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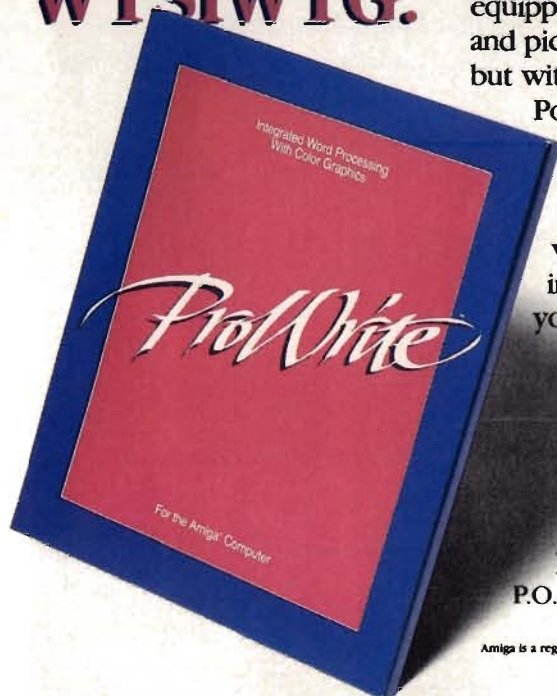


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Amiga Paintings by R. ShammsMortier.

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All articles marked with the disk symbol have programs or graphics on this month's AMIGA Plus Disk! If you bought this magazine *without* the disk, here's how to order yours now!

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# EDITORIAL

## **You are getting a real All-Star AMIGA Plus for our fourth issue...**

Guy Wright is our new East Coast Contributing Editor. Guy was the founding editor of Amiga World and has been deeply involved in the Amiga's growth since 1985. Now his uniquely colorful views on Amiga developments will appear exclusively in each AMIGA Plus -- starting with this issue's story about the video lab that makes today's best available printouts, slides and tapes of Amiga screens.

Gail Wellington debuts her Occasional Column "From The Well..." in this issue of AMIGA Plus, delivering an insider's report on the 1989 Amiga Developers Conference. Gail is probably known to more Amiga users than any other Commodore staffer. She is General Manager of Worldwide Software and Product Support -- a vital link in the development of new Amiga applications and systems software.

This issue's AMIGA Plus Disk is also an All-Star extravaganza, with no less than *three* commercial-quality programs. Our cover story spotlights Mindware's new hard disk real-time animation player, which is the first release running under TASS, a powerful point-and-click interface for the ARexx multi-program-connection system. The disk also includes a fast, easy-handling 95,000-word spell checker -- which retailed for *more* than the price of an entire AMIGA Plus subscription! Not only that, the disk has an exclusive, professionally programmed utility that automatically

displays the amount of free space on every floppy, hard drive partition and RAMdisk connected to your Amiga.

### **Five + Ratings**

Back when we were interviewing scores of Amiga users about what they wanted in a new magazine, we often heard requests for some kind of rating symbol and short summary to start each product review. Users wanted to know right away if the product interested them enough to read a whole review.

We now feel we have spent sufficient time working out the details, and in this issue we are ready to go into print with the AMIGA Plus Product Ratings. Each product has one overall rating -- from one to five plus-signs. Here are brief explanations of each rating level:

+++++ Best in its category (as of now). Hard to think of possible improvements.

++++ Outstanding product of its type. Should be considered if you're in the market for one.

+++ Solid performer. Not all that different from other good products in its category. Might have some special features that appeal to you.

++ Adequate but not especially inspiring. You wouldn't have much trouble finding something just as good or better.

+ Don't bother. Probably should not have been released.

*Nat Friedland*

**Nat Friedland**  
Editor, AMIGA Plus



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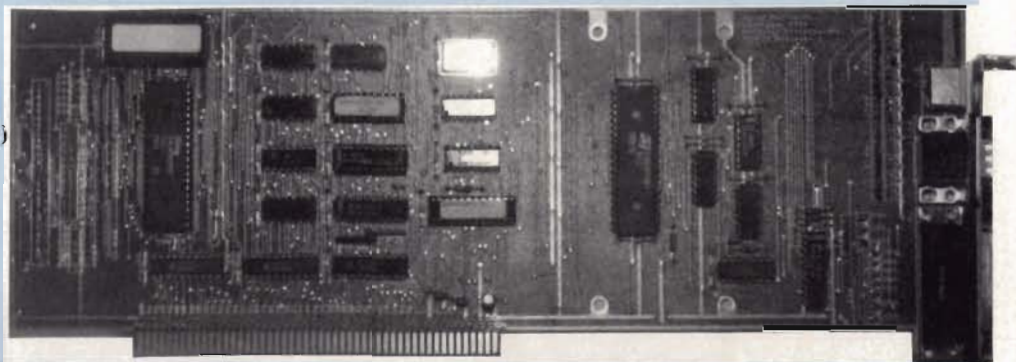
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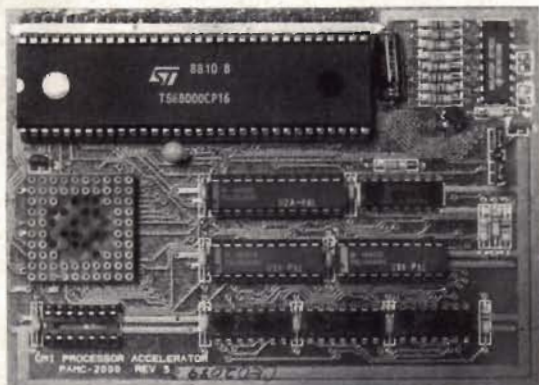
The Processor Accelerator comes with a Math FPU socket that is either 68881 or 68882 compatible, and works with software packages that use the IEEE libraries under Workbench 1.3 recognizing the FPU as a peripheral device.

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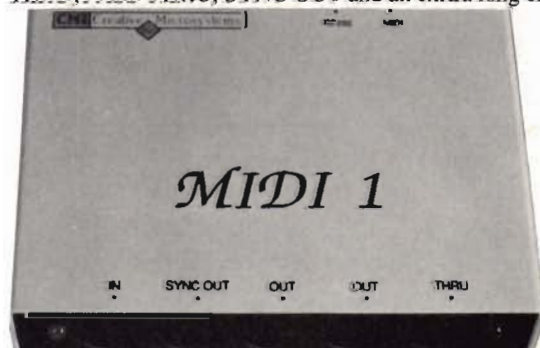


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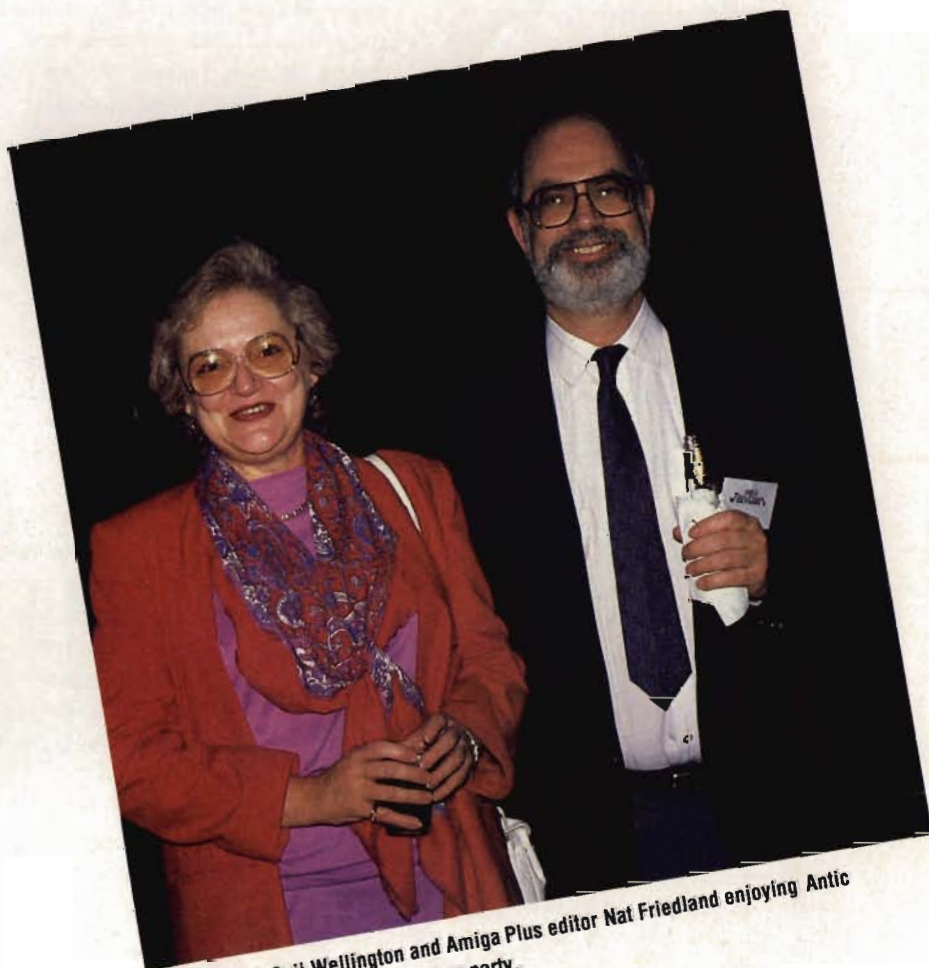
# From the Well

## *Insider's Report on the Amiga Developers Conference '89*

BY GAIL WELLINGTON

Commodore General Manager for Worldwide Software and Product Support

*I have had the good fortune to participate in all six DevCons (Amiga Developers Conferences) -- four here in the USA and two in Europe. In one sense, it is like running a three-day party for several hundred of your closest friends. In another way, it is like organizing classes for a university department. In all cases it is an exhilarating (and exhausting) experience.*



Commodore's Gail Wellington and Amiga Plus editor Nat Friedland enjoying Antic Publishing's DevCon Exploratorium party.

The most recent DevCon was held in June at San Francisco, home of AMIGA Plus. Over 300 people attended. If you liken the conferences to music styles, the first few were like folk music -- friendly and happy, with simple harmonies. The San Francisco DevCon had a big-band feeling, care-

fully orchestrated with trumpets in close harmony and a swing rhythm.

The style that these conferences develop is not something planned. It just seems to happen. The "happen" of this one came from many things. One was the venue, a nice friendly hotel right in Frisco near the cable car lines. Another was the main topic for the conference, Version 1.4 of the operating system.



Developers were pleased with the direction Commodore is taking the Amiga -- that is, into a more professional, more standardized and easier-to-use system. Developers were also pleased by the cooperative spirit from all Staffers in attendance. When Dr. Henri Rubin, Chief Operating Officer and member of Commodore's Board

## **The Amiga will get faster, more powerful, and easier to use.**

of Directors, announced that ARExx will be part of the operating system, the developers knew we had listened to their comments at the '88 DevCon. The announcement of built-in scalable fonts upcoming was another indication that we are tuned in to the direction the market is moving.

Another announcement that pleased the developers was the elimination of all remaining traces of BCPL in the DOS commands. These will be coded into C. (I have never been quite sure why this mattered to the developers, since it is Commodore's headache to maintain that code. But based on the applause the announcement received, it obviously did matter.)

Individual sessions went into the details of how developers can take advantage of these new features. The presenters were Commodore's actual systems software engineers from West Chester and Los Gatos, as well as the independent developers who have made contributions to the new release.

Sessions were not limited to software issues. Some of the key hardware design engineers from West Chester were on hand to explain how to make compatible peripherals for Amiga systems.

The most commonly asked question must have been, "What can you tell me about Amiga 3000?" The answer invariably was, "Not a lot." In fact, no new information was released

on this topic. The original announcement that Commodore was working on such a product was made by Irving Gould, Commodore's Chairman of the Board and CEO, in West Germany in March, 1988. He said that the A3000 would have a 68030 on the motherboard, would be compatible with current models and would have room for lots of expansion options. This is exactly the position today.

In addition to technical sessions, many sessions were offered for the sales and marketing people from the developer companies. Advertising clinics, legal protection, import/export and selling in other countries were among the more popular workshops.

The developers were especially pleased to have the opportunity to hear and meet Harry Copperman, new president of Commodore's U.S. sales subsidiary. He told the developers that hardware sales were dependent on great applications software and that he was counting on their help and continued support. In exchange, he promised five objectives for his first year. They are:

1. Focus on the Amiga.
2. Improve the Commodore image through advertising, being more professional and more focused.
3. Improve distribution (quality, not quantity) by product positioning and a VAR program.
4. Establish a plan and a team for going after-sales to education and government.
5. Pay attention to after-sales support -- i.e. service, training and customer support.

Most of the time there were three sessions simultaneously. Developers had to choose which to attend, but if they had to miss something of interest, extensive notes and disks of example code were distributed. These notes were so extensive that they filled two large-size binders and Commodore provided canvas bags in which to carry them. The size amazed even me.

On Memorial Day when I asked the editor of the notes how things

were going, he informed me that the notes would be much smaller than for the 1988 DC conference. When I arrived in San Francisco the notebooks were being assembled by a hard-working volunteer crew and it was obvious that there was much more material than for any previous conferences. When I asked the editor about this, his comment was, "Welllll, that was two weeks ago. A lot happened since."

For those of you who would like a set of these notes, they are to be available from Commodore Applications & Technical Support (CATS) by the time you read this. Price to be announced.

### **What YOU Gain!**

All of this is great stuff, but what does it mean to you as an Amiga user? Let me try to put some of it in perspective.

First, it means that the Amiga is a viable evolving computer platform on which developers can offer increasingly powerful applications. Some of that power is made possible by features added to or improved in the operating system. These include access by the console device to the character map (which is a techie way of saying it will be easier to implement cut-and-paste between applications). Some neat things are happening in the file system, like record locking (for all those network applications under development) and notification so that a program can tell if a file has been modified. Links are another neat feature. They will allow a single directory entry to have two different names (like a spreadsheet file being saved as a spreadsheet and as a word processing document -- same file, two names).

Second, it means that some things will get faster, like floppy support for the fast filing system and faster text display. Workbench will display icons and open drawers faster. And because of multi-tasking, it will now be possible to select an icon before the entire drawer is displayed.

Third, there will be more standardization in the way things look. A



standard file requester and font requester will be offered, for example. Icons will be improved and can now be labelled with proportional fonts.

Some great things are happening in the user interface department, as well. You may be disappointed to learn that Commodore "killed the Guru." You now will get text messages and system messages instead of Guru meditation numbers. It may not be as mystical -- but that's the whole idea! At long last there will be an optional full screen editor as part of the OS. We decided that if it was possible back in the days of the Commodore PET, we should offer it for the Amiga as well. Things that you want to have boot when you turn on your system can be installed by just dragging them into the Startup drawer. This is a great way to implement a virus checker or other resident utility without needing to edit your Startup-Sequence using the CLI. Select All and Drag Select will also be standard methods of choosing icons. And there will be no more trashed icon names with Cleanup. This command has been "cleaned up" so that it takes into consideration the length of the name as well as the size of the icon.

### **ARexx Horizons**

ARexx is an interprocess communications and scripting standard language compatible with the mainframe language REXX. Its first microcomputer implementation was for the Amiga. ARexx allows sophisticated end-users to customize their applications and will enable applications developers to have their software easily co-operate with other packages. For example, an animation package might communicate through ARexx to a program that calculates the orbit of a satellite. The calculation program would pass parameters to the animation package to determine the path of movement of the animation. Now that ARexx will be part of the OS, its value is even greater.

Scalable fonts may not be ready for the first release of Workbench 1.4 but we promise that it will follow soon after. This means screen display of

fonts in any size, and output to match. It also will result in higher quality output than can be displayed on the screen. A byproduct of this will be a vast library of new fonts including some well-known professional standards.

I should point out that scalable fonts may not be the only item that does not appear in the first release of V1.4. The operating system development team promised the conference attendees that there *would* be changes

## **ARexx and scalable fonts will be part of Workbench 1.4.**

and that everything might not make the deadline. In fact, input and suggestions were requested from the developers who went home with an Alpha version of the V1.4 software. If your favorite new tweak isn't in the first release, be patient. As soon as it is perfected, it will be available.

So you see, we had plenty to talk about at DevCon. We did take occasional breaks for some fun. Antic Publishing, the people who bring you *AMIGA Plus*, hosted a great party at the San Francisco Exploratorium. We not only ate and drank, but we had plenty of time to try out the fascinating science experiments that make up the exhibits at this world-renowned science museum.

The conference kick-off was a "Margarita night" Mexican Buffet in honor of one of Commodore's favorite watering holes here in Pennsylvania. The wrap party was a "beach party" by the pool on Saturday afternoon. Attendees were invited to come in their craziest beach attire and compete for a prize. Willy Langenfeld who wore shorts and a Hawaiian shirt with his cowboy boots, hat, and belt was one of the winners. Copper Bitner of the Zuma group was the other winner. I almost went as a bag lady so I could wear all the clothes in my suitcase at once, but settled for a Commodore hockey jersey.

When I suggested the pool party they neglected to tell me that San Francisco has the coldest summers in the USA! The party was a big success and when it got too windy to fly kites, our engineers resorted to flying helium filled balloons on the end of the kite string. (Did the big bands ever play "Up, up and away"?)

