecs) to 30 distance units (15,000 Parsecs) from the target galaxy's center.

Calculating the new positions and velocities of the stars is a time-centered "leapfrog" algorithm — named leapfrog because on alternate time cycles the velocities are held steady while the positions are updated, then the positions are held steady while the velocities are updated. The time cycle used in this program is 1.2 million years.

Result	Mass	X0	Y0	Z0	VX0	VY0	VZ0
Ring	1.00	7.5	0	35	0	0	-1
Bridge	0.25	40	10	10	-1	0	0
Whirlpool	0.25	-30	30	0	0	-0.34	0.34

FIGURE 1. Examples of Initial Conditions

Figure 1 shows some examples of initial conditions which result in the type of galaxy listed. The program can be run with any of an infinite number of starting conditions. Professional astronomers are constantly doing experiments of this type on computers large and small. With this program, you can do some experimenting yourself. Or if you prefer, just watch the fascinating patterns which can be formed from one force — gravity.

Galaxies are not the only forms of gravitational interaction which can be investigated with this program. Try placing a small number of particles in orbit about the central body, then put the other body, also known as the intruder galaxy, in circular or elliptical orbit. Watch how the intruder galaxy perturbs the particles in orbit about the target galaxy and throws some of them out of orbit. This could be a simulation of asteroids in orbit about the sun being perturbed by the planet Jupiter — or proto-comets being perturbed by a passing star that sends them hurtling toward the inner planets in highly elliptical orbits.

A circular orbit can be formed for the intruder galaxy by taking the velocity of the intruder as the square root of $5 \cdot (1 + im) / id$ — where im is the intruder galaxy's mass fraction and id is the intruder galaxy's distance from the target in distance units. Apply the velocity tangentially (at right angles to a line drawn from the target galaxy to the intruder galaxy) and a circular orbit will be formed. Elliptical orbits can be formed by varying the velocity's magnitude, direction, or both.

How It Works

Once the initial conditions are set, the program begins by initializing the stars, the display, and the galaxies. The target galaxy is assigned a mass of 100 billion solar masses, while the intruder galaxy is assigned a fraction of this. The target galaxy is placed in the center of the display windows, with the intruder galaxy and stars placed relative to the target galaxy's position.

Then each of the stars is placed in a circular orbit about the target galaxy. This is accomplished by looping

through the number of rings and the number of stars per ring. For each star, the position is set as 10 distance units plus a fraction of 20 based upon the ring number being processed — zero for the first ring being processed, 20 for the last ring. The actual X, Y coordinates are determined by taking the sine and cosine of the fraction of the circle each star in the ring is assigned. Velocity is assigned to be tangential to the star's position and of a magnitude calculated to produce a circular orbit. The Z coordinate and velocity are set at zero.

A borderless window is opened on the Workbench screen, taking up the entire 640 X 200 display. If all goes well, the main loop of the program begins. The only exit from this loop is by clicking the left mouse button in the upper left part of the window telling the program to stop at the end of the current loop. The loop begins by calculating the new velocities and positions of the stars and galaxies via the leapfrog algorithm discussed previously. At the end of the loop, a function is called upon to draw the new display.

This function, `drawstars()`, clears the screen and draws lines separating the X-Y view from the Y-Z view. The

bottom of the display gets an updated status line labeling the two views and informing how many time steps have been run so far. Then each galaxy is drawn in its position relative to the center of gravity of the system, which is placed at the center of each view.

At the end of the main loop, `handle_messages()` is called to check on any user input which may be of interest to us. We look for keystrokes and mouse buttons. If we need to pause, we set a flag indicating so. Similarly for the left mouse button being clicked in the upper left part of the screen. If we are quitting, the main loop is exited, and we quit the program. If we are pausing, we go into a small wait loop until the P key is pressed again or the left mouse button is clicked on the area indicating we should quit. Notice the `Wait()` function which is used to put our task to sleep until a message arrives for us. That way we won't waste processor time constantly looking for messages. When a message comes in for us, our task will be resumed and we can look at it. ■

Jim Lawrie is a Massachusetts software engineer who has been programming the Amiga since 1985.

COMPUTER MODELING

The science of mathematical modeling has been around since mathematics itself. Carving marks in a piece of wood or clay to represent the number of sheep in a herd is a primitive form of mathematical modeling. But with computers, a new era of modeling has arrived. Computer modeling is essentially the old concept. You represent a physical system with a set of symbols and equations, plug in some numbers and translate the output of the equations back into the physical world.

Just such an equation is $d = vt$. Here d represents distance, v represents velocity, and t represents time. Letting $v = 5$ and $t = 10$ says that after 10 seconds of traveling at 5 distance units per second, you will have travelled 50 distance units.

A more advanced form of modeling can now be performed with computers. You can model the many separate pieces that make up a complex system — such as such as the movement of a large number of air particles flowing around an experimental aircraft wing. With each tick of the clock, hundreds, thousands, or even millions of calculations must be performed in order to accurately predict what will happen to the airflow around the wing. All calculations must be redone every time the clock ticks — whether once per second, once per thousandth of a second, or whatever time interval is chosen — because the conditions have changed. Particles have

moved and the forces upon the air particles have changed.

You can see how exhausting this task would be if a scientist needed to perform it manually. Even with the aid of a calculator, keeping track of the many thousands of particles would be nearly impossible. If by luck, someone could do this with reasonable accuracy, another problem comes up — how to display the results. I am comfortable with mathematics, yet I would shudder at the thought of trying to figure out what was happening to the air around this wing if all I had to go on were columns and columns of numbers.

This is where a powerful computer such as the Amiga comes in. The Amiga could take that pile of numbers and translate it to a graphic image of the airflow, perhaps with different colors showing air pressure. Even I could see at a glance if the low pressure area was on top of the wing, where it should be.

Ray tracing is a more familiar form of computer modeling. Here the computer determines the color and brightness of each pixel on the display screen, based on mathematical descriptions of where the light sources are, how bright they are and what objects exist to bounce the light off. The more pixels, the more objects in the scene, the more complex those objects are, and the longer the animation — the greater the drain you put on the computer.

Digi-View 4.0 — Still the Leader

Best-selling video digitizer gets a near-photo-quality upgrade

REVIEW BY MORTON KEVELSON

++++¹/₂

Looking for a way to get an image into your Amiga? Digi-View 4.0 is a low-cost way to let the Amiga see the light — with more powerful tools than ever before.

tle-known HAM mode which could show all the Amiga's 4,096 colors on-screen at once. The HAM mode, which stands for hold and modify, was almost left out of the Amiga's custom display chips because the Amiga designers worried that the HAM display concept was too complex to be of any practical value and

price, Digi-View has enabled thousands of Amiga artists to easily digitize (record and convert) "real-world" images for computer manipulation. Always aggressively marketed and regularly upgraded, Digi-View has come up with a new 4.0 version that offers a number of major advances.

Update 4.0 News

The most significant addition to Digi-View 4.0 is the Dynamic HiRes display mode, which produces images of near-photographic quality. Dynamic HiRes shows all 4,096 Amiga colors in a 640 x 400 pixel image — up to 704 x 480 pixels with overscan. Normally, high-resolution images are limited to only 16 screen colors at once.

There's also a new Dynamic HAM mode that eliminates "fringing" distortion. Dynamic display modes achieve their performance by redefining the image's palette for every scan line. Not unexpectedly this eats up a lot of the Amiga's processing time. As a result, all other tasks must be shut down while the Dynamic image is displayed.

Digi-View does keep track of several additional functions while maintaining a Dynamic display. The program looks for input from both the mouse and the keyboard at all times.

Digi-View 4.0 was not really designed to digitize moving subjects, but the results can still be interesting.



In the early days of the Amiga 1000, NewTek's disk full of impressive Digi-View images circulated through the public domain channels. These pictures used the lit-

that programmers wouldn't use it.

By now, Digi-View has become the most popular graphics grabber product for the Amiga. With its deceptively simple hardware and affordable

When input is sensed, the Dynamic display mode is shut down and the input is processed. The disk drives are also periodically checked for a disk change. If there is a disk in the drive, its light will periodically flash while the Dynamic display mode is active.

Multi-tasking within Digi-View 4.0 has been improved. If your Amiga has at least three megabytes of RAM and one megabyte of chip RAM it is possible to transfer images directly from Digi-View into NewTek's Digi-Paint 3 painting software. I found that it took about 10 minutes to transfer a Dynamic HiRes image with overscan and interlace into Digi-Paint as a super bitmap HAM image. Since both Digi-View and Digi-Paint run from their own screens, it was necessary to shut down the Workbench screen in order to be able to flip between these two programs.