Maybe I think of San Francisco DevCon as big band sounds because of all of the after-hours time spent on the dance floor. Maybe it is because everyone there was in tune and in step with the same objectives. Maybe it had to do with the spirit of optimism and co-operation. Whatever the reason, it felt great and will always be a time I look back to with fond memories.

Now I also look forward to the next DevCon as well. Whatever its musical theme, somehow I believe it will be a hit! ■

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# READER INPUT

## Your letters to AMIGA Plus

### Super Agnus Corrections

The article "Get Ready for Super Agnus" by Rick Cook in the August/September 1989 issue of *AMIGA Plus* was incorrect on a couple of points.

The Agnus used in the Amiga 500 is identical to the one in the Amiga 2000. Although the installation procedures used by your service center differ, they use the same part. No third party device is necessary for installing the Agnus in the Amiga 500.

The Super Agnus is not directly responsible for higher resolutions, as is implied in the article. The Denise chip controls resolution, not the Agnus. The Agnus chip indirectly allows better resolutions (via the Denise) by using one megabyte of chip memory.

As an added note, I believe that the author did not put enough emphasis on having this chip installed by a service center. It is a difficult part to install and without the proper knowledge and tools a user could seriously damage the Amiga. Thank you for your great magazine.

Andre Frech

Southeast Technical Manager  
Commodore

### Easier Fix for MasterMind

Thanks to your promotional mailer, I am a subscriber to *AMIGA Plus*, and want to offer my congratulations on a fine publication.

I read with great interest the letter from Allan Baer in the June/July Reader Input, regarding the incorrect icon type for the BASIC MasterMind game in the premiere issue.

I assumed that I had done something wrong when the game refused to load. While trying to fix my "mistake," I hit upon the following solution: While holding the SHIFT key down, click once on the BASIC icon,

then click twice on the MasterMind icon. The game will load just fine.

Irene Kobelski  
Colchester, CT

### Inkwell Light Pen

Inkwell's \$129.95 Amiga Light Pen & Driver, listed as a New Product in *AMIGA Plus* #3, is compatible with EA's Deluxe Paint III -- not with DPaint II as the announcement stated. Thanks for correcting this.

Gail Rosenthal  
Inkwell Systems  
1050-R Pioneer Way  
El Cajon, CA 92020

### Disk Recovery Discovery

Congratulations on a really good follow-up to your premiere issue. The mix of articles is just perfect -- something for everyone!

I thought you might like to pass on a tip I discovered as a result of trying to copy the *AMIGA Plus* Disk. The disk had been bent into a saucer in the mail. I held my breath as I straightened it, and tried inserting it in my external drive. (I figured the external drive would be easier to fix if the disk damaged it.) The metal slider on the disk came off, and I thought my drive was history, but once I managed to shake the slider and spring out of the drive, I was able to reinsert the disk with the slider off -- and the drive was able to read the disk! I immediately inserted a blank disk in my other drive and copied the disk.

Charles Andrews  
Brooklyn, NY 11230

*We're glad that things worked out for you, this time. But we cannot recommend this desperation technique, even as a last resort. The risk of serious damage to your disk drive is too great -- and AMIGA Plus cannot take*

*responsibility for damages caused by trying to read a mangled disk.*

*We don't bear that many reports of damaged AMIGA Plus Disks. But if your disk arrives damaged in the mail, we are glad to replace it promptly. Just mail the disk to Disk Desk, AMIGA Plus, 544 Second St., San Francisco, CA 94107. -*

+ EDITORS

### Final Mission Fallout

We all know that games are a matter of taste, but I do think that Steve Panak was way off base in his review of the game **Final Mission** in *AMIGA Plus* #2. He wrote, "Technically brilliant, the program has state-of-the-art sound and graphics rivaling the best arcade games I've ever played." The graphics are blocky and the only sounds during game play are the various beeps and bops and poorly digitized explosions when you die. The game just doesn't stand comparison to outstanding games such as **Pioneer Plague**, **Sword of Sodan** or **Pacmania**, to name a few.

I don't expect Mr. Panak to think the way I do, but when you review a game you should not make outrageous statements that are truly false.

Robert Goldwasser  
Lusby, MD

*We passed Mr. Goldwasser's comments on to reviewer Steve Panak, a veteran reviewer of games on many computers, including the C64. He responds: "I immediately re-examined Final Mission, which was admittedly one of the first Amiga games I reviewed. True, its graphics and sound are not as sophisticated as, let us say, Technocop. But it is extremely fast, and its futuristic theme and look are visually interesting." -*

+ EDITORS ■





**ABOVE**  
Dialogue: The Mayan figure motif was digitized and then brought into Photon Paint for manipulation and cloning. The top faces were rendered in Photon's draw/fill setting after setting the dither slider.



**BELOW**  
Processional: The Buddha figure is from a religious calendar and the Acropolis is from a magazine. The birds are hand-painted and stamped on.

By Dr. R. Shamms Mortier



# doing It with style

## Developing Your Own Style On The Amiga

*Style is what sets your art apart from others. Everyone who finally becomes an artist works very hard to constantly refine and release their visions.*

Purchasing a set of fine oil paints or an Amiga computer is no guarantee that you'll be able to delve into your artistic depths without some rather serious and dedicated effort over a period of time.

However, starting out with an attitude of having fun with your visual exploration is the very first step required for any artistic search. Established artists must work very hard to retain the "open mind" shown by novices in any medium. If you lose that, you lose the possibility of being astounded far beyond your structured plans. The Amiga is a superlative artistic medium because it actually promotes a constantly fresh approach

that gives everyone -- professional and novice alike -- infinite visual options at an affordable price. Amiga artists constantly witness visual surprises.

Art is play, and style is born from that play. You cannot see the world in one way, and neglect that same "way of seeing" in your art. Your artistic mission (should you decide to accept it) is to engage in visual play whenever you sit down at the Amiga canvas. Play in the ways that only your unique visions and dreams demand, and the basis of your personal visual style will grow from that.

### **Pens and Brushes**

One paintbrush is not like another, and one drawing program for your Amiga cannot be arbitrarily traded for another without a noticeable change in the style of your work. If your emerging style demands thin strokes, then obviously you will need to work with specific resolutions and tools that can produce those strokes. Conversely, why purchase a HAM paint program if you are more comfortable painting in broad strokes with four colors. Comfort is a good indicator that you are on the right stylistic path

for you.

If you are just beginning, thoroughly learn one painting/drawing program that you are excited about. Let the rest of them go for a time. This will allow you to get a feel for systems and methods without being overwhelmed by too much stuff at your elbow. But if you are a moderately experienced Amiga artist who understands the way you enjoy working, stretch out to other software.

You will probably find that specific paint or drawing software (or a utility program) offers one little way of manipulating an image that is just right for your emerging style. When you discover that tool, it's like finding a lost child after a long absence.

### **My Amiga Toolbox**

My favorite Amiga software tools vary from one work to another, but I keep orbiting a few constantly. As far as doing electronic paintings, which most times requires very different tools than video animation or art for hard-copies, I usually begin with Deluxe Paint or Express Paint and then incorporate the 2-D results into Photon Paint. If the finished work has to be larger than the screen (super





**Mist Temple:** Everything except the red figure was painted on the screen. The figure itself is a goddess playing a double flute. It was digitized from a postcard sent to me from Rome by a friend.

bitmapped), I use Deluxe PhotoLab for the final composition. If I want 3-D elements, I use Turbo Silver, Caligari Professional and the newly released PageRender 3D.

Another element of personal style possible to explore and expand with the Amiga has the potential of blending traditional painterly methods with electronic media. A digitizer -- in some cases a "frame grabber" may be preferred -- enables you to take images from the real world or from videotape, and bring them onto the Amiga screen for manipulation, editing, and storage. These images are open to the full range of color and form manipulation that your paint programs and Amiga screen resolutions will allow. This means you could still work in pen & ink, watercolor, or many other media and then digitize your work for incorporation onto the electronic canvas.

Style is based very heavily upon your experience in the world, which has both differences and similarities with the experiences of all other people. Those parts of your experience that demand expression become translated into the kinds of subject matter that become a recognizable part of your style, the more work you do.

Style, then, is everything that both sets you apart from others and at the same time is the basis of your being able to communicate with others in a similar and somewhat shared symbolic language. You can usually tell that you are developing a style when you

notice that viewers either appreciate the hell out of you, or dislike your work intensely. Style represents choice and risk.

### **True Amiga Confessions**

Visual artists are image philosophers, and the hint of their beliefs (usually too complex and abstract for words alone) can literally be experienced by seeing their works. If you can't get a discernible "hit" from a piece of visual art, then no amount of verbalization will suffice to lead you to its soul...or yours. Not all art "works", and that's certainly true of my attempts. My main interest (and my doctoral degree) is centered upon "transformative symbolism". Transformative symbols can potentially evoke change in their surroundings by their presence alone, and one of the places that they are noticed is in the visual realm -- the world that we see around us. Sometimes, the symbol is actually the relationship of two or more things in a certain proximity to each other. I find that the Amiga is not only the proper tool for my work, but that in-



**Hymarmenae:** The background figure was painted directly on the screen. The foreground figures are clones of a digitized pen & ink drawing of a Celtic mythical king.

teracting in its unique environment actually motivates visual experiments that I never planned to engage in prior to a working session.

Another identification mark, or stylistic ingredient, of my present work, is what I call "digital archaeology," meaning that I incorporate digitized images and symbols into my paintings, or refer to such images in the paintings themselves. These images are often parts of traditional transformative symbols, and are usual-



**Dovescape:** The bird that appears throughout was originally a watercolor before it was digitized and brought into the system.

ly found in works based on ancient religious texts, which is a nice treasure-box of transformative symbols. I use photographs rather than drawings when I do this, preferring to wind up with a finished piece that is both painting and non-painting. The photographic elements of my paintings are either in the public domain, or are distorted in some creative fashion so that I am not committing any copyright infringements.

Style, by the way, is only developed from a dedicated and ongoing work regimen. You must set a time aside every day for immersion in the process, and you must try at all costs to be present in your workroom at that time. That old tale that an artist waits until the muse speaks before doing any work is complete nonsense. More than likely, you will only keep and/or show to others about 10 percent of what you create, but the rest is not a waste of time. It is the dues paid in the development of style.

I average about 60 hours a week on my Amiga, working on various projects, and sometimes the total is well over 100 hours. That's when you can tell that you're on the track or path of a personal style, or in a working environment out of which style will emerge. Style in the arts is not something you either seek or that you lust after -- it emerges from long hours of giving in to visions that demand objectification in the world. ■

**Shamms Mortier has an MEd in Instructional media and a PhD in comparative religion/creative arts. He teaches Design at the University of Vermont.**



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# GURU BASHERS

## Amiga users' technical questions answered here

By Arnie Cachelin and Aki Rimpilainen, AMIGA Plus Technical Staff

### Keybuffer BASIC Blues

Q: I want my BASIC program to repeat a routine as long as the user has a key pressed. One approach I tried is:

```
WINDOW 1,,31
AS=INPUT$(1) 'Wait until a key is
pressed
WHILE INKEY$ <> "" 'While key
stays pressed
a=a + 1
PRINT a
FOR x=1 TO 500:NEXT 'A dummy
routine
WEND
```

Unfortunately, INKEY\$ doesn't work. INPUT\$(1) can be used instead of INKEY\$ to make the program work well enough to illustrate the next question. The screen flashes while the key is pressed and the looping continues for a while after the key is released. I guess this is the result of keyboard buffering. Can the buffer be bypassed with a direct hardware read? And why doesn't INKEY\$ work?

Brad Zander  
Bethlehem, PA

A: In your example, INKEY\$ doesn't work because of what is called the Key Repeat Delay. The system will wait a specific amount of time while the key is held down before repeating the keystroke. As your program reads the first keypress, the system detects that the key is kept down and applies the delay. Meanwhile, the program continues executing and searches for active keys with INKEY\$. This fails because the system is still waiting for the delay to end. You can avoid this prob-

lem by setting the Key Repeat Delay variable in Preferences to "Short" and inserting the following line between INPUT\$ and INKEY\$:

```
FOR X=1 TO 1000: NEXT X
```

The extra time provided by this line should be sufficient to clear system's Key Repeat Delay.

As for the keyboard buffer: In theory it is possible to bypass the keyboard buffer by using direct Amiga library calls from BASIC. A more practical way to avoid the extra keystrokes after the key is pressed would be to use another Preferences variable to slow down your Key Repeat Speed, and match it with your INKEY\$ loop time. Unfortunately the time it takes this loop to execute will depend on what other processes are running on your Amiga at the moment. In general, the key buffer can be cleared with a line like:

```
WHILE INKEY$ <> "" : WEND
```

It is a good idea to do this at the beginning of your program if you want to avoid using any characters which may happen to be waiting in the buffer when you start up.

### VirusX AutoLoad

Q: Recently I received the premiere issue AMIGA Plus, including VirusX, which allowed me to discover that I had 57 out of 83 disks infected. They have all been sterilized, but now I am not sure how to go about installing VirusX in my startup-sequence, as was mentioned in the

docs. Can you give me step-by-step instructions so I can continue to use this invaluable program without loading it each time I wish to use it?

R.M.Weber  
Kitchener, Ontario, Canada

A: To install VirusX, or most similar background utilities, in your startup-sequence, you need to edit the text file "startup-sequence" in the s: directory on your boot disk (or the boot partition of your hard disk). You can use Notepad or any other word processor/text editor which will save plain text files (i.e. no bolds, fonts, etc.) to add the necessary line to the file. You will find Notepad in the Utilities drawer on your Workbench 1.2 or 1.3 disk. Run Notepad, then use the drop-down menus to OPEN s:startup-sequence. Your startup-sequence file will appear in the Notepad window, ready for you to add the line:

```
RUN >NIL: virusX
```

This line should be added somewhere in the middle of the startup-sequence, after the first two lines and above the line which reads ENDCLI >NIL:. Save the altered file, and reboot. (As always, keep an unaltered backup boot disk, just in case).

For this to work, VirusX should be in your c: directory with the rest of your CLI commands. If VirusX is somewhere else, you should give the whole path name in the startup-sequence (e.g. RUN >NIL: Utilities/VirusX). Using RUN >NIL: will run VirusX in the background, and send any messages it has to NIL:, which al-



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lows the CLI window to close.

### AMIGA Plus Icon Copy

**Q:** I'm having trouble backing up my AMIGA Plus Disk from issue #2 (June/July). Every time I try to make a copy the message comes up:

Error while opening

SYS:Utilities/TurboBackupV1.00: 205

Mackie Bowden

Martinez, GA

**A:** Sorry, we goofed. To fix this icon so you can copy your AMIGA Plus #2 Disk using the Workbench, first click on the disk icon to select it. Now choose the Info item in the Workbench menu. Info lets you see what program an icon looks for when you click on it, and lets you change the program name or path. When the info window opens, click on the Default Tool entry. Edit it so the string reads SYS:System/Diskcopy, and click on the SAVE gadget. Assuming that the file SYS:System/Diskcopy is available, you should now be able to duplicate the disk from the Workbench. Without fixing this, you could still copy the disk by using the CLI command DISKCOPY, or some other disk copy utility.

This problem happened because the disk icon for the second AMIGA Plus disk was produced by an artist using the PD disk copy utility TurboBackup v1.0. Apparently this utility changes the Default Tool setting of the disk icon to a non-standard name. The setting needed by most other disks is SYS:System/Diskcopy -- not SYS:Utilities/TurboBackupV1.0.

### DiskChange Icons

**Q/A:** In the June/July issue you answered a question, paraphrased as follows:

"When I change a disk icon (or any other) on my hard disk, how can I see the new version without rebooting?"

You answered that the reader could run the LoadWB program to see the new icon with causing any severe problems for the Amiga.

There is another way. Run the DiskChange utility (standard with

AmigaDOS in the c: directory).

DiskChange was intended for use with the 5.25-inch floppy drive, which does not know when a new disk has been inserted (unlike the 3.5-inch drives). However, it works just fine on other drives, including 3.5-inch drives, hard drives and hard drive partitions.

Further, I have experienced NO side effects with DiskChange. On the other hand, LoadWB ate up 28K to 29K of RAM each time I ran it while testing. Each time you run LoadWB, WorkBench "task" is loaded into memory. Unfortunately, any old Workbenches are not unloaded and continue to run!

On another subject, you also ran a letter in that issue about "fooling" Electronic Arts software into using the hard drives. I use a PD program (in my c: directory) called AssignDev. I has worked for me in all situations except for using the Install command and other programs that check hardware. Not only are EA products happy, but script/batch files expecting DF1: work just fine on a 2000 where the second drive is external (DF2:).

Further, programs similar to Install do not really pose a problem since they always notice the presence of DF2:. Most also recognize mounted devices where appropriate. Usage:

```
<drive: path>/AssignDev [<old device>]
```

to add a new device name to the old device, or:

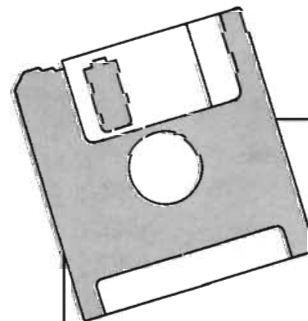
```
<drive: path>/AssignDev [<old device>]
```

to remove an old device. This works for ALL devices. You can remove Par:, DH0:, DF0: ... even CON:.

Thomas Scott

Bellingham, WA

**A:** Thanks for sharing this useful information, Tom. We invite and encourage all you AMIGA Plus readers to send the magazine your technical tips for possible publication. ■



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# M



## Real-time music performance with ever new and surprising sounds



*Review by Rob Griffith*

***I was fully prepared to  
dislike M. As a musician  
who learned to play in the  
school of hard knocks,  
namely bars and nightclubs,  
I value the human element in  
music and tend to resent  
anything that substitutes  
automation for expression.  
But I was delighted and  
surprised to discover that M  
encourages musical  
experimentation without  
sacrificing human creativity.***



**M ++++**  
*Best algorithmic music software  
for the Amiga. Outstanding  
interface gives you real-time  
control over many sound  
parameters at once. Works with  
MIDI or internal Amiga sound  
chip. Still has a few minor bugs.*

The first thing that attracted me about **M** was that it doesn't require an act of Congress and a grant from the Ford Foundation to get started. You can make simple musical sounds a few minutes after you first boot up the program, using the internal sounds of the Amiga. You don't need a costly MIDI setup. **M** uses standard IFF sounds and comes with some good ones. But if you are a MIDI freak like me, you can also use a MIDI sound module to play your music. It's also easy to change the voices of your MIDI module, or to change MIDI channel assignments by using the mouse and clicking on gadgets.

**M** is different from many other music composition and performance programs in that it lets the user interact with the music in real time. Jazz musicians improvising on their instruments do this all the time. But for a person who is not accomplished on a musical instrument, it is a wonderful feeling to be able to create musical ideas, play with them and watch them unfold and transform.

**M** is based on the concept of algorithmic composition. This method of composition was pioneered by John Cage, among others. It is based on the notion that good music can be created by pre-setting various musical parameters such as pitch, rhythm, etc. -- and then being able to vary them over time, either in pre-determined patterns or at random.

This approach differs from the most widely used method of recording and performing music on the Amiga (as well as other computers) -- sequencing. Sequencing is useful if you want to pre-determine and have complete control over your musical ideas. However, it is limited because once a sequence is set, it is difficult to change in real time other than by laying another track of music on top of the sequence. Algorithmic composition allows you to constantly shift many parameters at once, thus creating ever new and surprising sounds.

### **Seven Windows**

I think that **M** has one of the neatest user interfaces I have seen. First, the screen is fun to look at. Two of my friends, who didn't know what **M** was for, independently complimented the screen graphics and wanted to know more about the program. The main screen is divided into seven areas which control the various functions. You create music by setting up as many as four Patterns of notes, and then manipulating them.





At the upper left is the Patterns Area, which is used to input and edit notes in the four Patterns. Next is the Control Area where you start and stop your music, adjust the tempo, save MIDI files, etc. In the Conducting Area, you direct various parameters of your music simultaneously in real time. The Sound Area is where you do things like suddenly change your Mormon Tabernacle Choir into a crunching guitar.

**You'll interact  
with your  
music in  
real time,  
like jazz  
musicians do.**

In the Cyclic Area you create cycles of rhythm, dynamics and legato-staccato articulation. For example, you could set a rhythm cycle four notes long, so that the first note in your Pattern would be a quarter note, the second note an eighth, the third a dotted eighth, and the fourth a half note (regardless of whether the Pattern itself contained more or less than four notes). Then, every time four notes of the Pattern played, this variation in rhythm would repeat.

The Variables Area enables you to randomize the order of notes, change orchestration (for example, to choose which MIDI channel a Pattern will be sent to), to change the density of notes (what percentage of the notes in your Pattern are actually played), or to transpose. Each of the cycles and variations in the Cyclic Area and the Variations Area is subdivided into six sections. So you can suddenly change your rhythm setting or accent setting or whatever, in one of five oth-



er settings. The Snapshot Area allows you to store several screen settings at once.

**Easy Entry**

M uses the old familiar Amiga gadgets, plus a couple of new ones I've never seen before. Slider gadgets can also function as range bars, setting a range where a variation can happen within. For example, instead of setting an accent at an absolute value, you can set a range where the accent can fall within, allowing for random variations of accent in each cycle of a Pattern. There are also arrow buttons that can change direction, giving four settings for one button.

It's quite easy to enter notes into a Pattern, either by using an external MIDI keyboard, or by opening the Pattern Editor window and entering or deleting notes. When notes are entered into a Pattern, they have no particular values of rhythm, articulation, accent, etc. All these values can be set and altered later from the various screen areas. A Pattern consists of up to 999 steps, each step containing a note or a chord. M has a 10 1/2 octave range.

You can also save or load compositions as MIDI files. The MIDI file format is a fairly recent addition to the MIDI standard. It allows you to move your music to different music software, or even to a different type of computer. For example, you could create music on M, then move it to Dr. T's Copyist and have it written out as a score. Or you could send it via modem to a friend who has an Atari or a Mac, and let them play it on their own MIDI setup.

As for the manual, I found it for the most part to be comprehensible.

## ON DISK

### Nebula City Blues

By Rob Griffith

I composed "Nebula City Blues" with M music software for this AMIGA Plus Disk. To hear it, just double-click on the Nebula icon in the music drawer.

In order to use less than 100K of disk space, I limited myself to four one-octave samples, even though M is capable of using 16 IFF multi-octave sounds simultaneously (within the limitations of memory and the Amiga four-voice sound chip). M can also drive 16 channels of MIDI instruments. M saves sequences of notes in the MIDI file format, but not in the SMUS format. Since there are no MIDI file players that I am aware of, I was obliged to save my music as a MIDI file and then convert it to SMUS. I discovered a MIDI-to-SMUS conversion program on a BBS, but couldn't get the darned thing to work. Fortunately, Darrienn Fitzgerald came to the rescue and spent several sleepless nights writing a conversion program. He didn't have time to work out all the bugs, however, so I had to load the SMUS file into Deluxe Music for tweaking.

One thing Darrienn's conversion program doesn't do yet is convert note velocity (volume). One of the powerful features of M is its ability to create cycles of dynamic accent. My attempt to re-create the dynamic feel of the piece with Deluxe Music was only partially successful. But I would also like to thank Tony Barnes for his technical expertise in helping finalize the conversion you'll hear on this issue's AMIGA Plus Disk.



It is organized into relatively small "bite sized" chunks of information, which are easy to digest. There were a couple of places where it got a bit convoluted, though. For example, the section on how to load internal sounds is somewhat unclear.

Unfortunately, M doesn't quite seem to have all its bugs worked out yet. One time, for the hell of it, I created a chord in the Pattern Editor window with every chromatic note in an octave turned on. I then started playing the Pattern. I held down the left mouse button and began sliding the cursor up and down on the Pattern grid to turn notes on and off at random. Much to my dismay, some of the notes on my MIDI sound modules got stuck on. Admittedly, I was being a little wild, but the program is supposed to encourage experimentation. Once several notes get stuck on, there is no panic button which will shut them all off from the program. I had to either turn them off from my sound modules, or figure out which notes were stuck on, and then shut them on and off again individually from the

Pattern grid, which could be a disaster in a performance situation.

Another time, the mouse jammed up after loading a MIDI file. When I re-booted, once again some notes got stuck on. I also managed to crash the system a couple of times, although I

## You can save or load compositions as MIDI files.

couldn't discover what sequence of mouse interactions caused the crashes. Finally, when I tried to create a new piece by using the menu to request a new screen, I got a requester with a message reading "Can't Open" -- which I couldn't close! Still, M seems to work quite well most of the time.

M is copy protected. It requires you to look up a word in the manual. However, you can get unprotected disks by signing an Addendum to the License Agreement and paying an additional \$50.

## Summing Up

People just starting to get into the Amiga's unique sound capabilities want to know a good program to start with. On the other hand, there are musicians who already have many music programs but are in the market for something new that will entertain and challenge them. In either case, M wouldn't be a bad choice.

There are some other algorithmic composition programs available for the Amiga, Music Mouse and Instant Music for amateurs, and the Program Variable Generator in Dr. T's KCS Level II at a professional level. In my opinion, of all the algorithmic programs for the Amiga, M best combines ease of use with musical power. ■

**M** \$199  
Intelligent Music, 116 North Lake Avenue, Albany, NY 12206. (518) 434-4110.  
Copy-protected, 1Mb recommended.

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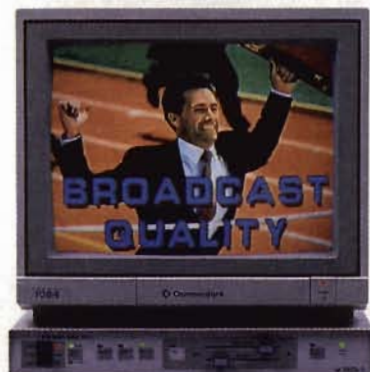
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CIRCLE 032 ON READER SERVICE CARD



■ Introducing the TASS interface for ARexx... ■



# DiskANIM

## Real-Time Hard Disk Animation System

By Wolfgang Dinger

**NOTE FROM THE EDITOR:** During the most recent Amiga fairs and electronics trade shows, we heard that Mindware International was working on a hard disk real-time animation player program -- that would show animations as big as your hard drive could hold. So we were very pleased when Mindware's Bob Maludzinski offered AMIGA Plus this newly finished utility as a special disk feature. Quick negotiations at deadline and ultimate transmission of the material took place by phone between Mindware in Canada and us in California. Then when we downloaded DiskANIM we were surprised to find that we had gotten even more than expected...



It seems that DiskANIM is the first stand-alone utility module programmed with Mindware's TASS -- a powerful new point-and-click user interface for the ARexx inter-program communication language being incorporated into Commodore's upcoming Workbench 1.4. So the following article also serves as a preview of TASS.

**Please Note:** In order to fit in all the outstanding features we have for you on this issue's AMIGA Plus Disk, it was necessary to compress the TASS drawer containing DiskANIM. On this issue's "How To Use the AMIGA Plus Disk" page, you'll find easy instructions for de-compressing these files back into useable form.

Many of us bought Amiga computers so we could make our own animations, and we have learned to live with the RAM limits on our creations. We piece together long animations from many fragments, meanwhile dreaming of someday being able to play five or ten minutes of computer animation non-stop without going through the hassle of constant transfers to videotape. The exclusive DiskANIM program on this issue's AMIGA Plus Disk gives us at least some of that potential.



Although the most significant use for DiskANIM is as a hard drive animation player, it really can play a properly formatted Amiga ANIM file stored anywhere -- in RAM, or even on a floppy disk. However, floppy disk animations will be too small and too slow to really show what DiskANIM can do. The article also explains how you can generate a lengthy sample animation with PageRender 3D.

**Important:** DiskANIM can use any ANIM that's *fully* compatible with the standard Aegis format developed for VideoScape 3D and VideoTitrer. Mindware's PageRender 3D works with DiskANIM. However, please note that some other graphics software may use slightly different ANIM formats which don't work with DiskANIM.

### Operating DiskANIM

To get to DiskANIM, open the drawer called TASS. Then double-click on the DiskANIM Startup icon inside. A window will open up and show the gadgets for the three main DiskANIM functions, along with a configurable grid with five slots occupied and 11 slots open for customizing.

Click on the PLAY gadget. You'll get a directory requester and use the mouse or arrow keys to select the path name (volume, directory, file) for the ANIM you wish to play. Remember, your animation can even be on a floppy if you don't have a hard drive! After your file is selected, click on OK and the ANIM will play one time, then quit.

If you click on the FOREVER gadget before selecting a file from the directory requester, the ANIM will continue looping until you press the ESC key to stop it at the end of its current loop. There's also an APPEND gadget which you use for adding IFF frames to the end of an ANIM.

### DiskANIM Test Case

To generate an animation long enough to adequately test a hard disk animation system, you need to make lots of frames in a short time. This is-

sue's AMIGA *Plus* Disk contains a script, requiring Mindware's PageRender 3D software, that will generate 1,130 frames in about seven hours on a standard Amiga with a 68000 processor. The script file, called Circus.Script, is contained in the directory DiskANIM\_Test, which is itself inside the TASS drawer. Your completed animation will occupy approximately 1.9 megabytes.

The animation frames are generated in low resolution 3/4-page size (240 X 150), but you can edit the script file to change the resolution. The file contains comments indicating where changes can be made. A full-page size will approximately double the final ANIM file to almost 4 megabytes. Increasing the number of bitplanes from three to four will probably increase the ANIM file size by about 25%. More time will also be required to create this ANIM file, if you select larger page size or more bitplanes.

To use this test case, load PageRender 3D and use the "DRAWER" command to indicate the location of the test script. Use a command such as:

```
3D> drawer:TASS/DiskANIM_Test
3D> read Circus.Script
```

The script will save the animation to your hard drive in the file dh0:Circus.Anim. You can change the name and location by editing the Circus.Script file, if you wish. Circus.Script loads six other files from the TASS/Test drawer.





## More ARexx Facts

Commodore is putting ARexx into the forthcoming Workbench 1.4 and is also encouraging all software developers to include ARexx ports in their software. ARexx is the Amiga adaptation of the Rexx language used on IBM mainframes. But due to the Amiga's wide range of software, ARexx's may become even more useful than Rexx has been on the IBM.

Any software which has been adapted to work with the ARexx programming language instantly becomes much more powerful because that software is now programmable! However, software that supports ARexx is not only programmable, but programmable in concert with other ARexx-supporting software. For example, three consecutive lines of code in ARexx could drive Digi-Paint III, PageRender 3D, and HandShake, all of which support ARexx.

A programming language normally comes with a library of functions which can be utilized within that language. However, ARexx is at a distinct advantage over other languages in this respect. Every program that supports ARexx will add its command set to the set of commands which can be called by ARexx. Thus, the ARexx base of available functions will far exceed that of any other language.

ARexx can be used to tie together the strengths of various programs with its own programming abilities for particular applications. Any program which supports ARexx could even be rewritten without a user interface, thus providing an "engine" which can be totally customized to the needs of any user.

## TASS Surprise

What about all those string gadget locations at the bottom of the DiskANIM requester? Well, if you want to use the full potential of this software, you need to know that DiskANIM actually runs under a very powerful new interface system called TASS (which stands for THUT Application Support System).

TASS is a "software hub" designed to be used with the ARexx language. (See the "More ARexx Facts" box with this article.) ARexx, which will be included by Commodore in Workbench 1.4, is a comparatively easy program-

***The script on this  
disk generates a  
two-meg  
animation with  
1,130 frames in  
about seven hours  
on a standard  
68000 Amiga.***

ming language that can control a variety of ARexx-supporting software. ARexx messages sent from one program to another are usually in the form of a command string -- a piece of text that can be read.

Although ARexx programming is relatively simple, it still involves typing and using the CLI, which would dampen the enthusiasm of many Amiga users. However, software can be written which primarily functions as a "hub" for user activity, which not only ties ARexx macros together with various ARexx-supporting programs, but provides a familiar graphic interface with gadgets and requester windows.

Each of the TASS interface windows can have a number of Macro Trigger Gadgets. When these gadgets are selected, they execute a file with the same name as the gadget face, from the appropriate macros drawer. You can assign any utility (Rexx



**TASS Color Requester Screen**

macro, AmigaDOS batch file, TASS macro) to any gadget of any user interface window. Even while the user interface is open, the set of gadgets can be revised to whatever you wish. Any key on the keyboard can be assigned to a set of functions within a macro.

TASS user interface windows can call ARexx macros which can call other TASS user interface windows. Each user interface window continues to function after it sends off an ARexx macro. TASS only loads the required modules for a program at the time they are actually needed.

TASS is to be incorporated in a number of upcoming Mindware graphics software products. The first release, due in late 1989, will be PageFlipper Plus F/X 2.0. Also coming is PageRexx 3D, a version of PageRender 3D which has no user interface and simply functions as a host to ARexx macros -- which means it can be totally customized for any user. Complete TASS utilities and functions will also be made available to other commercial developers for their applications.

## More Disk TASS

The additional TASS utilities included along with DiskANIM on this issue's AMIGA Plus Disk are:

**Image** - Displays IFF files or single steps through ANIM files. The IFF files are all loaded into memory, so that they can be swapped quickly. Image will "split" an ANIM file into IFF files. It has numerous (and time consuming) Image Processing techniques for IFF-ILBM files including flipping the image around an axis, mirror imaging, converting HAM pictures to other formats, color edge detection and image resizing. Although there is



an Undo button, there is no way to abort an operation in progress. This module loads its pics into the BACK screen, so you may need to switch the screens by dragging the TASS and Workbench screens down, or using the standard gadgets in the upper right corner.

**Screens** - A screen grabber, converting any Amiga Screen to an IFF-ILBM file by selecting from a list of current screens.

**Arrows** - Will shift your screen around to get those video applications centered.

**DirTool** - A File Requester and Directory Utility. Especially useful for selecting a number of files at one time. This module is called by most of the others when they have to LOAD or SAVE a file. The DELETE gadget requires ARexx.