Digi-View now includes ARexx support which allows the program to be remotely controlled either from other applications or from script files. The presence of ARexx support should encourage the use of Digi-View by independent developers and system integrators. The Digi-View software includes the DVlink utility which provides access to Digi-View's ARexx port from either the CLI or a script file without need to have ARexx running on your system. (See *Dan Wolf's article in this issue*. — + EDITORS) Several sample script files are provided as well.

Digi-View's Control Screen now includes an NR (noise reduction) slider which can be set to reduce the grain or snow caused by random pixels.

Displaying an image with Digi-View takes some doing. The data is first read in and converted into Digi-View's internal 21-bit format before it can be processed into a viewable image. The Dyna-Show program on the Digi-View disk allows saved images to be quickly displayed as IFF files in any of Digi-View's screen formats. Dyna-Show is a redistributable standalone slide show program which can

be run from either the CLI, the Workbench or from a script file.

For the benefit of readers who are new to the Amiga community, we will now present a complete overview of Digi-View so you can find out what you have been missing...

Digi-View Background

The Digi-View hardware is a video interface, about the size of a deck of cards. It has a standard RCA jack and a 25-pin connector that plugs directly into the Amiga's parallel port. The RCA jack expects to see a standard NTSC composite video signal (PAL for European users). Just about any video signal will be accepted by Digi-View, but for best results the signal should adhere to the RS-170 standard — it should be a monochrome and fully interlaced signal.

Digi-View's new display modes push the Amiga hardware to its limits.

The best low-cost source of such video signals is a high-quality, black and white security camera such as the Panasonic WV-1410 — which also has a conveniently located mechanical focus adjustment that makes it easy to do close-up work. NewTek has found that the WV-1410 works especially well with Digi-View and sells this Panasonic camera for \$279.95.

To create a full color image, Digi-View digitizes three monochrome images through a set of red, green and blue color filters. The original Digi-View came with a color wheel made from segments of heavy lucite. Digi-View 4.0's filter wheel consists of gelatin filters in a cardboard holder. The gelatin filters have excellent color uniformity, but they are easily scratched and attract dust. A simple aluminum bracket is provided to

mount the filter wheel and to hold it in front of the camera's lens.

Several accessories are needed to complete your Digi-View system. As with any videographic endeavor, a suitable source of light is essential to obtain optimum results. The Digi-View filter wheel and accompanying software works best with cool white fluorescent lighting — such as the inexpensive 22-watt ring-type fluorescent lamps sold as low-energy replacements for standard light bulbs.

Since the color digitization process takes several seconds and will be repeated three times, some means of supporting the video camera, the lights and the material being digitized is essential. NewTek has the optional photographic **CS-II Copy Stand** for \$79.95.

NewTek also offers the \$79.95 **Digi-Droid**, an optional motorized filter holder that automatically runs Digi-View through the entire three-color digitization sequence in the shortest possible time — because you don't need to leave the computer in order to turn the filter wheel. Digi-Droid connects to the Amiga's mouse port, and comes with its own filter wheel and mounting bracket.

Digi-View Software

When Digi-View is started you must choose the screen display mode, to determine the resolution of your digitized images. Digi-View supports all the Amiga's standard display modes plus a variety of overscan modes. Screen widths can be 320, 352, 384, 640, 704 or 768 pixels. The display height can be 200, 240, 400 or 480 pixels. The PAL version of Digi-View supports display heights of 256, 296, 512 or 592 pixels.

Your screen format can be changed any time after the program has started. However, be sure to save your current image first. Digi-View will not convert the current digitized data to the new screen format. Instead, it performs the converse conversion process. That is, any Amiga IFF image file can be loaded into

Digi-View for conversion to the current screen format.

Images are digitized with seven bits per color per pixel — a total of

VIDEO DIGITIZING TIPS

If you already own a conventional camera system with interchangeable lenses and you are using the Panasonic WV-1410 video camera, you should check your photography store for a C mount adapter to hold your camera's lenses. The advantage of using the longer focal-length lenses from a 35mm single lens reflex camera is that it permits the video camera to be positioned further away from the object being digitized. The greater lens-to-object distance allows for additional flexibility in the lighting.

And if you are using the Panasonic WV-1410, be sure to cover the power LED on its front panel with opaque tape. The light from this LED can reflect off the filter wheel into the lens, creating a hot spot which obscures a portion of the image.

Unlike scanners, video digitizers do not work with a fixed resolution or scanning area. In fact, the actual resolution of a digitized image is inversely proportional to its original size. For example, digitizing an image one inch wide in high-resolution mode results in an effective resolution of 640 dots per inch! Or in other words — the smaller the image, the higher the resolution.

21 bits for a color image. This comes out to a working palette of 2,097,152 colors. Although the Amiga can only display a maximum of 4,096 colors at one time, based on four bits per color, Digi-View uses the extra bits for image processing. The extra bits let you use the program's Control Screen to adjust the brightness, contrast and color balance of the digitized image over the complete range available. Digitized images can be saved either as standard IFF files of the current screen display, or as 24-bit IFF images containing all of the original digitized image data. Note that Digi-View can also read in and process 24-bit IFF files. A hard disk is required to handle 24-bit, high-resolution overscan images because these are too large to fit on an 880 kilobyte Amiga floppy disk.

The Control Screen also lets you pick the number of display colors used. Your actual choices depend on the current screen resolution. Options include a high-contrast, two-color line art mode as well as a 16-level gray scale display. The color display options include 16, 32 and 64 colors in extra half-brite as well as the 4,096-color HAM display mode. A pair of optional dithering levels can generate additional pseudo-colors in the display. The image can also be displayed as photographic negative.

For normal digitization, Digi-View tries to optimize the palette which will be used to display the image. Note that the 4,096-color HAM images are actually based on a palette with only 16 colors — while standard low-resolution images can have a palette with as many as 32 colors.

Digi-View's palette control option lets you alter the palette on which the image is displayed. A typical application for a customized palette would be to reserve several colors for use in a paint program. The palette can also be imported from another image. This would force Digi-View to optimize the image display so as to be compatible with the palette from your own artwork.

Images can be digitized with one

half the screen dimensions (one fourth of the screen area) or one fourth of the screen dimensions (one sixteenth of the screen area). These reduced images are always placed in the top left corner of the screen.

Keystroke combinations are available for many of Digi-View's menu commands — including all the digitization commands. This lets you move the keyboard closer to the digitizing setup while manipulating the filter wheel.

Summing Up

Digitizing with Digi-View is not a fast process. The basic scan, using a low-resolution, non-interlaced image format, takes about five seconds. Color images will require three of these scans. A high-resolution interlaced image takes nearly five minutes to complete its three scans. Displaying the image requires additional time as Digi-View analyzes and processes as much as 21 bits of data per pixel. I found it could take as long as 10 minutes to digitize and display an image using the highest possible screen resolution with the maximum number of colors. The digitization process can be slowed down even further by instructing Digi-View to take four samples of each pixel as the scan takes place. These samples are then averaged to improve the image resolution and reduce noise.

Digi-View 4.0 is a significant improvement over the previous version. Its Dynamic display modes push the Amiga hardware to its limits. Fortunately, the program does support the high-speed 68020 processor to help reduce the long image processing times in the highest resolution modes. Although applications for the Dynamic display modes are presently limited, I expect new uses for them to start appearing very soon. ■

DIGI-VIEW 4.0	\$199.95
Upgrade	\$ 30.95
NewTek, Inc., 15 West Crane Street, Topeka, KS 66603. (800) 843-8934.	



ScreenStars

A screen blanker display worthy of the Amiga

By Arnie Cachelin and Aki Rimpilainen, AMIGA Plus Technical Staff

Save your monitor while you cruise the galaxy with ScreenStars. This handy little screen blanker is the result of a rare Amiga case of MacEnvy. . .

We saw a nice, relaxing screen blanker running on a Macintosh near the AMIGA Plus office. This blanker replaced the drab B&W Mac screen with a drab B&W field of stars passing by as if the viewer was at the helm of a very fast starship. So we decided to create our own enhanced Amiga starry blanker, ScreenStars.

A very common type of program, a screen blanker basically hangs around, waiting for your computer to be idle for some time. When the blanker decides that you must have gone for a sandwich, it blanks out your screen display to prevent that screen image from being burned into your monitor's phosphor.