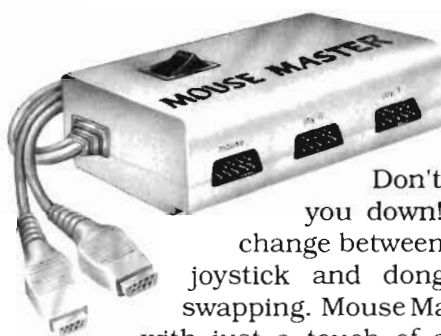
**ColorReq** - A Color Requester, which when called from an ARexx program can return from the user a single color, a range of colors or an entire color palette. It can also be used to revise the Workbench colors.

**ShowText** - Tool to display text files. This is used by the help system to display help files for various functions and utilities. If you click on a file name within the actual text, that file is inserted right after its name. If there is a colon in a line you click on, TASS will think you mean to import a file and will create an "insert volume..." requester. Just cancel it.

**SysReq** - System Error or Help Messages work with this tool. It has the same file insertion features as ShowText. You can exit with the mouse, or by typing a return.

These application icons can be selected from the TASS drawer of this issue's AMIGA Plus Disk. To examine these applications, first select the Startup icon. Startup assumes you have several ARexx commands available. But without ARexx, you can still examine these utilities at a reduced capacity.

*Wolfgang Dinger heads up Toronto, Canada's Anakin Research, which makes the Easy! graphics tablet for the Amiga. He was among the first independent testers of TASS.*



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### FOR TECHNICAL QUESTIONS...

Because DiskANIM and TASS are such new and advanced products, technical support for AMIGA Plus readers is being provided directly by the developers. Questions, comments and bug reports specifically about TASS should be directed to: THUT Inc., 34 King Street E., Suite 802, Toronto, Ontario, Canada, M5C 1E7. (416) 366-6668.

Questions relating to DiskANIM and other Mindware applications using TASS should go to: Mindware International, 110 Dunlop Street W., Box 22158, Barrie, Ontario, Canada L4M 5R3. Voice, (705) 737-5998; BBS, (705) 737-5017.

### DiskANIM User registration

The DiskANIM software presented on this issue's AMIGA Plus Disk is the property of Mindware International. It may be freely used by anyone who completes the following registration form and mails it to Mindware International at the address below. Registered users of DiskANIM can freely make a backup for personal use, but may not distribute or resell the software to anyone else. Mindware International reserves all commercial rights to the DiskANIM and TASS software.

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CITY/STATE/ZIP:  
PHONE:  
AMIGA MODEL/OWNED:

I understand the terms of usage of DiskANIM as described above and agree to abide by those terms.

SIGNATURE:

DATE:

Send to:  
Mindware International  
110 Dunlop Street W., Box 22158  
Barrie, Ontario, Canada L4M 5R3



# A-Max

## HOW TO PUT A MACINTOSH INTO YOUR AMIGA

Review by Matthew Leeds

### RATING ++++

*It works. A-Max really runs most of the best-known Macintosh applications software on your Amiga. But be prepared for some limitations, such as no hard disk support yet.*

If you want to run Macintosh software on your Amiga, ReadySoft's **A-Max** (\$199.95) will do it for you. Sure, there are certain limitations. But the bottom line is that it really works. Not likely to run under A-Max are: programs that use disk-based copy protection, programs that do not follow Apple's programming guidelines, or programs that take direct control over the hardware. Programs that use color, or AppleTalk, or the Mac sound chip also will not find the resources they require.

I did most of my testing on an Amiga 2000 with a Super Agnus, 3Mb RAM, FlickerFixer and multi-sync monitor, GVP hard disk controller and 40Mb Quantum drive (not much use with the A-Max), and 128K Mac ROMs. The Amiga had two floppy drives and used an Apple floppy drive as well. Printer testing was done on an old but still operational Star SG-10 printer, and telecommunications testing was done with a Supra 2400.

As expected, games were mostly a washout. They either never passed the copy protection check, or bombed as soon as they tried to talk to non-existent hardware. Ditto for music software.

Applications software ran like a charm. This article was written using Microsoft Word V. 3.02, partly on a Mac and partly on my Amiga. The same disk was read and written to on the Mac and in the Apple drive attached to the A-Max cartridge. I also successfully tested Superpaint, PageMaker, Illustrator, MicroPhone, Excel, Hypercard, MacDraw, MacPaint, MacWrite and a whole host of DA's.

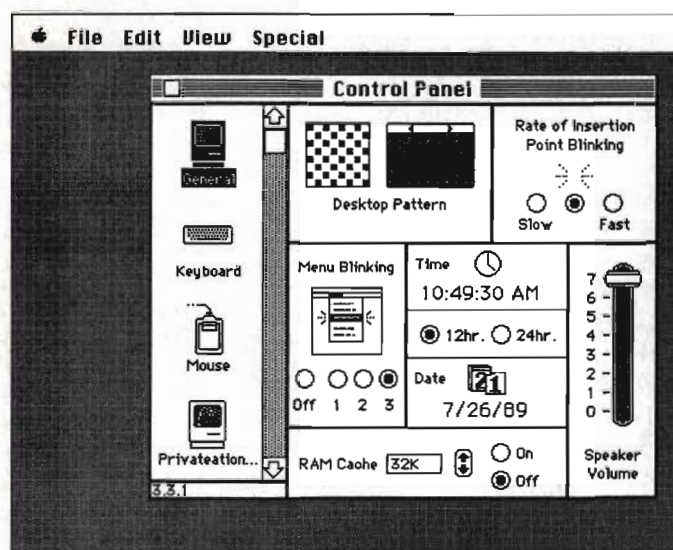
To give you a sense of how well the emulation works, I ran some simple benchmarks. Loading Microsoft Word on a Mac SE from floppy disk takes 15 seconds, from an Apple drive attached to A-Max takes 20, and from an A-Max format disk in an Amiga drive takes 17. Doing a search and replace on a 1,000-word file in Word on an SE takes 42 seconds, 38 seconds

under A-Max. Other applications showed similar results. A-Max disk I/O was slightly slower, CPU intensive operations slightly faster.

### Physical Details

The A-Max cartridge connects to the Amiga's floppy drive port. It has an Amiga floppy drive pass-thru and a Macintosh-compatible floppy drive port. Inside the cartridge are two chip sockets. These must be filled by a set of Macintosh ROMs supplied by you. They may be either the older 64K ROMs or the 128K ROMs used in the Mac Plus.

I used a set of the 128K ROMs for this review, and I recommend them over the 64K ROMs for many reasons. They're faster and they support the Hierarchical File System (HF), non-





68000 CPU's and MultiFinder. They offer a higher degree of compatibility with current system and applications software.

Macintosh ROMs are available from a variety of sources, including local retailers and mail order. At the time of this review, the best mail order price on a set of ROMs was around \$125. Apple frowns on the selling of Mac ROMs for use in non-Apple computers, and from time to time makes attempts to cut off the supply. There are no guarantees that ROMs will continue to be available, or that their price will not change. If you are planning on purchasing an A-Max, I would recommend that you first obtain a set of Mac ROMs to insure that you won't be left out in the cold.

The A-Max cartridge physically is more than a little awkward to install. It sticks out perpendicularly about seven inches from the back of the Amiga, and sticking a drive cable into the Amiga floppy drive pass-thru connector adds a couple of inches extra to the total length. You can connect the cartridge to the back of an Amiga external floppy drive, but I found that with some third-party Amiga floppy drives, the A-Max software would not recognize the cartridge.

ReadySoft also offers a floppy drive extension cable. Once installed, the cartridge can be left in place because it is transparent to Amiga software.

I connected an Apple external floppy drive to the cartridge to allow the direct transfer of Mac software to the custom A-Max format that can be read in Amiga floppy drives. These are not Mac format disks, nor are they Amiga format, they are only readable under A-Max and appear as Mac disks while in Amiga floppy drives. There have been some reports of incompatibility between A-Max and some Apple and third-party Mac-compatible floppy drives although I had no problems.

### **Software Connection**

Once all the hardware was installed correctly I could move on to the A-Max software. There are two disks provided; one is a standard

Amiga format disk, bootable and containing the A-Max program and some supporting programs. The other is an odd format, part A-Max and part Mac. The Mac portion contains utilities -- useful if you have access to a Mac -- that let you transfer applications from Mac format disks to A-Max format disks without using a Mac floppy drive on your Amiga, and that let you transfer ASCII files from Mac format to AmigaDOS format via a two-step process. The A-Max portion contains sim-

## ***Running Macintosh software on the Amiga under A-Max offers some advantages over running on a Mac.***

ilar utilities that support the A-Max to AmigaDOS transfer.

The A-Max program disk has a few peculiar features worth knowing about. It has a custom boot block that lets you take advantage of the Kickstart RAM in an A1000. This can add 256K to the available memory pool, but forces you to re-Kick your A1000 when you quit A-Max. This will not work if you have installed a Kickstart Eliminator in your A1000. A utility on the disk will let you re-install this custom boot block if required.

As you can imagine, virus detection programs see this custom boot block as a possible virus. The version of SetPatch on the A-Max distribution is not the most recent one. However, it turns out that the A-Max program is most compatible with the most recent version of SetPatch.

Since the current version of A-Max does not support hard disks (see below), I eventually found that the easiest way to use A-Max was to boot from a backup of their distribution disk. Although the manual states that several utility programs will be found in the C directory of the distribution disk, they're in the A-Max drawer on

my copy.

You will also need system software to run Mac programs. Most commercial Mac software comes with system software on the disk. It's worthwhile to note that Apple recommends using anything from system 3.2/finder 5.3 on up to system 6.0.2/finder 6.1 on the Mac Plus. Also, buying a set of system software should get you a system software manual, very useful for first-time Mac users.

### **Running A-Max**

Running the A-Max Startup program brings up a startup preferences window. From it you can set a variety of options for using A-Max. The normal Mac screen display is 512 X 342. You can choose to emulate it, or run in 640 X 400 mode. You can also choose a "video" mode. Running in interlace allows the entire screen to be displayed at once. In non-interlaced mode, Slow Scroll, Fast Scroll, and Paged options either scroll the screen or swap it to show the unseen portions. A-Max also offers support for Commodore's new Extended Chip Set (unreleased so far but offering 640 X 400 non-interlaced) and for the Commodore A2024 and Viking Moniterm hi-res monitors. I was fortunate to be able to run with a FlickerFixer in 640 X 400 mode.

The Memory Mode option is used to control which and how much memory on the Amiga is used by A-Max in Mac emulation. On the Mac, memory is a single contiguous block, unlike the Amiga. This difference can cause problems with some applications. It's possible to reserve some memory for use as a RAMdisk, and, as previously mentioned, to use Kickstart RAM on the A1000.

Direct support for ImageWriter printers and emulation for Epson-compatible printers is offered. I tested the ImageWriter emulation and it worked fine. The serial port may be used with a modem, and this was tested and worked fine. LaserWriters are supported, sort of. You must print a PostScript file to disk, then dump it out the serial port via a supplied File Dump utility.



All of the Startup preferences can be stored to a file read by the A-Max Startup program when you run it. Once all of the Startup preferences are set, clicking on the Go A-Max gadget starts the emulation process. A message appears on the screen notifying you to remove all disks from their drives. There's a short wait while information is read from the Mac ROMs, and then a prompt to press RETURN appears. Doing so brings up the Mac's boot screen.

From this point on you've got a Mac. Of course, you still need a boot disk. If you've got an Apple 3.5 inch floppy drive attached to the A-Max cartridge, just stick a Mac boot disk in it, wait till the system boots, then make a copy of it onto a disk in one of the Amiga floppy drives. You'll end up with a boot disk in A-Max format. I highly recommend this method of moving applications and data files from Mac format to A-Max format.

If you don't use an Apple floppy drive, you will have the opportunity to be introduced to a fourth format, the Mini Transfer Disk (MTD) format. It is similar to the dual format utility disk that comes with the A-Max. It requires access to a Mac as well. You create MTD's via the Mac Disk Transfer program on the utility disk. These can hold up to 272K of data.

If you want to move data files from the Mac environment to the Amiga, you need yet another format -- the File Transfer Format (FTF). This creates a disk that can be used with the File Transfer program that runs on both the Mac and the Amiga. I had reliability problems with this process, sometimes it would work and sometimes my Amiga would go off into never-never land.

### Custom Boots

Unlike the Amiga, all of the files needed by the Mac system are stored in a single directory, the System Folder. It holds the startup application (usually the Finder, the Mac's equivalent of Workbench); the system resource file named System; fonts and desk accessories (DAs) installed via the Font/DA Mover; programs run at

startup (INITs); control panel device files (CDEVs); printer drivers; the clipboard, scrapbook, and notepad files; and other magical stuff. If you muck with files in the System Folder without knowing what you are doing you are asking for trouble.

Also, if you run an application from a disk that contains a System Folder the Mac will switch to that disk's system. Any fonts, DA's, or other goodies on the first disk are no longer accessible. This is called switch-launching and can be prevented by holding down the Alt key on the Amiga when you start the application.

A bare-bones boot disk must have at least one DA, and four specific fonts. You'll want to have the Control Panel, and should also keep Key Caps, Chooser if you plan on printing, and Scrapbook if you want to do much cutting and pasting between applications. The four fonts that must be on every system disk are Geneva 9 & 12, Chicago 12, and Monaco 9. These cannot be removed via the Font/DA Mover. The latest version is 3.8. Make sure you have a copy.

You'll also want to have a copy of MultiFinder in the System. MultiFinder is very useful with A-Max in resolving memory conflicts that result from the non-contiguous memory on the Amiga. As far as CDEVs go, you'll need General, Mouse, and Keyboard.

If you find that you run out of room on your boot disk for fonts and DA's, consider getting either Font/DA Juggler or Suitcase. These are programs that let you access fonts and DA's not in the System Folder or on the boot disk.

Mac floppy drives auto-eject floppies, they do not have easily accessible eject buttons. The Mac operating system keeps an invisible file on every Mac disk, called the Desktop file. This file is updated just prior to ejecting a disk. If you manually eject an A-Max format disk without first letting the operating system know you want to remove the disk, you are asking for trouble. A-Max handles this by flashing a drive number in the upper right corner of the screen if you forgot and

popped a disk out too soon.

The A-Max manual is confused about System/Finder numbering. There is no direct relationship between version numbers for System and Finder. Official copies of the system software come with an Installer program that insures the correct pairing between System and Finder versions.

Although the current A-Max does not support hard disks, ReadySoft is planning to introduce hard disk support by the end of the year. Commodore A2090, Microbotics, and Great Valley Products controllers were specifically mentioned as part of the coming upgrade. At least one third-party hard drive controller manufacturer (IVS) has demonstrated hard disk support, and several other companies have stated that they will add support if ReadySoft does not.

I would have preferred to see Macintosh emulation as a task, running in its own window. I also find running on a floppy-based Mac as frustrating as running on a floppy-based Amiga. The System Folder on the Mac that I use at work is over 2.5Mb, stuffed with fonts, DA's, CDEV's, INIT's, sounds, and whatever else seems necessary. Hard disk support is essential.

### Summing Up

The A-Max is an exciting addition to the Amiga family. It greatly expands the utility of the Amiga for *some* users. (Applications, yes -- games and MIDI, no.) Certainly, if you own an Amiga it makes far more sense to buy an A-Max than a Mac, if you use a Mac at work and just want access to your Word or Excel files at home. ■

---

<b>A-MAX</b>	<b>\$199.95</b>
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*Matthew Leeds is a well-known Amiga journalist, currently employed at a software company where his workstation is a Macintosh.*



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# SpaceCadet

**Cute alien creatures automatically display your free disk space**

***This innovative little C utility runs in background on any Amiga (you don't need C to run it) and gives you instant readouts of the amount of open space remaining on all your floppy disks, hard drive partitions and RAMdisks. This article explains the structure of the C program, which was written exclusively for AMIGA Plus by the professional software developers from Blue Ribbon Bakery.***

Just about everyone knows at least one space cadet, but how many can say they have one residing in their own computer? No, we're not referring to the time when you tried to stuff your little bother into a floppy disk drive, we're talking about a terrific way to monitor the space remaining on all your disk volumes.

Allow us to explain. By opening a window and drawing an alien being (officially called a SpaceCadet), our program indicates how much space currently exists on each disk in your Amiga system -- floppies, hard drive partitions and RAMdisks. The SpaceCadet program is small enough to keep running as a background

task, so you can always have it for reference.

Each SpaceCadet figure is partially colored from toe to head. The filled-in part of the figure indicates the amount of disk space already filled. The name of the disk is printed beneath the Cadet. Whenever a new disk is inserted in a drive, or otherwise activated, the display is refreshed and a new SpaceCadet figure is drawn in for that disk.

As far as we have been able to test, SpaceCadet can handle even the most supercharged, multi-drive Amiga systems. However, the program ignores the Workbench RAMdisk which would always be shown as "full" be-

cause it automatically expands to fit whatever is put into it.