An unobtrusive little screen blanker, ScreenStars opens a small starry window on your Workbench screen. When you click on this window, a larger window opens, which

asks you whether you want to remove the screen blanker. Clicking on the REMOVE! button removes ScreenStars. If you click on the close gadget in the upper left corner or click on another window, the little starry window will return and ScreenStars will continue to run in the background. To change the position of the starry window on your Workbench screen, open the REMOVE! window and move it, positioning its upper left corner where you want the starry window to appear.

it displays a black screen, and then draws a starfield moving either head-on or sideways. When your Amiga detects any input, ScreenStars will unblank your screen, and hide away again.

To use ScreenStars in its default, head-on Hi-Res mode, simply double-click on its icon on this issue's AMIGA Plus disk. To see ScreenStars in sideways or Lo-Res mode, run it from the CLI by typing:

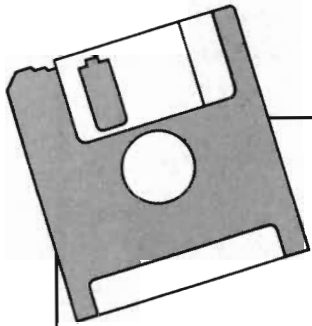
```
ScreenStars [delay] [L] [S]
```



Changing the Settings

ScreenStars goes to work when it notices that two minutes have passed since you last moved your mouse, pressed a key, or moved a disk. First

Here [delay] is the number of minutes (1-9) ScreenStars waits before turning on the stars. If you don't specify a delay, it uses a two-minute delay. If you use the [L] flag, Screen-



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Stars opens a 320 X 200 screen instead of 640 X 400. This doesn't look as good, but it's recommended if memory is tight. The [S] flag turns on the sideways mode, which looks like a side-window view from your Amiga starship.

The defaults can also be changed by editing the ScreenStars icon's ToolTypes. Click on the icon, choose INFO from the Workbench menu, and set the ToolTypes entries as follows: To set the Lo-Res mode add the ToolType RES=lores, to set the side view mode, add MODE=side, and to specify a delay, DELAY=n where n is a digit from 1 to 9.

ScreenStars is pretty stable, small and useful. If you don't have another screen blanker that you use, it would probably be a good idea to drop ScreenStars in the Startups drawer you installed for the BindStartups utility from *AMIGA Plus* Disk #7, so you can launch ScreenStars every time you boot.

Behind the Scenes

When ScreenStars starts, it first checks to see if it's already running. If it is, ScreenStars will exit. Otherwise, the program allocates memory for the star display, opens the little starry window and installs an input event handler which counts consecutive timer events (10 per second). ScreenStars now waits for a signal from our handler telling it to blank the screen. When this signal arrives, ScreenStars turns off the Amiga's sprites and redirects the View to the black screen it initialized at start-up.

ScreenStars then goes into its star drawing loop, which is synchronized with the vertical display blank interval. This loop exits when our input handler detects any event other than a timer event. If ScreenStars gets a GADGETUP message from its little starry window, it closes that window, and opens the remove window. Now ScreenStars will remove itself if it gets a message from the REMOVE! button, or it will go back to the starry window mode and start counting idle

time if it gets a CLOSEGADGET or IN-ACTIVEWINDOW message. The starry window reopens with its upper left corner where the corner of the remove window was when it closed.

The amount of memory used by ScreenStars depends on the selected display mode. A 320 X 200 screen consumes 8,000 bytes of chip memory, while a 640 X 400 screen hogs 32,000 bytes. The program also allocates an extra chunk of memory, needed to clear the screen quickly (this doubles the actual chip RAM used). ScreenStars reserves this memory when the program starts, so its attempts to open a screen don't interfere with whatever memory-intensive project happens to be running. This also prevents fragmenting your chip RAM, which tends to happen if you repeatedly allocate and free small chunks of RAM.

When the screen blanks, all ScreenStars does is move stars and wait for signs of life. We have tried to make the starfield algorithm as quick as possible, so even your ray-traces won't be slowed particularly by our screen blanker. (This was not a consideration for the Mac version, since they can't have anything else running, anyway.)

In head-on mode, the stars seem to speed up as they get closer to the spaceship. ScreenStars does this by skipping a few display frames before moving a young star, and later doubling its movement increment. In sideways mode, each star moves once per vertical blanking interval, whereas cruising head-on updates only a small portion of the stars. Head-on mode hogs less processor time, and thus is somewhat friendlier to your Amiga. ScreenStars eschews slow floating point math and transcendental functions (sine and cosine) by using a 360-byte look-up table for its head-on mode calculations.

ScreenStars was written primarily in C, with some assembly language parts. The windows and gadgets were created with PowerWindows 2.5 from INOVAtronics. ■

Aztec C 5.0A vs. Lattice C 5.04

Do you want speed or small code, ease of use or widest compatibility??

REVIEW BY MATTHEW DILLON

One of the Amiga's top public domain programmers takes a close look at the two competing heavy-weights of Amiga C language programming.

Manx's latest release of **Aztec C 5.0A** is a major leap up to what has been the de facto Amiga front-runner in this programming language, **Lattice C 5.04**. Overall, both compilers are at nearly the same level of integration and reliability, and the following comparison is more a discussion of details than an attempt to prove "this compiler is better than that other one."

I've tried to be impartial in comparing these two competing C compilers. My experience lately has been with Lattice C, but most of my best-known programs were originally written in Manx's Aztec C. I switched to Lattice simply because I was getting hooked on the ANSI standards for C, which Aztec didn't support. But that has changed — the new Aztec C

release is now a complete ANSI compiler.

The Face-Off

As a test, and to add a little humor and irony, I used both Lattice C and Aztec C to compile the compiler I've

huge switch() statements and routines, and *lots* of variables.

All executables were made resident, so all I/O overhead would be the reading of the header and source files and the writing of intermediate and object files. None of the pro-



ILLUSTRATION BY CHERYL RABIN

been writing. To add some diversity and really exercise the two products, I also compiled the GNU C-Preprocessor, which has some absolutely

grams below require a large number of includes, so the precompiled include file option has not been used. Since the size of the compiler exe-

cutables is not a factor in the comparison, it was not included in memory usage statistics. There are no `#ifdefs` in the code related to the type of compiler. All object files are written back to the hard disk so as not to interfere with the memory usage statistics, and because for big projects you usually keep objects on the hard disk instead of in RAM anyway. Lattice QUAD files and Aztec temporary assembly files are written to the hard disk as well.

Due to the above reasons, the accompanying statistics are good only in comparison with each other, not with any other product. I didn't bother with the standard execution speed benchmarks, such as Sieve, because both compilers are near-equal in producing relatively good 68000 code. The tests were conducted on my old Amiga 1000 with 160Mb hard disk, 2.5Mb RAM, and 68000 processor.

Compilers at Work

Aztec C 5.0A allocated its 100-odd K in the first few moments of compilation of CCCP.C, then stayed nearly constant. Lattice C 5.04 has a tendency to gobble memory. It allocated nearly the same amount as Aztec C in the beginning but then kept on allocating more throughout the remainder of the compilation.

One of Aztec's supreme advantages has always been its fast, straightforward compilation. It was obviously written with forethought from the ground up. Compilation of a C program has two extremely modular parts, cc and as. The actual compiler, cc, produces a temporary assembly file which is then assembled with as. Not quite standard, the assembler does some very obvious optimizations that the Aztec compiler relies on. Such optimizations as `movem->move` (or removal of the `movem` altogether), *should* be done by an assembler, because they're easy to do with an assembler and difficult to do with a compiler.

On the other hand, Lattice C has the advantage of tending to produce

smaller objects and executables. Lattice C also has much better warning messages than Aztec, such as warnings about variables not referenced or used before being initialized. Lattice conforms to the spirit of ANSI somewhat better than Aztec. Aztec is too strict about certain things, such as defaulting to giving an error for ptr-int conversions instead of a warning, and complaining about comparing pointers with zero (NULL is okay because that is defined as `(void *)0`). Aztec also has the annoying habit of complaining about int-long conversions even when `sizeof(int) == sizeof(long)`, the default.

Lattice C has a deluge of options that handle specific needs, such as declaring that a routine is called as an interrupt, and an option to relax pointer-pointer warnings for structures of similar standing.

Lattice C offers a straightforward method to make a residentable (re-entrant) executable. You simply use `lib:cres.o` instead of `lib:c.o` in your blink line. There are some restrictions, but it works extremely well, and Lattice has made nearly all of its binaries pure so they can be made resident. Aztec does not appear to have anything close to this. Its binaries are not pure, and therefore cannot be made resident. (In my tests I used REZ, a utility by Aztec's Jim Goodnow that lets you make such programs resident.)

Aztec's high-end package includes complete source code to its libraries, so experienced programmers can track down and fix bugs in the library without having to wait for the next release of the compiler. Apart from that the copyrighted source is of limited use, since you can't include it in any of your own projects.

Shared Features

Both compilers have options for precompiled header files, inline library calls, and automatic placement of autos into registers. I personally like Aztec's user-friendly `#pragma` format rather than the cryptic hex codes

Lattice uses, but Lattice makes up for it by having additional options to automatically pass arguments to normal procedures in registers, rather than on the stack for fully prototyped procedures. The latter option is really only useful if you are hell-bent on making your code go as fast as possible, and even then I don't think you gain much because it leaves fewer registers available for register variables and makes the code larger.

Both compilers have their own object module librarian, and have symbolic debuggers with similar features. Aztec C also has a low end debugger, called db, which does not have symbolic source line display capability, but is so easy that I use it almost exclusively.

If you insist on a comparison of documentation, I will say that I like the Lattice manuals better. They come in two three-ring binders and looking things up is easy. Aztec C's manual has roughly the same number of pages in a single bound volume, not formatted quite as nicely but with a bit more technical information.

Lattice Problems

Lattice C has always been known to be somewhat slow, and still uses the ol' intermediate QUAD file between two executables, LC1 and LC2.

Lattice C is extremely sensitive to option placement. For example, you must place the `-o` option before the source file name, and you cannot put a space between the "o" and the filename.

Lattice has spent more time adding features to LC1/LC2/BLink than fixing the ones already there. To their credit, they have fixed nearly all the bugs reported to them, but there are still some obscure problems. Because of this, I have a tendency not to use the more esoteric features of the compiler.

I normally find myself having to specify a deluge of options to LC as well as construct long-winded BLink lines to link.

Lattice cannot generate text assembly output from LC1/LC2. They do

provide an OMD utility which you run on the object file, but it won't always disassemble your object module, and when it does disassemble the module it does a half-baked job of it.

Lattice ASM, an independant assembler utility, is extremely slow and full of really stupid format bugs. I use a freeware assembler, A68K (mainly because it comes with source, so when I find a bug I can fix it).

Lattice has a feature allowing you to manually specify that certain procedure arguments are passed in specific registers. Aztec has this feature as well, but with Lattice it is an extremely convoluted declaration, impossible to remember and messy to write.

Aztec Problems

My "problems with Aztec" list used to be a lot larger. In 5.0A, Aztec fixes its register usage to conform with the Commodore standard, and it is now a complete ANSI compiler. These two changes make it relatively easy to write assembly interface routines that can work with both Lattice and Aztec with a minimum of hassle. The fact that both Lattice and Aztec are ANSI means that most of the top-level includes such as <stdio.h> and <stdlib.h> are standard. Being ANSI, the new Aztec accepts prototypes.

Aztec does not use Commodore's object file format. Lattice uses an object file format somewhat extended from Commodore's, but the extensions were necessary. Aztec *does* handle standard .O files, but just doesn't generate them. Because of Lattice's deviations from Commodore standard, Aztec cannot handle Lattice .O files.

Aztec still uses its "set" command instead of the standard setenv command. That is, it does not use normal ENV: variables.

Shared Problems

Neither compiler implements fork/exec correctly. I've had nothing but problems with fork/exec calls, and have resorted to going back to

the dos.library Execute() call, which at least works with everything and handles resident properly. Globbing the problems together, there are incompatibilities with BCPL programs, failure to allow programs called with exec to call Execute(), improper redirection of stdin and stdout, improper propagation of ^C, ignorance of the resident list, and a host of other problems. I think Execute() has problems with ^C as well. Hopefully this will be fixed in OS1.4 or 2.0.

Neither Lattice nor Aztec utilizes

registers to their fullest extent. For example, D0/D1/A0/A1 are not used for register variables even if the procedure in question makes no subroutine calls. Both insist on using other registers, thus forcing a move[m] to save/restore them on entry and exit to the subroutine. This causes greater stack usage and more overhead on the call/return.

Really huge macros, such as those in GNU-CPP's header files, are too much for either compiler to handle. Lattice crashes and Aztec gives up

Table 1. Compiler exercises:

CCCP.C represents an atypically huge source file while CEXP.C represents a more typically sized source file.

Compiling:	CCCP.C 144950 bytes	
	LATTICE V5.04	AZTEC V5.0A
Memory Used	209400	90208
Time to .O	374 seconds (6:14)	181 seconds (3:01)
Object Size	37056 bytes	44272 bytes
	CEXP.C 35486 bytes	
	LATTICE V5.04	AZTEC V5.0A
Memory Used	95168	82024
Time to .O	44 seconds	32 seconds
Object Size	7048 bytes	8824 bytes
Linking:	LATTICE V5.04	AZTEC V5.0A
BINARY size	49372	55000

OTHERSELECTEDPROJECTS

File	FileSize	LATTICE			AZTEC		
		RAM	Time	ObjSize	RAM	Time	ObjSize
ASM1.C	29344	153992	96	14932	118976	62	17844
ASM2.C	12298	128800	44	5708	110832	30	6748
ASUBS.C	7860	124608	41	4320	110832	24	4864
BLOCK.C	6367	117272	22	2576	108776	18	2808
CEXP.C	14860	123560	40	6660	133368	29	7532
GEN.C	10782	124608	42	5384	110832	29	6460
GENARITH.C	9096	122512	38	4296	106728	24	4720
GENASS.C	2066	115176	17	1436	110840	13	1388
GENBOOL.C	15751	125656	52	5732	110840	31	6928
GENLOGIC.C	6930	119368	31	3020	108800	21	3368
GENMISC.C	27366	146616	88	11556	110848	51	13248
LEX.C	10217	125656	48	4552	108784	27	5528
MAIN.C	2546	115176	19	2240	110848	14	2180
REG.C	11458	127752	41	4468	110840	27	5372
SEM.C	2676	114128	17	960	110840	13	956
STMT.C	15442	127752	47	7172	110848	32	7408
SUBS.C	6052	121464	32	4124	110848	20	4448
SYM.C	2220	117272	19	1836	110840	15	2012
TOplevel.C	10072	124608	37	4288	106784	24	4780
TYPES.C	6755	124016	29	3352	110888	20	3396

TOTAL

800secs 98612 bytes

524secs 111988 bytes

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with an error. I am usually forced to alter such macros so they work. This is a problem only if you intend to port large UNIX programs over.

Utilities

Both Lattice and Aztec offer vari-

ous auxiliary utilities. The useful utilities deal with managing libraries, object modules, and other compiler-oriented things.

Most of the utilities, however, are largely useless or trivial, or have even better counterparts in the public

domain. Both packages come with Make, which isn't really UNIX Make, but a very poor, bug-encrusted program (for both Lattice and Aztec C). Also included are Grep (like the AmigaDOS Search command) and Diff, a utility that compares two text files and prints the differences. Each package includes an editor, neither impressive. Basically, all these extra utilities were included give the compiler a self-contained environment, in consideration of those users who have no access to other software sources.

Summing Up

There are pluses and minuses to each compiler system. Both Aztec and Lattice come with five floppy disks, and if you intend to become a serious programmer, you'll find you need a hard disk. That way you can simply copy all the master floppies onto your hard drive and not worry about which libraries, executables or utilities you will or will not use.

I can't really say that either Lattice or Aztec C is better than the other, both having their advantages and disadvantages. My final advice is to think about both your price range and what you need in a compiler before checking the features and capabilities of available commercial products. Aztec and Lattice are at each other's throats, and you should make sure the one you buy has what you want. ■

Matthew Dillon of Berkeley is a star Amiga freeware programmer. Some of his best-known works are the DME text editor, Backup for hard disks, and DNet Amiga networking software.

DILLON ON "FEATURE-MANIA"

I have a certain disregard for compiler "features" because, beyond a certain minimum need, they encourage bad habits and become obtrusive — a source for bugs in the compiler, and useless except for their obvious advertising benefits.

I do not believe that the following "features" are worthy of comparison.

1. The #asm directive allowing embedded blocks of assembly code (Aztec). This generally not only makes code unportable, but unreadable as well. I got into the bad habit of using it until I couldn't use it — Lattice C doesn't have the feature. Frankly, putting assembly code into a separate assembly file takes no more than maybe 30 seconds of your time.

2. Certain classes of optimizations and optimizers — things like subexpression reduction, removal of constant expressions from loops, converting array indexing into incremental pointers within loops (to avoid a multiply or shift), and other related topics.