To run SpaceCadet, just double-click on the AMIGA Plus Disk's SpaceCadet icon and the aliens will invade your screen. The Lattice C 5.02 source code for this program is in the Programming drawer. C language owners can recompile and link this SpaceCadet source code. Just type the command line:

```
LC -L spacecadet.c
```

## **Programming SpaceCadet**

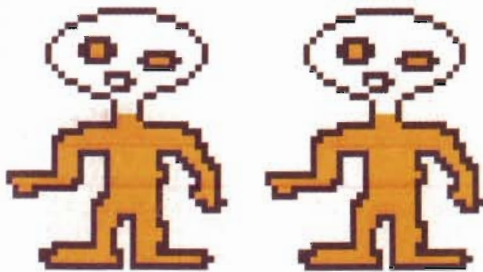
At first glance, the Amiga seems like a programming labyrinth. You must head off in one direction and then another and another in search of the right programming information, before you finally end up with all the knowledge you need for creating what you want. With SpaceCadet, two key Amiga programming issues need to be addressed:

1. We need to be able to find out what disks are in the computer and how much memory is currently used in each one. This is an AmigaDOS issue.

2. We need to draw a SpaceCadet that is part red, part white. This is a Graphics and Intuition issue.

Let's address each of these problems and implement a C programming solution. These solutions will work not only for SpaceCadet but will provide ideas, examples, and solutions for further programming projects as well.





By Melissa Jordan Grey and Todor Fay

We're assuming that you are reasonably familiar with C on the Amiga. However, if you are proficient in another language and have worked with data structures, you should have no trouble following this.

### Task 1

Getting volume names from Amiga DOS on your Workbench screen, every disk, or "volume," in your machine is displayed with a disk icon and a name under the icon. AmigaDOS keeps track of each of these volumes, so we need to get that information. Doing so requires following a rather obscure path, so fasten your C-to-BCPL translators and hold on tight. We start at the AmigaDOS library structure. This is called `DosLibrary` and is described in the include file "libraries/dosextens.h":

```
struct DosLibrary
{
    struct Library dl_lib;
    APTR dl_Root;
    APTR dl_GV;
    LONG dl_A2;
    LONG dl_A5;
    LONG dl_A6;
};
```

Accessing the `DosLibrary` structure is easy. Just declare: `extern struct DosLibrary *DOSBase;` in your program. The startup code that is linked in with your program (with Lattice C, it is `c.o`) defines `DOSBase` and calls

`OpenLibrary("dos.library",0)` which returns the actual location of the `DosLibrary` structure. The startup code then places a pointer to `DosLibrary` in `DOSBase`. Looking at the `DosLibrary` structure, we are interested in the second field, `dl_Root`. This points to yet another structure, called `RootNode`:

```
struct RootNode
{
    BPTR rn_TaskArray;
    BPTR rn_ConsoleSegment;
    struct DateStamp rn_Time;
    LONG rn_RestartSeg;
    BPTR rn_Info;
    BPTR rn_FileHandlerSegment;
};
```

Now, things get interesting. `RootNode` is the heart of AmigaDOS, and we get our first glimpse of something truly frightening -- the `BPTR` data type. AmigaDOS was written in a strange language called BCPL. In C, a pointer simply holds the memory address of the structure it points to. For example, if something is at memory address `0x10028`, the pointer holds the value `0x10028`.

In BCPL, a pointer holds the memory address *shifted to the right by two*. This is a `BPTR`. A `BPTR` for the address `0x10028` would be `0x400A`. To make sense of a `BPTR`, shift it `LEFT` by two, then treat it as a normal pointer. A macro in the `libraries/dos.h` file called `BADDR()` does just that. (By the way, an `APTR` is a generic pointer that does not need to be shifted.) The field in `RootNode` that we want is `rn_Info`, a pointer to a `DosInfo` structure:

```
struct DosInfo
{
    BPTR di_McName;
    BPTR di_DevInfo;
    BPTR di_Devices;
    BPTR di_Handlers;
    APTR di_NetHand;
};
```

Whew! We really are in the labyrinth. This gets us a little closer to our objective. The `BPTR di_Devices` points to a list of both devices and volumes. Devices are the physical hardware into which a disk is placed (for example, `DF0:` and `DH0:`). A volume identifies a particular disk that is accessed through one or more devices. For example, you may have a disk which you labeled `Whale Songs` with the Workbench `Rename` command. Whether you stick the disk in drive `DF0` or `DF1`, it can be accessed by name as the volume `Whale Songs`.



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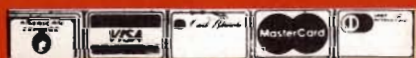
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Volumes and devices are represented by very different structures that sit in the same linked list at which `di_Devices` points. The second field of each is an identifier that specifies whether this structure is a volume or device. The definition for a volume structure is found in the include file `libraries/filehandler.h`:

```
struct DeviceNode
{
    BPTR dn_Next;
    ULONG dn_Type;
    struct MsgPort *dn_Task;
    BPTR dn_Lock;
    BSTR dn_Handler;
    ULONG dn_StackSize;
    LONG dn_Priority;
    BPTR dn_Startup;
    BPTR dn_SegList;
    BPTR dn_GlobalVec;
    BSTR dn_Name;
};
```

The field `dn_Type` holds the number 2 if this is a volume, 0 if this is a device. A BCPL pointer to the next Device or Volume is stored in `dn_Next`. These two fields are in the structure whether this is a Device or Volume. So, if `dn_Type` is not 2, We can safely access the next Device or Volume simply by looking at the pointer in `dn_Next`. Finally, `dn_Name` points to a BCPL string that holds the name of the volume. That's what we are looking for, which brings us face to face with BSTR, another ugly BCPL data type. In C, a string is represented by an array of bytes stuffed with ASCII characters, and the end of the string is signaled by a byte with the value 0.

A pointer to a C string simply holds the address of the first byte. A BCPL string is also an array of bytes, but the first byte holds the length of the string (thereby limiting it to a maximum of 255 characters) and the following bytes hold the ASCII characters. To point at such a string, BCPL uses the BSTR data type, which, like BPTR, holds the address of the first byte of the string shifted right by two. So, to get all of the volume names, simply scan through the list of Devi-

ceNodes and, for every DeviceNode that has a `dn_Type` of 2, grab the name from the `dn_Name` field.

Getting the name is not enough. We need to know some statistics: How much disk space is there and what percentage of it has been used. Yet another AmigaDOS structure, called `InfoData`, has what we need:

```
struct InfoData
{
    LONG id_NumSoftErrors;
    LONG id_UnitNumber;
    LONG id_DiskState;
    LONG id_NumBlocks;
    LONG id_NumBlocksUsed;
    LONG id_BytesPerBlock;
    LONG id_DiskType;
    BPTR id_VolumeNode;
    LONG id_InUse;
};
```

The `InfoData` structure carries information about the current status of a disk. For example, the number of disk errors that have occurred are stored in `id_NumSoftErrors`. `Id_UnitNumber` identifies the device the disk is currently in. `Id_DiskState` stores the current state of the disk (read only, read/write, or validating). `Id_NumBlocks` stores the number of blocks available on the disk.

We'll use this along with the next field, `id_NumBlocksUsed`, which states how many blocks are currently in use, to calculate what percentage of the disk is filled. We use the Amiga DOS routine `Info()` to access the `InfoData` of the volume. But first, `Info()` needs to know where to look. We must pass it a `FileLock` structure, created with the `Lock()` command. `Lock()` and `UnLock()` are provided primarily by AmigaDOS to guarantee that no two programs write to the same file at the same time. However, they are also used as a way to identify a particular file, directory, or volume, and pass that identifier (the lock pointer) from one routine to another.

We can get a lock on a volume simply by calling `Lock()` and passing it the name of the volume. Then, pass that lock to `Info()`, along with

an empty `InfoData` structure, and `Info()` will fill in all of the `InfoData` fields. That's it for part one.

Now, we can get a list of volume names and information about each of the volumes from AmigaDOS. Fortunately, that was by far the weirdest part of this project. Anything is simpler than dealing with AmigaDOS! On to the next task...

## Task 2

We need to draw the `SpaceCadet` filled up to a certain level with one color, much like a thermometer fills up to the current temperature with mercury. The simplest way to do this is to have two full pictures, one of a full `SpaceCadet` (red), the second of an empty `SpaceCadet` (white). Then, draw the bottom half of the `SpaceCadet` with the bottom half of the full image and the top half of the `SpaceCadet` with the top half of the empty image, the proportion of the two being determined by how full the disk is. The simplest way to handle graphic images is with the `IntuitionImage` structure:

```
struct Image
{
    SHORT LeftEdge;
    SHORT TopEdge;
    SHORT Width;
    SHORT Height;
    SHORT Depth;
    USHORT *ImageData;
    UBYTE sPlanePick, PlaneOnOff;
    struct Image *NextImage;
};
```

This carries everything which needs to be known to draw a simple bitmapped picture. The `LeftEdge` and `TopEdge` fields define the 0 coordinates of the top left corner of the image. `Width` and `Height` specify, in pixels, the dimensions of the image. `Depth` specifies how many bitplanes there are to this image. `ImageData` points to an array of 16-bit words, in which the bitmap image is actually stored. The bits in `PlanePick` specify into which bitplanes of the destination to copy the image, while the bits in `PlaneOnOff` determine the color of



the bitplanes that are not copied to.

Usually, PlanePick is set for all bitplanes and PlaneOnOff is ignored, so don't worry about them. To draw an image, use the Intuition command DrawImage(rastport,image,x,y). RastPort is the graphics structure to which the image is drawn. (Every window has a RastPort.) X and Y are the coordinates in the RastPort where the top left corner of the image should be drawn.

### ***Drawing just half an image is not as easy as it may look.***

Drawing just half an image is not as easy as it may look. We have to reorganize the image data. Here's why: The data is arranged so that the entire bitmap of the first plane comes first, followed by the entire bitmap of the second plane, and so on. Using the height and width variables, DrawImage knows how far to index down into the image data to pluck out the data to draw a line in the proper bit plane. If the Image Height is changed, how far DrawImage indexes into the bitmaps is also changed.

An example might help clarify this problem. Suppose we have an image that is three pixels high, twelve pixels wide, and two bit planes deep. The height, width, and depth parameters would therefore be 3, 12, and 2. Each line of the image takes one word (since the smallest size we are allowed is a 16-bit word).

So, each bitplane is  $3 * 1 = 3$  words. Since the depth is two, there are two bitplanes, the second after the first. The way they are arranged in memory is as follows:

line 1 of bitplane 1  
line 2 of bitplane 1  
line 3 of bitplane 1  
line 1 of bitplane 2  
line 2 of bitplane 2  
line 3 of bitplane 2

Now, suppose we want to change the height to 2 and draw only two lines. If we simply change the height parameter of the Image to 2, the data to draw will look like this:

line 1 of bitplane 1  
line 2 of bitplane 1  
line 3 of bitplane 1  
line 1 of bitplane 2

As you can see, the third line of the first bitplane still makes it into the image as the first line of the second bitplane. We need to throw out the unwanted line 3 and move the second bitplane up:

line 1 of bitplane 1  
line 2 of bitplane 1  
line 1 of bitplane 2  
line 2 of bitplane 2

Great! Now we know how to draw the top half of an image. Copy over the top half of each bitplane into a shorter data image array. We also need to know how to draw the bottom half. This is accomplished by doing the reverse, tossing out the first lines of each bitplane, and shifting the other lines up to fill the space. So, continuing our example, if we want to draw just the last line, height is set to 1 and the image data becomes:

line 3 of bitplane 1  
line 3 of bitplane 2

We need a routine that takes an image and shuffles the image data around so just a portion of the image can be drawn. In SpaceCadet, such a routine exists. Called drawslice(), it takes an Image and draws it, starting at a specified line in the image and ending it at a second specified line. Drawslice() is called just like DrawImage(). But, in addition to the four parameters that are normally passed to DrawImage(), two more, Start and Finish, are passed. These select which line to start with and which line to finish with. Drawslice()

works by creating a copy of the image and copying just the bitmap imagery it needs, following the rules outlined above.

The remainder of the program is very straightforward. An intuition window is opened in Workbench with ACTIVEWINDOW, NEWSIZE, and DISKINSERTED IDCMP Flags set. Every time the window is activated (by clicking on it) or resized, or a disk is inserted in a drive, Intuition notifies the window with a message. At this point, SpaceCadet scans the list of volumes (our first task), and redraws the window with a SpaceCadet for each volume -- drawn part empty, part full (our second task), with name underneath.

This program could be improved in many ways. For one, you might wish to display more of the information learned from the InfoData structure, like how many bytes total exist on each disk (id\_NumBlocks \* id\_BytesPerBlock). Or, you may wish to display the devices, as opposed to the volumes by grabbing them from the DeviceNode list.

So, there you have it. A disk space fuel gauge right on the screen! Aside from playing with SpaceCadet, you can apply some facets of this article to other projects.

Now that you know how to access Volume and Device names, you can write a sophisticated file requester.

- Use drawslice() to write a program that cuts and pastes figures of people. (You know, like those books when you were a kid that allowed you to combine the head of a pig with the torso of an ostrich and the legs of a rhino.)

- Improve on drawslice() so that it will crop a picture in both directions, horizontally as well as vertically. ■

*Todor Fay is the author of 10 different Amiga software products including Soundscape, 3-Demon, Who! What! When! Where! and Bars and Pipes. Melissa Jordan Grey is president of Blue Ribbon Bakery, an Amiga software publisher, and co-designer of Who! What! When! Where! and Bars & Pipes. They have both been called space cadets at one time or another.*



# ANIMagic

## FLASHY VIDEO ANIMATION EFFECTS GALORE

*Review by Steve King*

### **RATING** +++++

*ANIMagic produces many slick and professional video animation effects. It is not for the impatient, or for those unwilling to learn multi-step processes.*

Aegis' **ANIMagic** is a powerful desktop video tool that can produce some very complex and outstanding animated digital video effects (DVE) using one or two ordinary IFF files, such as pictures, lettering or graphic objects. The ANIMagic effects are saved on disk in ANIM format, which stores the first image completely and then only stores the changes to that image. This method significantly speeds up the animation while cutting down its size. ANIM is becoming one of the standard Amiga graphics file formats, so the animation you create can be displayed using a number of commercial video presentation programs, as well as the PlayANIM utility supplied with ANIMagic.

To achieve your ANIMagic effects, you start out by selecting one of the 22 DVEMaps furnished with the program. These maps create effects ranging from venetian blinds (the surface of the blinds turns in segments to reveal a second image on the back) to a rotating cube that displays a different image on each surface. You can program each of the DVEMaps in 9,025 different ways, so ANIMagic has the capability of producing almost 200,000 different effects!

### **Control Panel**

The heart of the program is the Effects Control Panel. It is here that you

select the effect you want, as well as the number of frames for the effect. You can specify a strobe effect which leaves a trail of images and, if you combine this with Translucent, the trail will become lighter and lighter until it finally disappears. Clicking on the Grid button will open another panel where you can choose the locations from which the effect will begin and end. By clicking the 3DStuff button, you can specify the starting depth of the image and produce an animation where the object starts as a small point in the background and moves towards you.

### **ANIMagic can produce almost 200,000 variations of effects.**

The Backdrop Control Panel permits you to choose which image or colored background you would like behind the animated graphic, and even provides a moving shadow.

An effect lasting only several seconds could require computing and rendering up to sixty different frames. ANIMagic provides a Preview button to let you see a quick wire-frame rendition of the entire effect.

A Palette Panel gives you broad control over the colors, and a special optimizing feature can combine different palettes from multiple pictures to produce a new palette that best matches the two pictures.

The Edit Bay Panel is where you select the images as well as control

the actual animation process. Here you can edit, splice, append and overlay animations created both by ANIMagic and other animation programs. Depending upon the complexity of the effect and the screen resolution, the animation process could take anywhere from 15 minutes to several hours, and the final ANIM file might weigh in at several hundred thousand bytes. But the end results do justify the wait for ANIMagic's effects. The program supports all graphic modes (including HAM and half-brite) as well as screen resolutions up to 1008 x 1008 pixels.

### **Mouse Overwhelmed**

While ANIMagic is entirely mouse-driven (no alternate keyboard commands) and you work entirely from graphic control panels, the sheer number of sub-panels and buttons detracts from the friendliness of the program.

The 86-page manual is full of tutorials, but lacks the information and organization truly necessary to communicate a clear understanding of how the program actually works. Creating your animation requires many steps and buffer swapping. The introductory tutorial animation, for example, is a 32-step procedure. If these are performed incorrectly or in the wrong order, you risk a visit from the Guru. ANIMagic is not copy-protected and comes with a separate data disk containing graphics for the tutorial.

After you experiment and get used to the program (which takes considerable time), you will find you can produce some stunning visuals. One

**CONTINUED ON PAGE 42**



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# Datel

## Data Acquisition Unit

DIGITAL STORAGE OSCILLOSCOPE FOR THE AMIGA

Review by Morton Kvelson

### RATING +++1/2

*The Datel Data Acquisition Unit is a functional, low-cost digital storage oscilloscope that's the only one available for the Amiga. If you need an oscilloscope for testing electronic equipment, this is well worth the price.*

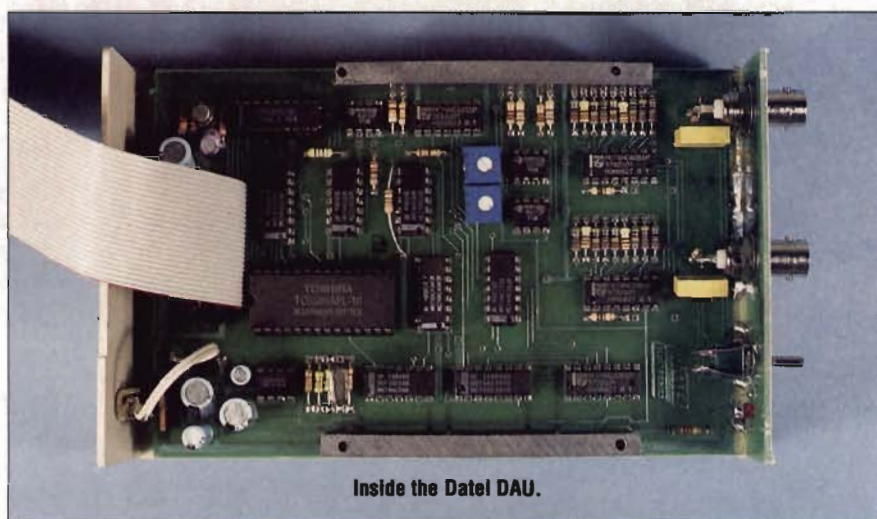
Of all the applications for the Amiga that I have seen, the Digital Storage Oscilloscope (DSO) may well be the most esoteric. As a low-cost alternative to an actual oscilloscope, a DSO makes it possible to check electronic equipment using your computer.

As of this writing, the \$179.99 **Datel Data Acquisition Unit** (hereafter referred to as the Datel DAU) is the only DSO available for the Amiga. On the other hand, there have been a variety of DSOs available for some time for the Macintosh and MS/DOS computers.

The operational specifications are impressive for such a low-cost unit. It has an internal 6-bit analog to digital (A/D) converter which is rated at 5 million samples per second. The overall 3 db operating bandwidth, for the entire unit, is from DC to 1 mHz. Up to 8,000 samples (4,000 samples for each channel) can be stored in on-board RAM.

### Working Screen

The Datel DSO's main working screen is modeled after a typical oscilloscope. The right half of the screen is nearly filled by a representation of



Inside the Datel DAU.

the cathode ray tube (CRT) of a real oscilloscope. In most cases you will want to illuminate the scope's graticule (a calibrated grid) by clicking on the GRAT button right below it. The width of the CRT is 250 pixels, which corresponds to the actual number of samples which can be displayed.

The available sweep speeds are from a minimum of 10 microseconds to a maximum of 500 milliseconds. The sweep speed can be changed in a 1, 2, 5 sequence, for example 10, 20, 50, 100 ... microseconds.

The gain of the vertical amplifiers ranges from 100 millivolts per graticule division to 10 volts per division. Like the sweep ranges, the vertical amplifier gain can be set in a 1, 2, 5 sequence.

### Trigger Modes

The Datel DSO has several trigger modes which initiate the sampling

operation. In the Continuous / Automatic mode samples are repeatedly taken as rapidly as possible. Each sampling operation consists of a sequence of steps. First the signals on both channels are sampled until the selected buffer is filled. The size of the buffer can be adjusted from a minimum of 250 samples to a maximum of 4000 samples per channel in 250 sample increments.

In the Single/Auto mode the sampling and display process is done only one time after the incoming signal reaches the preset trigger level. The resulting sample then remains in the buffer and on the CRT. The Manual trigger mode is similar to Single/Auto mode except the sequence waits for the user to start the sampling process. The trigger level can be set from 1 to 64 with the higher numbers representing increasing sensitivity.

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CIRCLE 007 ON READER SERVICE CARD

## DATEL CONTINUED FROM PAGE 41

age the results of 8, 64 or 256 samples. This potentially useful function may let you extract some useful information when a signal is obscured by high random noise levels. The averaging function can only be applied to the sweep ranges from 500 milliseconds to 2 milliseconds. Unfortunately,

**The main screen is modeled after a typical oscilloscope.**

nately, the unstable triggering of the Datel DAU tended to negate this feature.

A Plotter display function is also provided. In this mode about 75 percent of the screen is turned into a graphic display. The time base range can be set from one second up to ten hours for a full sweep of the screen.

### Mouse Access

Access to the mouse is turned off while the actual sampling takes place. When the slower sweep rates are used in conjunction with a large buffer, the time that you cannot access the machine may be more than a minute.

There is no way to obtain a hard copy of any of Datel DAU's waveform displays other than using your own screen dump utility. Improvements could be made to the sample processing. Features such as RMS extraction, waveform squaring (corresponds to electrical power), sum, difference and product of the two samples could all be inserted via software, without any changes to the hardware.

Still, the Datel DAU is a functional, low-cost, digital storage oscilloscope. Despite various shortcomings, it is well worth the price. ■

### DATEL DATA

#### ACQUISITION UNIT

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CIRCLE 250 ON READER SERVICE CARD

## ANIMAGIC CONTINUED FROM PAGE 39

of my favorites was the Unfold9 effect -- where each of the nine pieces of a picture folds out of a stack at the center of the screen. This effect, however, took about 90 minutes to create. Another of my favorite effects has the source picture on a pair of swinging doors that open to reveal another picture in the background.

Simpler animation effects can be achieved much more quickly using other programs such as Deluxe Paint III. But ANIMagic is a powerful effect-

ts generation program that clearly can do a lot for video professionals, or for any Amiga-owning video enthusiast. ■

*Steve King lives in Wayne, Pennsylvania and is a widely published Amiga technical reviewer making his AMIGA Plus debut here.*

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# Pictures From A Perfectionist

***Best Amiga color reproductions you can get!***

By Guy Wright, AMIGA Plus Contributing Editor

*For almost two years, Peter Lullemann's Philadelphia Video Lab has been producing the highest quality slides, transparencies, color prints, black & white prints, and videotapes being made from Amiga graphics. Many of the top Amiga pros use Peter's services - developers, artists, animators, publishers. Very simply, Peter is the best.*



Amiga pro artist R. Shamms Mortier gets his master slides made at Philadelphia Video Lab.

Even the best-quality color printers -- which most of us can't afford anyway -- don't do justice to the graphics we see on an Amiga screen. If you just create Amiga art for your own enjoyment, this may not be a big problem for you right now. But what if you are an Amiga professional -- a software developer who needs a clean screenshot for your package or advertisement, a computer artist who needs big prints for a gallery show, or

a producer of Amiga graphics presentations?

Increasingly, Amiga graphics pros are getting their hardcopies from a small company in a suburb of Philadelphia. At a very nice house, in an upstairs study filled with absolute top-line equipment, you can usually find Peter Lullemann, owner and founder of Philadelphia Video Lab. You could say that Peter is Philadelphia Video Lab. You could also say



that Peter is a perfectionist driven by his own standards to produce work of the highest quality.

To understand why Philadelphia Video Lab is the best when it comes to Amiga graphics you have to understand Peter. Born in Hamburg, West Germany, Peter came from a family of artists and engineers. He was always fascinated with film, color, audio, tape recorders, technology, and later video. He wanted to become a film cameraman, but that was just about impossible in post-war Germany. After serving a five-year apprenticeship in graphic arts, he became a professional photographer. From the beginning he was constantly experimenting with new film technologies, always searching for ways to do things a little better than anyone else. For 15 years he was considered one of Europe's best photographers.

Early color film was difficult to work with and Peter developed methods of calibration that were unique. But unless your printing process matches your film calibration, your photos will never be perfect. Since no film labs could guarantee the quality he wanted, he started his own laboratory because, as he puts it, "I had no choice." His lab was based on a very simple idea, "Just do everything right the first time." Soon the photographers who used to be his competitors became his customers.

### **Video USA**

Eventually, he wanted a change, sold his business, and in 1977 he moved to America. He had become interested in video technology 10 years earlier and had some ideas he wanted to work on. In America he had the freedom to try out different ideas. "In Germany I could never have done these things because I was not officially trained in this field. In the U.S. you don't need a degree, you just need an idea."

He started The Photo Lab, Inc. a commercial film processing laboratory that again specialized in doing things right the first time. In the following years, as his business grew, Peter began investigating the capabilities of in-



**Philadelphia Video Lab 35mm slides of commercial Amiga software screens.**

dustrial video equipment. But it just wasn't good enough for his purposes, so he moved up to broadcast quality equipment.

In November 1985 he bought an Amiga 1000. But with no video software or peripherals available and too many other projects going on, he ended up putting it in his basement. During the next year or two, he did intensive video research and finally in 1987 he decided that he was ready to launch his next venture, the Philadelphia Video Lab.

Philadelphia Video Lab specializes in generating slides and prints from videotape. "Extended definition hard-copy from video," says Peter. As with everything Peter ever did, he gained a reputation for producing the highest quality work. His prices range from \$80 to \$120 per image -- but if you need the best, it's worth it. His clients range from major broadcast networks, down to a man who took pictures and videotape of his son's birth. When the local one-hour film developing house accidentally destroyed the film, Peter made new prints from the video tape.

### **Amiga Discovery**

Just before Christmas 1987, Peter

bought an expensive "television computer" and decided that it was a piece of junk. He got so frustrated with the computer that he dragged his Amiga out of the basement to prove that even an inexpensive "hobbyist computer" could do a better job. It then occurred to him that he could use the same techniques for generating slides and prints from the Amiga that he used for his video clients.

After two weeks of experimentation he had the bugs worked out and on January 4, 1988 he gave me a call. Did I think it was worth while? Would people be interested? When he sent me examples of the things he was doing I was certain people would be very interested.

In a quiet way, Peter began promoting his services to the Amiga developer community. At the same time, he has been looking for ways to bring down the costs of his services so that anyone can afford them. And he has been working on a few of his own new products for both end-users and developers.

### **Trade Secrets**

So how does Peter generate such high quality slides, transparencies and prints from an Amiga? Anyone can do it. Just study film, color, processing, photography, and video for 20 or 30 years, then invest about \$500,000 in highly specialized camera and video equipment, and finally have access to one of the best photo processing labs. It's as simple as that.

When you ask Peter what kind of camera he uses, his reply is straightforward, "I had to learn, experiment, spend money, and make mistakes for a long time before I could do this. If someone else wants to know what the techniques are, let them find out for themselves. I will say that it is not done with just a camera."

While Peter is very secretive, he will talk a little about what makes his process better. Since his basic system is built around video, the process is not just a slick screen shot. He first takes the signal from the Amiga and splits the image. One of the signals goes into a waveform monitor and a



vector scope where he can accurately check color levels and values. If he needs to, he can adjust the signals electronically. He also uses the scopes to tell him exactly how to calibrate his camera. From there the signal goes into a \$9,000 calibration monitor with 900-line resolution, which he uses to check final screen output in case he has to make adjustments.

The other IFF signal gets split into straight RGB (red, green, blue) format and sent to a \$30,000 electronic camera that he had custom-built. After he checks the levels and values on the scopes from the other signal, he calibrates the electronic camera. Then he makes a three-pass exposure, one for each of the RGB colors. Because electronic cameras are so sensitive, it is essential to get the calibration correct before making any exposures.

Another element is matching the camera calibration to the processing materials. Since every batch of processing chemicals varies slightly, it is almost impossible to match these two elements -- unless, like Peter, you have your own processing house. Peter has been doing this for years, so he knows how to calibrate and match his signals, equipment, and processing. He makes few mistakes and doesn't have to bracket his shots. This saves him both time and money due to expensive wasted film.

### ***Breaking the Limits***

Peter says, "Most people who buy a \$2,000 computer will put a \$2,000 camera on it. That means a Polaroid Palette. The Palette cannot be calibrated or adjusted the way a more expensive electronic camera can be. So you are stuck with what they give you. You can go out and buy a \$30-\$50,000 electronic camera. But you still won't have the control that I do, or the experience."

Another element of Peter's work is transferring Amiga animations to videotape. He has all the equipment necessary to produce master tapes that can then be transferred to whatever format you need. He can do all the electronic color corrections, editing, and titling you need. Right now

**Anyone can do it.  
Just study film,  
color, processing,  
photography,  
and video for 20  
or 30 years. Then  
invest about  
\$500,000  
in highly  
specialized  
camera and video  
equipment -- and  
finally have access  
to one of the  
best photo  
processing labs.**

he can do still images or RAM animations and he will be working on single frame animation soon. These services are not cheap -- Peter charges \$100 an hour. But the finished product is of the highest quality.

Although Peter is careful about guarding his secrets, he is more than willing to help people -- particularly when his advice will produce a better result. One of the products that he is working on now is a utility that will help people select the right palettes when working with Electronic Arts' Deluxe Paint II and III. Another utility will select legal palettes for HAM software. Peter is also planning to issue a videotape of his professional-quality backgrounds.

One of the biggest problems Peter encounters when transferring Amiga graphics and animations to video is the color. While the Amiga is about the closest thing to a video computer that you can buy at that price, it is not perfect. For the most part the video signals that the Amiga produces are close to TV standards. However, the Amiga is also capable of producing "illegal" colors that have unusually high saturation levels.

On the Amiga monitor everything looks fine, but if you feed the signals through a waveform monitor (a device for measuring video signals) you can see that some colors jump way off the scales. When you try transferring these signals to videotape, the results are very poor. While it is possible to clean up these signals in a video studio with the proper equipment (not just a genlock) it is much easier to avoid using those colors in the first place.

Peter's product will give you giant palettes with hundreds of legal colors that you can pick from. This way, if you ever wish to put your work on videotape, you can be fairly sure that what you see on the videotape will be what you see on the Amiga screen. He is also working on software for calibrating your Amiga monitor to professional standards. (If your monitor is off when you create your work, there is no way you can expect things to be right when you go to film or videotape.)

Even though Peter's rates for his services may seem expensive, they are very reasonable for what he produces. He is also not getting rich by doing work on the Amiga. So why does he spend so much time and energy on the Amiga when he could probably make more money from the Mac or MS-DOS world? For the same reason that you and I use the Amiga. He likes the computer and the people. "It is a very creative computer with capabilities the other computers don't have," he says. "Yes, I want to make money from the things I do but I also have to enjoy what I'm doing. Besides, MS-DOS machines are boring."

When asked to describe himself Peter said this: "I am not an artist. When I was a professional photographer in Germany I was only as good as my art director. If they gave me good directions I gave them good work. I was more interested in the technology behind the photographs. I would have to say that I am only 40% artist and 60% technician," then with a bit of a smile, "but, I am a very creative technician." ■



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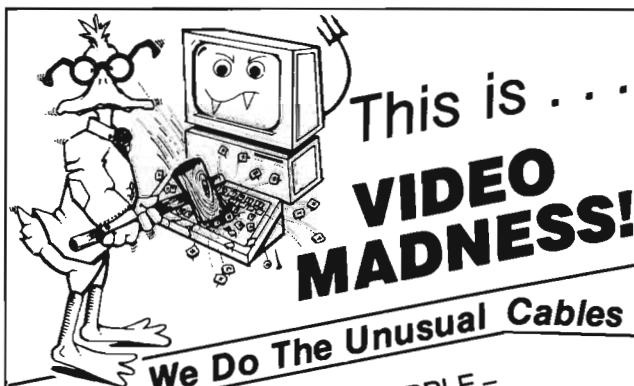
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# Hard-Copy Output

## *Tips and tricks to help you get the most from your Amiga printing*

Column by Curt Kass

***All printers have a most favorable paper and some manufacturers even supply a paper carefully designed to match their printing technology. It is well worth your efforts experimenting with various types of paper to get the most desirable results from your ribbon or inks.***

The most commonly used terms to identify paper mostly fall under the heading of "finish" -- surface characteristics which help identify the various grades of paper and affect the ink application results. Paper finishes are either porous or smooth, and either coated or non-coated. Porous paper allows deeper absorption of the printing medium and aids quick drying characteristics which avoid ink smear. Smooth finish retains more printing medium on the surface of the paper which helps create a brighter, more vivid image.

Coated paper has substances applied to its surface for added control of paper appearance and printing properties. Coatings print brighter, more solid-appearing color. Your ink may run or smear if you use too

smooth a finish, or pick the wrong coating combination for your particular printing medium. With high-porosity paper or no coating additives, your particular ink application may appear dull and lifeless. Porous paper may use a coating to counter its dulling ink blotting characteristics while retaining its quick drying feature. The Canon PJ1080A roll paper is an example of this combination.

Sizing adds substances to the body of the paper for greater strength, water resistance, and better receptivity for coatings. The combination of coating and sizing called ink receptivity is the final degree of control over ink penetration and ink spread, flow or bleed. This can be the difference between seeing the individual dot, or allowing the dot to flow and merge with its neighbors for a solid fill or over-fill of ink.