While these optimizations look great on a features list, they are pretty much useless to the experienced programmer and not appreciated by the inexperienced programmer who could get the most use out of them. Such features just aren't worth the amount of time spent in writing the complex routines to deal with such optimization, the obscure bugs such optimizations invariably produce in the end product, and the extra time it takes to run the optimization pass. In practice, I have always had problems with Lattice's global optimizer and did not fully explore Aztec's.

The Useful Stuff

The features that I consider really useful have been incorporated into the current compilers:

1. Obvious optimizations such as converting multiplication operations into shifts, particularly when indexing into an array of structures whose element size is a power of 2. (Division is less important.)
2. Automatic placement of auto variables in registers.
3. Standard optimizations of test-branch expressions like "if (a == 0)" and use of BSET, BCLR, and BTST instead of AND and OR.
4. Inline library calls (not so important, considering they steal registers that might otherwise be used for register variables).
5. Model control, such as small and large data model, small and large code model.
6. Basic peephole-style stuff (such as small-scale, highly-localized optimizations).

LATTICE C, V. 5.04 \$300
Lattice, 2500 S. Highland Avenue, Suite
300, Lombard, IL 60148. (708) 916-1600,
(800) 533-3577.

AZTEC C, V. 5.0A \$299
"Professional" Version \$199
Manx Software Systems, P.O. Box 55,
Shrewsbury, NJ 07702. (800) 221-0440.

New Hardware Solution

REVIEWS BY MORTON KEVELSON

How to Add a Macintosh Hard Drive to Your A-Max Amiga Disk Manager Mac for the Trumpcard

Disk Manager Mac overcomes the biggest drawback of the A-Max Macintosh emulator. But it works only with the IVS Trumpcard hard disk controller.

As pointed out in the *AMIGA Plus* A-Max review (October/November 1989) running a Macintosh without hard disk capability is a frustrating limitation. But now **Disk Manager Mac** lets you put partitions for the A-Max Macintosh emulator onto your Amiga hard disk.

Disk Manager Mac software was

developed by Ontrack Computer Systems and is actually a Macintosh program which manages hard disk formatting and partitioning. Interactive Video Systems (IVS) added A-Max hooks for this software to work with the IVS \$199.95 Trumpcard SCSI hard disk controller (reviewed in the August/September 1989 *AMIGA Plus*).

Setting Up

As with IVS' user-friendly TCUtils setup software for the Trumpcard, Disk Manager Mac is very easy to install and use. If you are already using a Trumpcard, your hard drive will need to be reformatted — so back up all your files before starting installation. If you have just plugged in your new Trumpcard, Disk Manager Mac should be the first step in setting up. The procedure is started by booting A-Max. When you are prompted for the Macintosh system disk, simply insert the Disk Manager Mac disk, which includes the newest version of Macintosh system and finder software.

Disk Manager Mac starts like any other Macintosh program. The make and model of your hard disk will be automatically determined and you will be presented with the program's working screen. The next step is to perform a low level format and verification of the hard drive. You then have the option of creating one or more Macintosh partitions on your hard disk.

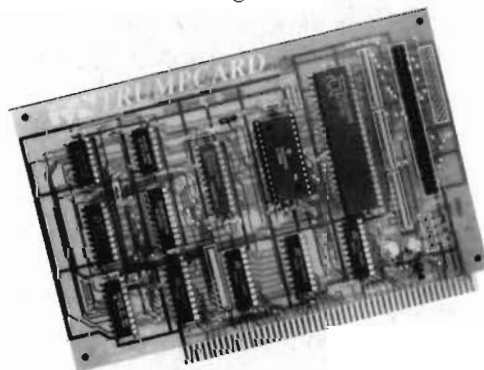
After all the partitions have been

completed and the software drivers are installed, the Macintosh system files are copied from the floppy disk onto the hard drive. Your pseudo-Mac should then be rebooted using the Shut Down option from the Special menu. Remove the Disk Manager Mac disk before restarting. At this point the Macintosh should reboot from the hard disk.

Shut Down the Macintosh once again and reboot the computer from the Trumpcard software disk using the CONTROL-AMIGA-AMIGA key combination. This disk has been modified to automatically recognize the presence of any Macintosh partitions. The Mac partitions will be automatically rearranged to be compatible with AmigaDOS and the Amiga's operating environment. The rest of the hard drive can now be set up with multiple AmigaDOS partitions, using the Trumpcard's installation software. Note that the Disk Manager Mac program should not be used again unless you intend to reformat the entire hard disk. The Mac partition rearrangement, which was performed by the IVS TCUtils software, is not compatible with Disk Manager Mac.

Performance

To use your hard disk with A-Max you will still have to insert a copy of
(continued on page 84)



Revision 3.1 of the Trumpcard hard drive controller card.

developed by Ontrack Computer Systems and is actually a Macintosh program which manages hard disk for-

ons From IVS

How to Add Two Amiga Printer Ports Printerface

+++ 1/2

Have you ever tried to get a screen dump while working with your video digitizer? You probably couldn't, but here is a workable solution.

Parallel port peripherals are common accessories for the Amiga. Most personal computer printers, video digitizers, sound samplers and scanners are designed to use the parallel port. The Amiga's parallel port is more than a simple printer connection. It is a fully configured, bi-directional, eight-bit, input/output port. This means it is capable of sending as well as receiving data, a byte at a time, at very high speeds. In fact, the parallel port can be configured to simultaneously send and receive digital data.

Therefore, as you add more peripherals to your Amiga system, several peripherals will often compete for the use of the parallel port. Virtually all video digitizers, scanners and sound samplers have software drivers that can send a graphic screen dump or other information to the printer. This is usually impossible while the associated device is in use, because most printers connect to the parallel port as well.

The most obvious solution is to re-

move the peripheral and reconnect the printer cable, a procedure that is neither convenient nor without risk. Switching cables on the parallel port while the computer is turned on creates some risk of damaging the equipment. A parallel port switchbox avoids the need to swap cables, but creates other problems. These multi-contact, electromechanical switches don't eliminate the possibility of damage to the port. Furthermore, the low cost switches which are used in many of these boxes tend to get noisy and unreliable after some time.

The ideal solution would be to install additional parallel ports in the Amiga. Although these devices are available for MS/DOS machines, they have yet to make an appearance for the Amiga. The **Printerface**, from Interactive Video Systems (IVS), is a low-cost alternative to additional parallel ports.

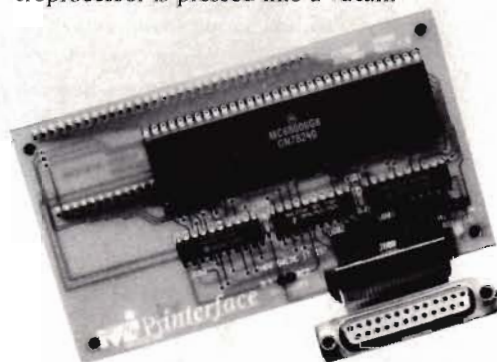
The Printerface is based on a very simple premise. Requirements for driving a printer place the minimum possible demands on the Amiga's parallel port. Printers only expect to receive data from the computer while providing little or nothing in return. In fact, only a single input line is required.

The Hardware

Printerface consists of a 3 X 5 inch

printed circuit board, a flat ribbon cable, a 25-pin connector on a mounting plate and some software. It is designed for use with either the Amiga 500 or the 2000. Although installation is not terribly difficult, it may be more than some users are willing to do by themselves. The computer has to be opened, the main circuit board must be exposed and the 68000 microprocessor has to be located and removed. In the Amiga 2000, the drive bay assemblies with associated disk drives and the power supply must be disconnected and removed.

The Printerface circuit board is then plugged into the now empty microprocessor socket and the 68000 microprocessor is pressed into a vacant



Printerface ready for installation in the Amiga 2000. The address change jumper is at lower right.

socket on the Printerface. On the Amiga 2000, the installation is completed by routing the flat ribbon cable to the rear of the machine and installing the mounting plate with its associated 25-pin connector in one of
(continued on page 84)

(Disk Manager Mac from page 82)
the Disk Manager Mac floppy disk when prompted for the Macintosh system software. The presence of Macintosh hard disk partitions will be automatically detected and the Mac will be shut down and restarted from the hard drive. At this point the floppy disk will no longer be required.