Paper is also manufactured in varying weights. However, most computer printers have limited capabilities to feed stock of less than 16 pounds or more than the standard 20-24 pound thickness. Note that paper weights can be confusing. Basis weight (also called Substance weight) indicates how many pounds that 500 sheets of a particular paper weighs in the basic size for that grade paper. For example, bond, book, index, and cover paper all have different basic sizes. Considering size along with the weight effect caused by porosity and manufactured additives, an 80-pound book paper may be a similar thickness to a 20-pound bond. Due to

this, some printer manuals list a paper thickness feed range instead of a pound size.

For reference, this page of AMIGA Plus is Lithobright 45-pound coated text (book) stock, and the AMIGA Plus cover is Sterling 80-pound coated, gloss-finished text (book) stock paper.

Explore various types of paper by visiting office supply stores, art stores, and paper distributors or manufacturers. The last two sources are usually willing to provide you with samples at no charge and, more important, will further your paper education.

Dot-matrix ribbon printers are designed to print well on plain paper. Coatings and very smooth paper will increase vividness of color to some degree and may allow you some control over ribbon smear. Anyone using the Canon PJ1080A or Quadrum QuadJet or Radio Shack equivalent will find that Hewlett Packard PaintJet paper works very well and is readily available. I use the Z-fold paper and tear off the micro perforations -- it is not as expensive as the 8 1/2"x11" cut sheets.

If you substitute the Canon inkjet's coated but porous roll paper with a smoother finished paper you must avoid smearing. To accomplish this, remove the printer's clear plastic paper-cutting blade to prevent the freshly printed ink from contacting its surface, and give the paper special handling for the few moments necessary for the ink to absorb and set. Some plotter papers which generally have a



very smooth finish will also produce brighter results on the Canon with a little more bleed of individual ink dots. I have not yet found an equivalent or better paper for the color HP PaintJet or the Xerox 4020. Readers could use a tip from anyone who has. In fact, readers of this are encouraged to send their output tips in care of *AMIGA Plus* and help spread the output magic of the Amiga.

### **DeskJet & Super\_DJ**

Widely used throughout the Amiga desktop publishing community, the Hewlett Packard DeskJet printer is a 300 dots-per-inch inkjet printer with output that rivals the quality and versatility of laser printers -- for less than half the price. It can even achieve PostScript capabilities with the PrintScript software I reviewed in *AMIGA Plus* #3.

The DeskJet's inkjet operation is quiet compared with dot-matrix or daisywheel printers. Plug-in ink cartridges and font cartridges make maintenance and expansion easy and efficient. (However, I did find considerable differences between several Hewlett Packard 51608A black ink cartridges when printing graphics. I am continuing to look into this and will keep you informed.)

It's a spellbinding experience for the new DeskJet owner watching the almost silent print cartridge whiz back and forth as it prints 120 characters per second letter-quality and 240 cps draft mode. Hewlett Packard is now introducing the DeskJet Plus, which promises even more speed and more fonts. List price for the DeskJet Plus is \$995 -- same as the original DeskJet which now lists at \$795 and can be found for \$600 or even less.

One problem is that the Amiga drivers available for this printer did not fully harness all its impressive features. This prompted Gerald Hull of Creative Focus to program the **Super\_DJ** printer driver. Hull felt that Commodore's Workbench 1.3 driver produced darker graphic values that tended to look all the same, so he programed a look-up table to improve gray scale differentiation.

Hull did not incorporate a complete image processing program where you could set the gray levels yourself by changing brightness and contrast. So he had to hit the middle of the road as a compromise and he frankly states, "On some pictures that do not have a lot of gray scale, the 1.3 driver is better. But Commodore's DeskJet driver doesn't control the cartridges, and every time you change Preferences it drives you crazy by re-

setting to the internal Courier font."

Printing graphics with Super\_DJ is where I spent the most time checking things out. I had previously experimented with printing images on the DeskJet and knew that generally the most favorable 1.3 Dithering setting for the DeskJet is Halftone in letter mode. I double-checked this with Super\_DJ and found it to be the same.

An image printing too dark with the 1.3 driver at Ordered [letter mode]

### **Super\_DJ DeskJet Output**

Binghampton IFF image from Super\_DJ program disk -- captured in black & white using DigiView, imported into Professional Page, output at the halftone dither setting. Printed on Hewlett Packard DeskJet at letter mode. Time: 5 minutes, 10 seconds.



Printed using Workbench 1.3 HP DeskJet driver.



Printed using Super\_DJ driver.



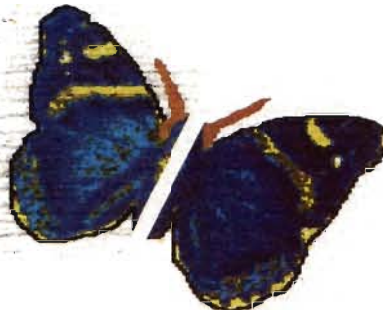
## Paper Comparison Output

Butterfly is a colorized and line-enhanced clip-art image created using Deluxe Paint 320x400 and image-captured with Digi-View. Printed using 1.3 Preferences HALFTONE:Dithering



Canon PJ1080A  
(inkjet - 83 x 84 dpi)  
LEFT: Canon PJ1080A coated roll paper.  
RIGHT: Hewlett Packard PaintJet Paper

Canon paper is too porous and its coating alone is not effective enough to prevent dulling of colors. PaintJet paper traps more ink on its smooth surface for more vibrant color, while the coating holds ink bleed more effectively. With a better paper the PJ1080A shines, and only a lower dpi holds it back from matching the twice-the-price HP PaintJet.



Star Micronics NX-1000 Rainbow  
(ribbon - 240 x 216 dpi)  
LEFT: Champion Chrome Coat 60 lb Litho paper.  
RIGHT: Champion #4 grade 24 lb bond paper.

Some ribbon printers thrive on "cheap" plain paper. The stock Rainbow four-color ribbon likes a fairly smooth surface to hold ribbon smear and to trap ink for a bright look. Here the modest Champion bond does the trick, though it does allow a little too much bleed which overpowers the light blue and turns the Butterfly's right antenna red. The ultra coated, super-smooth, premium grade Chrome paper traps the ink perfectly and gives the Butterfly a proper orange left antenna. But the ultra surface causes smearing by retaining too much ink on its surface to work with an impact ribbon printer.



Hewlett Packard PaintJet  
(inkjet - 180 x 180 dpi)  
LEFT: Champion Chrome Coat 60 lb Litho paper.  
RIGHT: Hewlett Packard PaintJet paper.

Here is a good example of how important the paper is to a particular printing application. The paper especially designed for the PaintJet outperforms any paper I have tried with this unit. The Champion Chrome Litho paper is one of the finest surfaces to use for many lithographic printing applications.

will change to a modified lighter-scaled version when printed using the same settings with the Super\_DJ driver. Changing Ordered to [draft mode] produces nearly unusable proofs with too much emphasis on similar value dark grays when using the 1.3 driver. Print the same image at Ordered [draft mode] with Super\_DJ and you achieve a *super* difference. The image results when using the Halftone setting parallel the above findings, the difference being that one or another Dithering settings will output "better" depending upon the nature of -- composition, saturation, values and possibly hues of that particular image.

The best examples of what Super\_DJ can do are the comparison images printed with this review. What looks "better" to individual viewers is somewhat a matter of personal taste. However, I think these sample pictures show that Super\_DJ can produce more pleasingly varied shadings than

the noticeably darker 1.3 output.

I also tried Super\_DJ with excellence! to see how it would help a word processor. With many programs, including excellence!, one of the worst quirks of the current 1.3 DeskJet driver is unnecessary page feeds. Super\_DJ fixes this, but unfortunately when using excellence! with the DeskJet the top margin placement will shift lower each time a multiple copy of a document is printed. This quirk occurs when using either the 1.3 DeskJet driver or Super\_DJ and is related to perforation skip. It will also exist in other programs that issue extra linefeed commands. With Super\_DJ, the reset switch is used to maintain top margin placement after printing each document. The Super\_DJ manual covers such situations adequately, although there is still a bit of trial and error involved. This nine-page manual, which you print from disk, provides DeskJet owners with a clearer understanding of some opera-

tions than the official 250-page HP manual.

Font control with Super\_DJ is a somewhat clear improvement over the 1.3 driver. A high point is more direct control over the DeskJet font sizes via its toggle key switch. For the DeskJetter who uses font cartridges, Super\_DJ enables you to use Amiga sequence printer commands to select bold and italic, or any 8-bit character sets the DeskJet supports if your word processor can download escape commands along with text. ■

**SUPER\_DJ** \$25  
Creative Focus, Box 580, Chenango Bridge, NY 13745.

CIRCLE 177 ON READER SERVICE CARD

*Curt Kass is an artist/designer in the Graphic Arts Department of the University of Wisconsin at Milwaukee. He also is the developer of Palette Printer, color proofing software for the Amiga.*



# USING YOUR AMIGA PLUS DISK

*Every article in this magazine with a disk icon on its first page has accompanying files on the AMIGA Plus Disk. Most programs on this FULL disk can be run by just clicking on their icons from the Workbench.*

**T**o use the AMIGA Plus Disk, first make a copy and store the original in a safe place. Then boot your Amiga with your standard Workbench (version 1.2 or higher) and insert your copied AMIGA Plus Disk in any drive. Double-click on the AMIGA Plus icon to see the disk contents -- including the Instructions scroll.

## **DiskANIM and TASS**

On this issue's disk, you will see an icon called MakeTass. Double-click on this to run a script that will decompress the drawer called TASS and put it onto a different floppy disk, or onto a partition of your hard disk. TASS is the system of programs including DiskANIM -- which plays long-running animations from your hard disk. You'll also find additional handy utilities in the decompressed TASS drawer.

In order to fit in all the special features on this issue's AMIGA Plus Disk, we needed to compress the entire TASS system into a single file. When all the directories and sub-

directories in TASS are recreated, the whole system will fill more than half a floppy disk. In its current form, the file with the decompression software fills less than a quarter of the AMIGA Plus disk.

To rebuild TASS, you will need a blank, formatted floppy disk. When this disk is ready, double-click on the MakeTass icon. The MakeTass script will ask you some questions about your system and proceed to copy TASS to the destination of your choice.

Before you can start DiskANIM (or any other program) from the TASS drawer on your new floppy, you must double-click on the drawer to open it, and then double-click on the Startup icon. (This Startup icon takes care of some necessary assignments for TASS and will also start ARExx, if it's available.)

After Startup is activated, you will also see the TASS ShowText module displaying a detailed file of instructions. You can click on the TASS Load box to view other text files, or just click on the Amiga close gadget in the upper left corner to exit ShowText. The other icons in the TASS drawer will run other modules, many of these modules accessible from within one another as well. Help is always available by pressing the Help key while the mouse is over the gadget in question. Further help can then be obtained by clicking on the names of the additional Help files in the text.

## **SpaceCadet**

SpaceCadet is a cute and useful utility that will show how much free space is left on your disks. For each floppy, RAMdisk, or hard disk partition in your Amiga system, the program displays a partially filled-in space alien. Just double-click on the SpaceCadet icon and the aliens will invade your screen. The Lattice C source code for this program is in the Programming drawer.

## **Music Drawer**

The Music drawer holds Rob Griffith's sound demonstration accompanying his M software review in this issue of AMIGA Plus. Just double-click on the Nebula icon to hear "Nebula City Blues."

## **Promise Drawer**

The Promise drawer holds the Promise spelling checker software. To run it, first copy the

Promise drawer to a separate disk. Then double-click on the AssignPROMISEHere icon in the drawer to make the correct assignments for Promise. Now you can double-click on the Spellcheck icon to check the spelling of your documents.

## **Pointers Drawer**

The Pointers drawer contains GetPointer and PutPointer, easy-to-use stand-alone C programs for playing with the mouse pointer image on your Amiga.

You will also notice some 20 icons with names that end with .p -- these are pointer data files for use with PutPointer. To view any of these ready-made pointers, simply double-click on its icon. For some of the smaller images, you may need to click around a few times before you actually hit the icon. Double-clicking on the PutPointer icon will restore the pointer to the original Workbench arrow.

Both GetPointer and PutPointer can be run from the CLI, where they have several additional options available. For example, GetPointer can also save the pointer data in the form of C language declarations, which can then be incorporated into your own programs. PointerDemo is a small C program which serves as an example of the use of these pointers in a program. Just double-click on it, and then click on various windows to see the Mouse pointer change. Source code for these programs is in the Programming drawer.

## **Programming Drawer**

This drawer holds Todd Petit's AmigaBASIC mouse pointer programs CustomPtr.bas and GetPrefs.bas. There are also a few example pointers in AmigaBASIC format, and some .bmap files which the programs need. To run the BASIC programs, you will need to move these files onto a disk with AmigaBASIC on it. An easy way to do this is to just drag the entire programming drawer over to a copy of your Extras disk with some room on it.

In addition, the Programming drawer contains the files for Daniel Wolf's article about Exec message passing. To try the assembled programs, double-click on the Whisper icon. This will run a script to open two CLI windows named Fred and Wendy. Then follow the prompts and you'll see Fred and Wendy's all-too-brief messageport *tete-a-tete*. Finally, the C source code for SpaceCadet (Lattice C) and the pointer programs GetPointer, PutPointer, and PointerDemo (Aztec C) is also found in this drawer. ■

All programs on this issue's disk are Copyright 1989 by AMIGA Plus unless specifically referred to as "redistributable." In order to speed up disk access, the entire disk has been processed with Blitz A Disk (B.A.D.) from M.V. Micro (distributed by Centaur Software, Inc.).





# Promise:

## 95,000-Word Spell Checker

FAST, POWERFUL, EASY-TO-USE, SOLD AT \$49.95

*Special AMIGA Plus Disk Bonus*

***This issue's AMIGA Plus Disk features Promise, a quick and efficient spell checker with a dictionary of over 95,000 words. With a mere click of the mouse button, you can add words to your own custom dictionary, and Promise will even check for basic punctuation errors.***

Even writers who hate spell checkers will love using Promise. This slick, feature-packed commercial software from The Other Guys was marketed for \$49.95. Promise boasts a fast-searching 95,000-word main dictionary, easy graphic interface and lots of unusual and useful tools -- including simple punctuation checking, and a helper module that suggests alternate spellings for words you're really unsure about.

Promise is designed to be compatible with as many word processors and editor formats as possible.

Among the formats that Promise can work with are Textcraft 1.0 files, FTXT IFF files (Textcraft later than 1.0), formatted ASCII files (Scribble and Notepad), dot commands, standard ASCII, IFF standard format, ProWrite, etc., etc.

### ***Getting Started***

Promise is featured on this issue's AMIGA Plus Disk. To use the program, first double-click on the Promise drawer icon to open it. Then double-click on the icon labeled AssignPROMISEHere -- which tells Promise where to look for its various

support files. Now you can double-click on the Spellcheck icon. Promise then opens a window with several gadgets and loads the main dictionary.

After the dictionary has been loaded, click on the Select Input File bar to bring up a file requester box. Use the gadgets to select the drive that your text file is on, or type the name of the drive in the Disk Drawer box. Choose the file you want to check and click on OKAY to return to the main window.

Click on the Start Spelling Check gadget. Promise will read your file --





at 1,080 words a minute -- and check each word against the main dictionary plus any custom dictionaries you have loaded. You can have as many as three custom dictionaries in memory at once, each with up to 20 words.

To put Promise on a separate disk, or onto your hard disk, copy the entire Promise drawer from your AMIGA Plus Disk. Dragging the drawer icon to the new disk icon will work just fine. If you rename the new floppy as Promise, you won't need to use the AssignPROMISEHere icon anymore.

### **Corrections and Changes**

When Promise finds an unfamiliar word, the surrounding text will appear in the main text window, with the unknown word highlighted. If the word is correctly spelled, you can tell Promise to ignore the word this once -- or throughout the document. If the word is one you expect to use frequently, you can add it to a Custom Dictionary simply by clicking on the appropriate bar. (Be sure to Save Custom Dictionary when you finish checking the document.)

If the word is spelled incorrectly, and you know how it should be spelled, you can click on the word in the Correction box, make your change, then click on either Change This Once or Change All Occurrences to make the change in your text. Make sure the word in the Correction box is spelled correctly before you select either Change option. Promise will accept any change you make in the correction box, whether it is correct or not.

### **Punctuation Checker**

The punctuation checker can be turned on or off. As you run the spell checker, the punctuation checker also checks to see that sentences begin with capital letters, that punctuation marks are not doubled, that commas and periods fall inside single or double quotes, and that colons and semicolons always fall outside quote marks. Sorry, possessives and contractions are beyond the scope of this (and most) spell checkers -- you'll still have to check for yourself that you're

using the proper form of "its/it's" or "theirs/there's."

### **Spelling Help**

If you're not sure about the spelling of a word, click on the Help With Spelling bar and a new box will appear, showing the word in question and any similar words from the Promise dictionary. You can help narrow down the search by editing the unknown word, using asterisks (\*) and question marks (?) as wild cards. Use asterisks to replace unknown parts of a word, and a question mark

**You'll never have  
to sweat again  
over those  
exceptions to "i  
before e except  
after c."**

to replace specific letters when you know exactly how many letters are in a word, but not the order in which they appear. You'll never have to sweat again over those exceptions to "i before e except after c."