As for the speed of the system, it took me 10 seconds to boot MicroSoft Word from the hard disk as compared to 19 seconds from the Amiga's floppy drive, a two-to-one improvement. Of course raw drive speed is not the only reason for a hard disk on the Macintosh. Many top Mac programs require a prohibitive amount of disk swapping to run, or they might be too big to run at all without a hard disk. Compatibility of the Trumpcard system with the Macintosh is excellent. According to IVS, you can even remove the physical hard disk from your Amiga, install it on a Mac and boot from it. If you have a removable media system on both the Amiga and a Mac, it is possible to transport your cartridges between the two systems.

Trumpcard Update

While reviewing Disk Manager Mac I also had a look at the new 3.1 version of the IVS Trumpcard. The layout of the circuit board has been completely revised and several minor enhancements have been added. The board now includes a hardware jumper to allow selection between AmigaDOS 1.2 and Amiga DOS 1.3. The AmigaDOS 1.3 option now boots directly from a fast file system partition. For Amiga 2000 installation, a pair of pins have been added to allow for the quick connection of the hard drive LED which is provided on the computer's front panel.

Conclusions

At this writing, the Trumpcard with Disk Manager Mac is the only hard disk game in town for A-Max users. Fortunately it is a good game indeed. ■

(Printerface from page 83)

the two cutouts which are located right behind the co-processor slot. On the Amiga 500, the ribbon cable is routed out the computer's expansion port on the left side of the machine. The mounting plate is removed and the 25 pin connector is left hanging there — a workable, although somewhat inelegant solution.

Two Printerfaces can be installed in the 2000 by piggybacking the second on top of the first. The microprocessor is then plugged into the second Printerface. There is not enough space inside the Amiga 500 to do this.

The Software

There are several ways to use the Printerface. The included software disk contains a variety of icon-driven script files which will automatically configure your system to meet your requirements. Note that each of these installation procedures will change one or more files on your boot disk. The installation procedures must also be repeated for all of the applications disks that you boot from and wish to access the Printerface from.

The first software option is to replace the original Amiga Parallel.device driver file with the Printerface.device driver file. This file diverts to the Printerface all output which is normally sent to the parallel port. This arrangement should divert all printer output to the Printerface since the Amiga's Printer.device sends its output via the Parallel.device. Both the Parallel.device and the Printer.device are standard device drivers found in the devs: directory on your Workbench disk. This approach works very well with digitizers, samplers and scanners because their software accesses the parallel port hardware directly in order to achieve their required data transfer speeds.

A second installation option modifies the Amiga's Printer.device driver so that it accesses the Printerface.device driver file instead of the original Parallel.device. This leaves

the original Parallel.device file unchanged on your Workbench disk. This approach should be used with applications that access the Amiga's parallel port via the Parallel.device driver file. It will still divert the Printer.device driver file to the Printerface. Unfortunately, the documentation that accompanies most applications software does not usually tell you how it accesses the Amiga's parallel port.

A third option is to patch your applications software. The supplied Patcher program scans the application's program file and replaces any calls to the Parallel.device with a call to the Printerface device driver. This does not always work because there is no guarantee that the applications software works this way.

The third option is for users who install two Printerfaces in their computer.

Another set of three programs on the Printerface disk lets you divert parallel port output being sent via the Printer.device, to either of the Printerfaces or to the Amiga's parallel port. This is a temporary setting which disappears when the computer is rebooted. Of course it is always possible to modify your startup-sequence so that one of the above three ports will be automatically chosen for printer output whenever the system is rebooted.

Conclusions

Printerface is a workable solution for a specific problem. It is inexpensive and does the job, although it may not be what everyone needs. If it suits your application and if you can handle the installation, then the Printerface is well worth considering. ■

Mort Kevelson is an electrical engineer at New York's Con Edison and a well-known Amiga hardware reviewer

DISK MANAGER MAC	\$ 119.95
TRUMPCARD 3.1	\$199.95
PRINTERFACE	\$ 99.95
Interactive Video Systems, 11612 Knott Avenue, Suite 13, Garden Grove, CA 92641. (714) 890-7040.	

CLI Remote Commander

ARexx-style control over Amiga software – without ARexx

BY DANIEL WOLF, Ph.D.

This powerful new tool for experienced CLI users is programmed in assembler.

Recently I needed to combine some fractal animation with a still picture background that I had digitized with Digi-View. This required transferring a series of image fragments onto the background—which would be tough to do by hand, since precision placement of each brush was essential for success. Trying a pixel-precise brush extraction and placement for 72 individual pictures was a daunting prospect. Then I remembered that NewTek's Digi-Paint 3 software has an ARexx interface. And now it looked like I had a real-world job requiring automatic remote control of a piece of software. (See "ARexx For Non-Programmers" article in this issue. — + Editors)

Any ARexx-compatible Amiga program has a message port and an ability to respond to Exec messages sent from another program or task running on the Amiga. If a program is ARexx-compatible it has a public message port that can send or receive mes-

sages. It may not be immediately obvious, but if you can send messages to a program via an ARexx script you can also send it messages in a variety of other ways.

There are two kinds of Amiga message ports – public and private. One program can find another's public message port with the EXEC FIND-PORT routine. All that's needed is the port's name (simply an ASCII string of characters). It wasn't hard to learn

at the bottom of the Digi-Paint 3 tool window menu display.

Jamie Purdon, author of Digi-Paint 3, included in the package a nifty utility called HEY. If you use Digi-Paint 3 you've seen HEY in action, because HEY is what runs this software's flashy demo. HEY lets you send an ASCII text string Exec message to Digi-Paint, just like an ARexx script might do. In other words, HEY lets you operate Digi-Paint 3 by remote



ILLUSTRATION BY CHERYL RABIN

that Digi-Paint's public port (intended for ARexx use) is named DigiPaint. This *case-sensitive* port name appears

control from the CLI or from Amiga-DOS scripts – without ARexx!

CLI Remote Commander

The notion of writing a simple program that uses the CLI to send ASCII text Exec messages to any software with a public message port became irresistible to me. HEY is specifically for use with Digi-Paint, so I decided to write a more versatile, general-purpose program in the same spirit.

CLI Remote Commander - the file is named JAH - gives you ARexx-type control of simpler operations from AmigaDOS, so you don't have to purchase or learn ARexx until you really need all its features.

ON DISK

You'll find the CLI Remote Commander program JAH code on this issue's AMIGA Plus Disk in the root directory. It can only be accessed via the CLI or Shell, by typing a command in the format:

JAH PortName Message

Also in the root directory are the

JAH.ASM source code and a text file with detailed notes about the assembly language programming of CLI Remote Commander.

Don't even *think* about using CLI Remote Commander JAH from the Workbench. It won't work and you'll get a direct line to Amiga's GURU. Just add JAH to your c: directory.

I should mention that I didn't study Jamie Purdon's code until after I wrote and tested my CLI Remote Commander JAH - partly to satisfy my own self-challenge and to prevent (even unintentionally) copying his copyrighted code.

My whole CLI Remote Commander is surprisingly efficient. I got an assembled, executable version of JAH which is only about 600 bytes. That compares to about 400 bytes for Jamie Purdon's HEY command, which lacks the ability to print out the reply and has no explicit storage for data within the program.

What makes JAH more flexible is

that it doesn't preface its text messages with any special coded text like HEY does, and it can print the reply. The ability to see the reply is very handy in debugging this kind of communications setup.

We also included the FRED program (from AMIGA Plus Disk #4) in the current disk's root directory so you can try a simple test. First open two Shells or CLIs. Then start FRED in one of them. FRED will just sit there and wait for a message. Now, in the other CLI or Shell, type:

JAH FRED Howdy

FRED will print the message, Howdy, received from JAH, and quit. JAH will receive a reply from FRED and print it out for you to see. ■

Daniel Wolf, Ph.D. co-wrote COMPUTE!'s Amiga Machine Language Programming Guide. He is an independent Amiga software developer based in Santa Maria, California.

ESTATE HAUNTED BY GHOSTLY PIANIST "He plays at the oddest hours", says owner

Luckily, the intrepid hunters at California Freeware, always on the lookout for the latest and best in Shareware and Public Domain Software, have acquired a copy of the pesky poltergeist caught in the act of performing his graveyard-shift concert. You too can acquire Ghost Piano (#9189) for your Amiga along with many others in virtually any category (business, education, graphics, entertainment, etc.). Just take a look at these gems:



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CADverter for importing files in AutoCAD (DXF), IntroCAD, Aegis Draw, Hewlett-Packard Graphics Language (HPGL), and Roland DXY formats. With UltraDesign's PasteUp utility and CADverter, it also supports PostScript and Encapsulated PostScript output. However, I have never managed to save a Postscript or EPS file which Professional Page would accept.

That is unfortunate — UltraDesign, CADverter, PasteUp and Professional Page would make a very useful combination, if they would work together. But without Professional Page support, UltraDesign's usefulness is limited to those who have plotters, since all line weights are controlled by commands to the plotter files. Other output devices (laser, inkjet or dot-matrix printers) print all lines in the thinnest solid line they support. This problem seems particularly surprising since UltraDesign supports all these devices at their highest resolutions.

Admittedly, in my haste to test UltraDesign I may have missed a way to print different line weights and characters on a laser printer or to export an EPS file to Professional Page. If so, however, the blame must still rest with the inadequate manual. Despite UltraDesign's general ease of use, all too often the manual lacked information or the program lacked an important feature. I also became wary of crashes and lost files.

Despite such problems, UltraDesign is *almost* an excellent and professional CAD program. With a few refinements, the elimination of a few bugs and the addition of a freehand option, UltraDesign is a product which could make it worthwhile for many design professionals to buy an Amiga.

Conclusions

Without a doubt, X-CAD with X-Shell is professional-level CAD software. But both programs need to become more accessible to users. A better manual would make X-CAD a dramatically better program.

Amiga CAD programs are very

weak when it comes to three-dimensional modeling (one of the most useful aspects of CAD programs for the Macintosh and IBM worlds). Interestingly, Homebuilders_CAD provides one of the best ways to construct accurate perspectives on the Amiga, if you can accept the program's limitations.

IntroCAD and Aegis Draw 2000 are good products which many Amiga users might like. They provide a range of options not possible in paint programs, and are relatively easy to work with. Neither should be considered a professional CAD program, and Aegis is not worth triple the price of IntroCAD.

IntroCAD and Aegis Draw 2000 both have problems with printed output. A good solution is **PlotPrint** software, which translates industry-standard HPGL plotter files into a high-resolution files for virtually any inkjet, dot-matrix or laser printer. It's not the easiest program to use, but its creator will take whatever time is necessary to talk you through your problems. PlotPrint provides reasonable-quality output of CAD designs for anyone without access to a plotter. PlotPrint works with any program (X-CAD included) that can save in HPGL format. ■

John Montague Massengale is Director of Design at the Manhattan architectural firm of Pier, Fine Associates.

HOMEBUILDERS_CAD	\$199
HOMEBUILDERS_CHOICE	\$ 81
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HOMEBUILDERS_PRINT	\$117
HOMEBUILDERS_SCULPT-INTERFACE	\$117

EaseWare, 11160F South Lakes Drive, Suite 305, Reston, VA 22091. (703) 709-9686. Requires 1Mb and two disk drives, 2Mb recommended. Not copy-protected.

INTRO-CAD	\$ 79.95
INTRO-CAD PLUS	\$149.95
ULTRA-DESIGN	\$399.95
Progressive Peripherals & Software, 464 Kalamath Street, Denver, CO 80204. (303) 825-4144. Not copy-protected.	

IntroCAD requires 512K. UltraDesign requires 1Mb, additional disk drive or hard disk recommended. 68020/68881 version available.

AEGIS DRAW 2000	\$279.95
Oxxi, P.O. Box 90309, Long Beach, CA 90809. (213) 427-1227. Requires 1Mb, works with 68020/68881. Not copy-protected.	

X-CAD DESIGNER	
(Taurus/Impex)	\$599.95*
Haitex Resources, P.O. Box 20609, Charleston, SC 29143. (803) 881-7518. Requires 2Mb and two disk drives, 2.5 Mb and hard disk recommended. Dongle-protected, non-protected version available.	

* Haitex no longer sells X-CAD, but can recommend some sources and still supports a BBS at (803) 881-7522.

X-CAD DESIGNER (CadVision)	\$149
CadVision International, Hazlitt Mews, Hazlitt Road, London W14 0JZ, England. 1Mb required, second disk drive or hard disk recommended, dongle-protected. U.S. technical support from Grafx Computing.	

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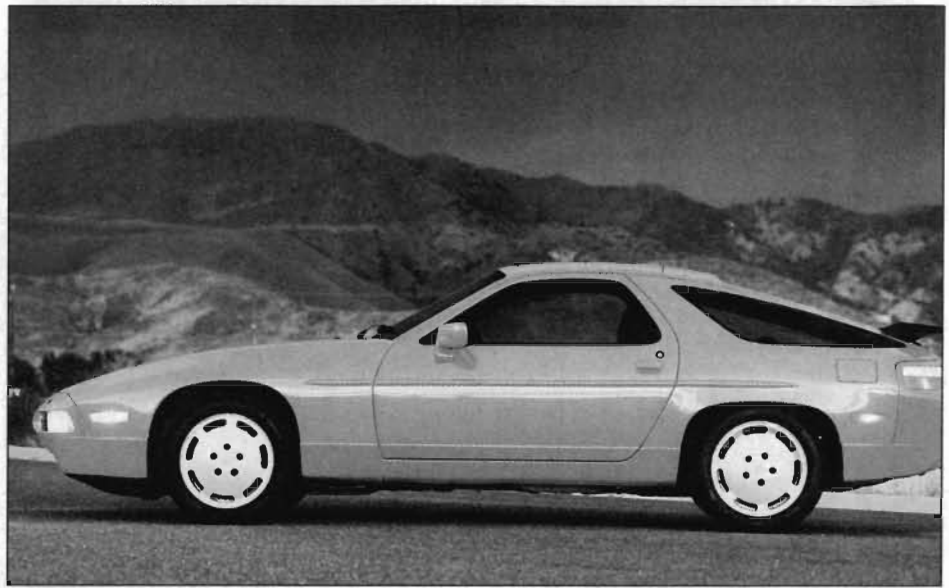
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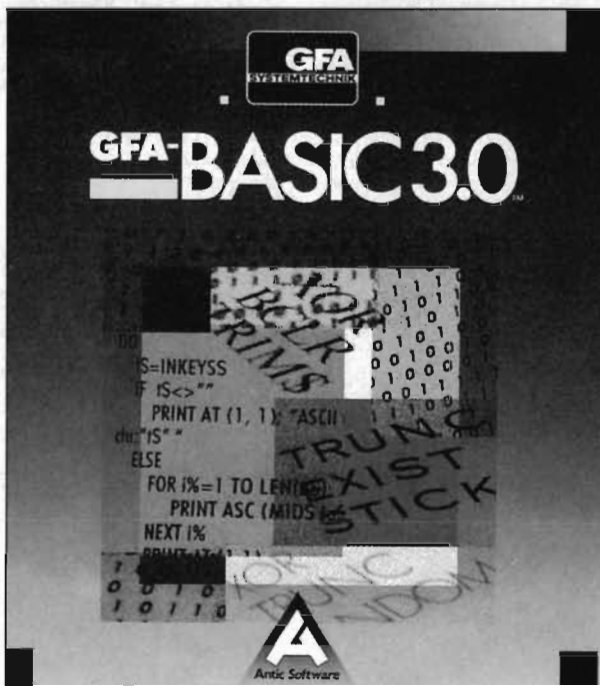
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Professional Page 1.3 brings super Compugraphic fonts to the Amiga

Column by Curt Kass



**HARD COPY
OUTPUT**

Compugraphic Font Sampler

Gold Disk's **Professional Page 1.3** (and its little sister, **PageSetter II**) features no-jaggies, scalable Compugraphic Outline fonts with better screen display and perfect output on all Preferences-supported printers. This important breakthrough gives Amiga users virtual PostScript quality output at a fraction of the cost.

Just feast your eyes on the accompanying samples and see impressive color or black-and-white output at the full capability of any printer. Printing with the Compugraphic fonts is slower than using a high-priced dedicated PostScript printer, but the sleek results are worth it — especially since the Amiga's multi-tasking lets you do other things while you wait.

In this column's color samples, screen colors are all full primary or secondary hues except for the golds — which are individually picked using my Palette Printer color selection software to match the screen color as closely as possible. This is an important feature of Professional Page 1.3, because if you know what YMC setting percentages will produce a particular color on your printer, you can just designate it with a custom color selection.

Commodore's CEPS Secret

At this year's CEPS (Consumer & Electronic Publishing Show) in Chicago, I was surprised to find Commodore making its very first appearance at this prestigious and well-attended show. Commodore had a single booth in the back aisle, sport-

ing a plain-Jane sign, one lonely Amiga 2000HD and a Commodore Midwest sales representative. Next door was Microtech Solutions, a local Amiga dealer, showing hardware including the ASDG/Sharp flatbed and hand-held color scanners showing visually dynamic images.

Meanwhile, a neighboring area had people busily working on at least a half-dozen Amigas to produce a daily show newspaper. Commodore had donated Amiga hardware running

Gold Disk software. A Gold Disk representative was there, but I found nobody from Commodore. Instead, an unattended video player and monitor showed familiar impressive images and voiced over the wonderful Amiga features that we use daily. No banner explained that a show daily newspaper was being created here on Amiga computers. A single Amiga running a MoniTerm Viking hi-res big-screen monitor was the only other greeter at the curtained entrance to the booth. I

These text samples from Professional Page 1.3 were created on dot matrix, ink jet and PostScript printers.

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A NEW feature of Professional Page 1.3 by **GOLD DISK Inc.**

QMS ColorScript 100

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Sharp JX-730

COMPUGRAPHIC FONT OUTPUT SAMPLES SPECIFICATIONS LIST

HEWLETT PACKARD PAINTJET

(color inkjet)

Density Setting: 1

Dot-Per-Inch Resolution: 180 x 180 dpi

Driver: 1.3 Preferences HP_PaintJet

Gold RGB Setting: 9-7-0

(CMY conversion = 40%-54%-100%)

Print Time (5 sets per page): 7:45

SHARP JX-730

(color inkjet)

Density Setting: 4

Dot-Per-Inch Resolution: 180 x 180 dpi

Driver: GlassCanvas Enhanced Sharp JX-730

Gold RGB Setting: 11-9-3

(CMY conversion = 27%-40%-80%)

ProPage 1.3 dot-matrix

Print Time (5 sets per page): 15:10

QMS COLORSCRIPT 100, MODEL 30

(color thermal-transfer PostScript)

Density Setting: Not Applicable

Custom Line : black at 50 LPI, YMC at 85 LPI

Dot-Per-Inch Resolution: 300 x 300 dpi

Driver: Printer's internal ROM

Gold RGB Setting: 14-8-0

(CMY conversion = 7%-47%-100%)

Print Time (5 sets per page): 3:00

STAR MICRONICS NX-1000 RAINBOW

(9-pin color dot-matrix)

Density Setting: 6

Dot-Per-Inch Resolution: 240 x 216 dpi

Driver: 1.3 Preferences EpsonX

Gold RGB Setting: 13-11-0

CMY conversion = 13%-27%-100%)

Print Time (5 sets per page): 13:30

STAR MICRONICS XB-2415

(multi-font 24-pin color dot-matrix)

Density Setting: 7

Dot-Per-Inch Resolution: 360 x 360 dpi

Driver: 1.3 Preferences Nec_Pinwriter

Gold RGB Setting: 13-9-0

(CMY conversion = 13%-40%-100%)

Print Time (5 sets per page): 25:50

NOTE: The light print on the capital F and the shifted color in the top line are driver-related anomalies.

HEWLETT PACKARD DESKJET

(b&w inkjet)

Density Setting: 4

Dot-Per-Inch Resolution: 300 x 300 dpi

Driver: 1.3 Preferences HP_DeskJet

Print Time (5 sets per page): 6:50

QMS Colorscript

I recently worked for five months with the \$15,995 **QMS ColorScript 100, Model 30**, considered by many to be at the peak of 300 dpi (dots per inch) thermal-transfer color technology, with its Mitsubishi printer engine and PostScript interpreter box with Adobe ROM. I put this printer through all its paces, and its output is generally impressive. But compared one-on-one to other printers, its black-and-white capabilities are not appreciably better than those of a non-PostScript laser (\$1,500) or the Hewlett Packard Deskjet (\$600) when used with Professional Page 1.3 —

whether printing bitmaps or using Pixelations' PixelScript to print the full PostScript file. In living color, the Hewlett Packard PaintJet and new wide-carriage PaintJet XL or Sharp's JX-730 inkjet printers, printing at 180 dpi with Professional Page 1.3 will give the ColorScript an impressive run for the money.

MacService Amiga

Many Amiga users experience major frustration when trying to use an output service bureau's high-resolution printers, such as the 1,270 dpi laser or LED printers. Now users have the additional frustration of having instant print shops in nearly every town sporting 300 dpi laser printers — but requiring disks in anything but Amiga format.

A modem is certainly one way to get an Amiga to access the laser, but it is neither immediate or foolproof. Smaller print shops often lack personnel with experience in using modems. The larger, more professional output service bureaus often have very busy telephones — and may charge extra to receive a telephone file.

These days, I successfully use Central Coast's **MAC-2-DOS** to transfer my finished PostScript files to Macintosh format, to access those PostScript devices generally hooked up to a Mac. When I first tried MAC-2-DOS I had some problems, not realizing that my files had to be compatible with the Mac PostScript program sending them to the printer. Any changes necessary must be made *before* you transfer the files with MAC-2-DOS. Even so, you can have trouble importing PostScript document files from one program into another.

I felt there must be a better way, and finally someone suggested a simple solution — use a Mac utility program which will simply send PostScript files directly to the printer. I found an Adobe public domain Macintosh program called DownLoader. When I called to tell Central Coast of my discovery, I learned they had just included an Adobe Macintosh utility

watched more attendees walk by than not, and it was as if Commodore was trying to keep the Amiga's presence a secret at CEPS.

Happily, the Amiga was also featured in a video wall consisting of 16 screens by the well-known computer artist Laurence Gartel. This high-voltage personality was creating on-site art with both Amiga and Macintosh computers outputting to color printers. Laurence Gartel's strong presence and outspoken Amiga enthusiasm turned a typical high-end business users convention into an inspirational creative experience.

titled SendPS on the new MAC-2-DOS V1.1C — which arrived on my doorstep in a couple of days. I now use this latest version of MAC-2-DOS, which includes complete instructions on the use of SendPS. And there have been no more incompatibility problems at my service bureau.

Color output update

Sharp Electronics is marketing a wide-carriage color inkjet printer, the **JX-730**, with a suggested retail price of \$2,195. This 180 dpi printer has a cloned cousin marketed by Tektronix called the ColorQuick inkjet printer (\$2,490) tweaked up to 216 dpi. Amiga outputters have been moderately excited by the JX-730, but its Amiga printer drivers have questionable reputations, definitely suffering from color shifts similar to those that plagued the Xerox 4020. This confusing problem is common — the colors on screen seldom match the output of color printers.

GlassCanvas Productions rushes to

the rescue by introducing the **Enhanced Sharp JX-730 Printer Driver**. The same artistically-oriented programming that brought better output to the Xerox 4020 now provides a better driver for the JX-730. The enhanced JX-730 driver uses the seven-density 1.3 Preference settings to allow a full range of color saturation and value choices. Density number one gives the lightest output, and number seven makes the darkest, most saturated colors.

By playing with the density settings you can essentially do some image processing right on your printer. You also can control the amount of ink deposited on the page — an important feature because the JX-730 is susceptible to over-saturation, to the point of splotching. Images differ in the degree of saturation they require to look their best. With all the features this driver offers you'd better be prepared to spend time experimenting to get the best possible results.

To help you find the best settings

and colors, the GlassCanvas disk also includes sample color palettes, sample IFF pictures and a dedicated image viewer program titled ViewMAN. This driver and the Sharp JX-730 make an exciting combination at a reasonable cost. ■

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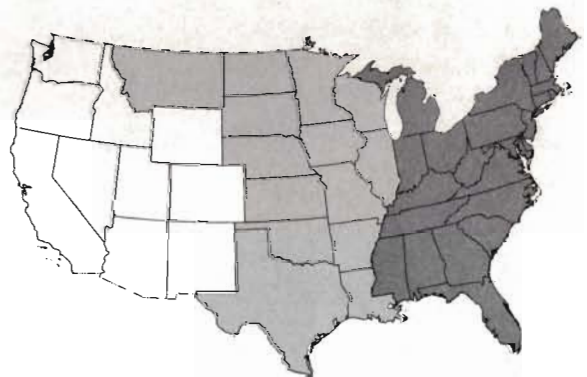
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*Curt Kass is the developer of Palette
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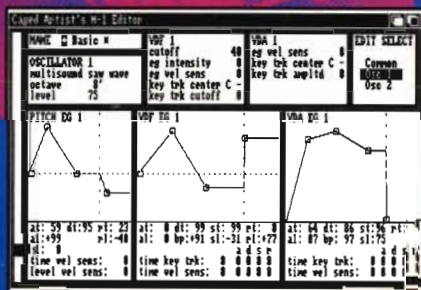
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