If any of the suggested words is correct, click on it and the word will appear in the Word To Export box. When you return to the spell checker, this word will appear in the Correction box. Click on Change This Once or Change All Occurrences to replace the misspelled word in the text.

This spellhelp portion of Promise can be run independently of the spell checker. Simply double-click on the spellhelp icon in the Promise drawer and the window will come up. The spelling helper does not actually load the dictionary into memory, and uses much less memory than the spell checker. Using multi-tasking, you should be able to use your favorite word processor with the spellhelp program running in the background where you can easily access it for aid.

### **Custom Dictionaries**

Each custom dictionary you create

can hold as many as 20 words. You can load three different custom dictionaries to be used along with the main dictionary. If you want to change dictionaries, you must first click on Clear Custom Dictionary to remove the old dictionaries, and then load the new ones.

You can only make a custom dictionary while using the spell checker to check a document. But you can easily create a text file containing words you want to enter, or to check to see if the words are already in the main dictionary.

For example, if you write about using your Amiga you will probably want to create a custom dictionary of technical terms (such as the word, Amiga). You can use your word processor to make a list of such words, save the list to disk and then use Promise to check the list. You'll see which words Promise already knows, and any unknown words can be added to your new custom dictionary with just a click on the Add to Custom Dictionary bar. Save the dictionary with a descriptive name, and whenever you want to write about the Amiga your custom dictionary will be ready to load.

Of course, Promise can't check any words that aren't already in its dictionaries. It will assume that any words you enter in a custom dictionary are spelled correctly. Any mistakes you make may multiply if Promise gives you your own misspellings as Suggested Words. A little care while setting up your dictionaries can save you a lot of trouble later.

### **Manual Available**

Promise is a well-designed program that's really easy to use. We believe this article explains all the essential commands you'll need to know. However, if you wish to have complete documentation, the 20-page original Promise manual is available from The Other Guys. For your manual, send a check or money order for \$5.99 plus \$1 for shipping and handling to: The Other Guys, 55 North Main Street, Suite 301-D, P.O. Box H, Logan, Utah 84321. ■



# Designasaurus

WALK YOUR DINOSAUR THROUGH A PERILOUS PRE-HISTORIC ENVIRONMENT

Review by Dean Friedman

**RATING: ++++1/2**

*Designasaurus is highly recommended, although its poignant introduction to nature's life-and-death struggles may not be appropriate for a very young child. However, the "Build Your Own Dinosaur" section of the program is an excellent stand-alone game that's totally suitable for children of any age. Prints dinosaur posters and T-shirts too.*

Britannica Software has released a terrific kids' program called **Designasaurus**. The first time I tried playing this with Hannah, my 2 1/2 year old daughter, it took some explaining as to why all the pretty dinosaurs kept getting eaten by a mean-looking tyrannosaurus rex. Nevertheless, natural violence aside, Designasaurus really is an excellent piece of educational software, even for pre-schoolers.

You get to walk a dinosaur through five eco-systems with your mouse. You must survive in a pre-historic environment of swamps and deserts, making decisions about where to go and what to eat, that would be suitable to the attributes of whichever dinosaur you choose. If you selected a brontosaurus, you must spend most of your time finding and eating treetop vegetation while keeping an eye out for that nasty, carnivorous tyrannosaurus rex.

As you stomp and munch through the well-drawn pre-historic screens -- with excellent dinosaur sound effects -- a display tells you the status of items such as your present caloric intake, existing vegetation, terrain and

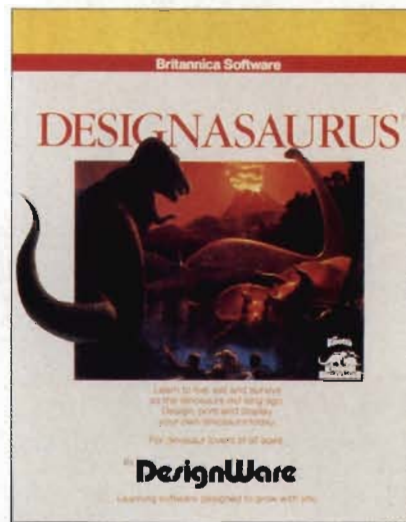
the operating ecosystem. The point of Designasaurus, and its beauty, is that it really does demonstrate in an almost poignant way how the balance of an ecosystem is maintained. The relationship between grazers and predators is presented clearly and simply.

Another aspect of the game that I appreciate is that it is dramatically slow. It's not your typical arcade shoot-'em-up. Designasaurus allows players time to focus on -- and start worrying about -- the real issues of the game. When will I eat next? Is there sufficient vegetation in this environment to support life? Will I be eaten myself? Will I starve? These are serious issues, relating not only to the dinosaur's world, but to our own. And it is well-handled in the context of an enjoyable and educational game.

## **Build Your Own**

But that's just the first part of Designasaurus. The second part is absolutely hysterical. You get to actually design your own dinosaur skeleton. You select body parts -- head, body or tail -- from the files of the Natural History Museum. As you view each file, you are given information about the body part, what dinosaur it comes from, its classification -- phylum, class, order, family and so on -- plus brief notes about the dinosaur's lifestyle. You can combine the head, body and tail of any of the different dinosaurs in the file. The unusual creature you wind up assembling is then displayed and can be printed out.

This may seem like just a silly game. But in the process you end up



with a substantial amount of knowledge about dinosaurs, and a good feel for how their different skeleton types tell us things about how those dinosaurs actually lived.

The Designasaurus disk also contains a library of 12 dinosaur illustrations that can be printed onto a sheet of paper, or in a large four-page poster. You can even print onto a sheet of T-shirt iron-on transfer paper for decorating your own dinosaur T-shirts. ■

**DESIGNASAURUS** \$49.95  
Britannica Software, 345 Fourth Street,  
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*Dean Friedman is a musician, illustrator and programmer living in Peekskill, New York. In addition to having a number of hit records to his credit, he is the author of several bestselling books and videos about music synthesis. He is currently designing interactive children's video games for Nickelodeon.*



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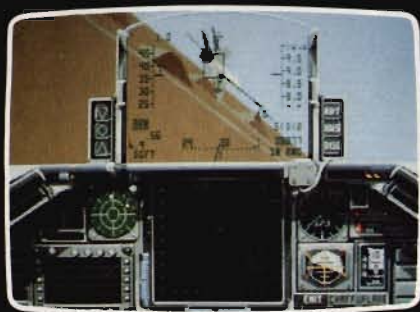
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# Desktop Motion Pictures

COMING SOON TO A THEATER NEAR YOU

Reviewed by Stephen Gulsvig

***It's the local neighborhood theater. Lights dim and the music comes up. On the big screen is your own animated movie! A desktop animated feature. Impossible? No. You can now transfer images directly from an Amiga to 35mm motion picture film.***

American Liquid Light's Polaroid Palette motion picture converter—from the Amiga to the movies.



Many Amiga users are already familiar with American Liquid Light of Torrance in Southern California. Liquid Light makes the Amiga interface for the Polaroid Palette—which converts computer screen images directly to color slides, color prints, or color separations. (*That's What AMIGA Plus uses for all our in-house screen shots.*— + EDITORS) The **35mm Motion Picture Pack** is their latest offering and works in conjunction with the already existing Palette and software. This camera add-on requires no additional cables,

no additional parts to purchase and the Palette itself does not have to be reconfigured in any way.

If you are comfortable using the Palette to transfer images to 35mm slides, there are no new tricks to learn about manipulating your IFF files and the camera—one frame at a time. The only drawbacks to the current software are the many film type options (none of which were specifically for motion picture film types) and a batch file limitation of 36 files maximum. However, American Liquid Light does have a new, more motion-

picture specific version of the software in the works. This should eliminate many of the irrelevant film driver selections and expand the number of files in a batch. Once you begin to process your animation frames, you will understand why extended batch files would be beneficial.

The camera itself worked flawlessly right out of the box. A well-constructed, precision-machined instrument, the camera consists of four main parts—a metal stand containing a fixed-focus lens, the camera body

CONTINUED ON PAGE 60



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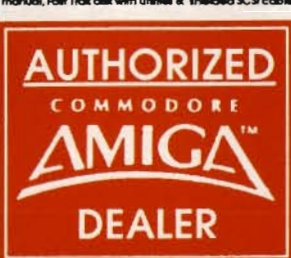
Card features Xetec's DMAx hard, autoboot ROM, auto-formatting circuitry, 25 pin SCSI conn., disk, utilities manual.

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Badly Hovis 1													





# Get The Message!

## *Assembly Language Doorway to Multi-tasking*

BY DANIEL WOLF, PH.D.

***Amiga assembler  
programmers  
will learn here  
how the  
little-documented  
Exec message  
passing  
capabilities  
are used for  
controlling  
communications  
between  
simultaneous  
computing  
operations.***

In the first issue of *AMIGA Plus* I showed some basic methods for using the Amiga's Exec routines to handle device-oriented I/O. The Exec is like an onion, with a core surrounded by various layers. I see the I/O system as the outermost layer of Exec. This time let's look at the layer just beneath Exec's device-oriented I/O system -- the message passing setup which is unique to Exec.

I know no way to duplicate what the Exec message passing features can do, using DOS or any other part of Amiga's Kernel. Exec message passing is also important if you want to become more than a superficial Amiga programmer. Even more important for you is that the information in this article is not well-documented elsewhere for assembly programming.

Exec messages are the key to exploiting much of the Amiga's multi-tasking nature. If you work in assembler, it's no secret that the multi-tasking requires you adapt your programming methods to it. The ability of one task to communicate directly with another is one of the least exploited aspects of the multi-tasking system. I should qualify that last statement -- message passing is thoroughly exploited within the Amiga

Kernel, it's just that few outside programs use it much to communicate with one another.

Let's demonstrate just what message passing between programs can mean. First we need to look at the nature of Exec messages, message ports, and the routines provided in the Exec library for transmitting and receiving messages between tasks. I presented the notion of message ports in the first article, along with assembly language routines for opening (creating) them and deleting (killing) them. Those routines substitute for the C programming versions in *Amiga.lib* which, as an assembly programmer, I avoid.

### ***Message Port Structure***

The message port (MsgPort) is a structure consisting of a node and room for flags and pointers. *Figure 1* shows the MsgPort structure just as found in Commodore's new *AutoDocs Manual* (\$32.95, Amiga ROM Kernel series, 18177, Addison-Wesley Publishing.) I can't praise the new *AutoDocs Manual* too highly. It has abundant and up-to-date system documentation and numerous tables and cross-references oriented to both C and assembly language programmers.



**FIGURE1**  
MsgPort Structure

Offset	Field Name	Field Size	Function
0	ln_Succ	LongWord 4 bytes	Pointer to next list entry
4	ln_Pred	LongWord 4 bytes	Pointer to prev. list entry
8	ln_Type	Byte 1 byte	Type of list
9	ln_Pri	Byte 1 byte	Priority of this list node
10	ln_Name	LongWord 4 bytes	Pointer to text of node name
14	mp_Flags	Byte 1 byte	Message Port flags
15	mp_SigBit	Byte 1 byte	Bit to signal task
16	mp_SigTask	LongWord 4 bytes	Pointer to task owner of port
20	mp_MsgList	LongWord 4 bytes	Pointer to list of messages

For the first time in one book you'll find complete lists of library function offsets and structure offsets in the form required by assembly language. The complete "include" files for the official Metacomco assembler are also there.

The MsgPort begins with 14 bytes we can mostly ignore for now. These make a complete Node structure required by Exec. Any item such as a MsgPort, which Exec will manage as part of a list, needs to begin with such a node structure. Just keep in mind that the node structure has pointers to the "next" and "preceding" nodes as well as other tools which Exec can use to manage the list. MsgPorts are attached to tasks, and since a task may have more than one MsgPort, the node at the beginning functions as a hook into a list of MsgPorts for the task. The other parts of the MsgPort include a signal bit, to signal the owner of the MsgPort when a message arrives, and a pointer to the Task Control Block structure of the task which owns the port. That is the hook connecting the port to the task. Then there's a pointer to the list of messages which have currently arrived at the port and not yet been removed with GetMsg.

Figure 2 shows a message structure. It also starts with a 14-byte node structure so it can be managed by the Exec list handling system. Then it contains a pointer to a "reply port." The reply port is a message port

owned by a task which sends a message. It permits a task which receives the message to return it to the origin. The task which receives the message also can find out which task sent it by examining the message's reply port pointer to that port's task.

The message's pointer to its reply port is a hook to the point of origin of

### ***Sending and receiving messages doesn't really need to move any message data.***

the message. It can be exploited by the receiving task in a variety of other ways. The message structure also has a word indicator of the size of the accompanying block of memory which really constitutes the body of the message. The actual message portion of the message structure can vary in size up to 64K. When you write a program containing a message structure you simply extend the message structure with the actual message data.

This issue's example program, Wendy, shows a message structure with a size indicator of 64 bytes followed by 64 bytes of room for text. Another way to set up a message structure is to call AllocMem in the program code and copy (using MOVE instructions) some pre-defined (DC.B)

text into its data area. You simply need to set the size of the data area by MOVEing a size value into the mn\_Length field. The important thing is that message data directly follows the message structure mn\_Length field. You either have to plan ahead for a potential maximum amount of message data when allocating memory for the message structure, or you must know specifically the amount of memory required for that message. I decided to show it explicitly in Wendy for clarity.

Sending and receiving messages needn't really involve any movement of the message data. The Exec message system just provides a mechanism compatible with the multi-tasking properties of the Amiga. When one task sends a message to another, the receiver is given "permission" to manipulate the message data area of the existing message structure related to the sender task.

The receiver can do with the message as it pleases. It could copy the message somewhere, but usually there's no need. The receiver's job is to wait for the message, get it, use it, and reply to it. The reply function is usually important because it can alert the sender that the message has been processed at its destination. From then on the originator of the message can examine the Message structure data returned and interpret the results.

A message is nearly useless without a port to which it can be sent.



**FIGURE2**

Message Structure

Offset	Field Name	Field Size	Function
0	ln_Succ	LongWord 4 bytes	Pointer to next list entry
4	ln_Pred	LongWord 4 bytes	Pointer to prev. list entry
8	ln_Type	Byte 1 byte	Type of list
9	ln_Pri	Byte 1 byte	Priority of this list node
10	ln_Name	LongWord 4 bytes	Pointer to text of node name
14	mn_ReplyPort	LongWord 4 bytes	Pointer to sender's MsgPort
18	mn_Length	Word 2 bytes	Size of attached data area

Message ports can be either public or private. The difference is that public message ports have names and private ones do not. The name of a public message port permits other tasks to find it. Finding another task's port is necessary before messages can be sent to it. We need to call the Exec routine, FindPort, and let it locate the port by name. The task searching for another task's port just needs to know that name.

### Wendy and Fred

In this month's code example there are two programs -- Wendy and Fred. Details about accessing these programs are on this issue's Disk Instructions page. Wendy is designed to send a message to Fred and wait for the reply. Fred's reply to Wendy is printed in Wendy's CLI window (both programs are simple CLI commands). Fred just waits for a message, prints the message received from Wendy, then copies some text to the message data area as a reply and returns the message to Wendy's CLI window. After the exchange, both programs close their message ports and quit.

Fred uses WaitPort to await Wendy's message, a well-documented function of the WaitPort routine in Exec. It might seem obvious to some to use WaitPort to await a message's return as well, but the ROM Kernel Exec Manual glosses over that point. WaitPort does the job of awaiting a reply in Wendy, just as it awaits the arrival of the message in Fred. If Wendy went about her business doing

some other jobs you could delay using WaitPort until later in the code. Since Wendy intends to print the reply from Fred immediately after it arrives and has nothing else to do in the meantime, WaitPort appears in the code just after she sends the message to Fred with PutMsg. WaitPort assures that Wendy will keep her hands off the message while it's in Fred's possession.

Each of the two communicating programs each has a different type of message port. Wendy's is private be-

### *I know no way to duplicate what the Exec message passing features can do*

cause Fred doesn't need to find Wendy, just reply. But Fred's is public and named, surprisingly, Fred. Wendy uses FindPort to locate Fred. When the message is sent to Fred using PutMsg, Fred uses GetMsg to retrieve it. After manipulating it, Fred only needs to use ReplyMsg to return it. The message structure contains a pointer to its port of origin (mn\_ReplyPort), so Fred doesn't need to find Wendy.

When the ports are created they each need to be processed a little differently. The same is true when they are removed. This part of the coding can be tricky and, if improperly done,

can cause strange fireworks. You must remove Fred's message port from its task's list of public message ports before freeing the port's signal bit and its memory.

The private port needs no such "removal". In fact, you must not attempt to use Remove or RemPort on a private port. This issue's programs demonstrate three ways to accomplish removal of a public port (see Fred and the MsgPorts.asm file). Both port programs end with calls to the KILLAPORT subroutine in the MsgPorts.asm file. KILLAPORT frees a message port signal bit and its memory.

The MAKEAPORT routine in MsgPorts.asm shows how to arrange a call to the AddPort routine in Exec for a named public message port. Both programs have the name, Fred, declared in data bytes. Fred uses it to create a public port with his name and Wendy uses it to find Fred. If the port is private the MAKEAPORT uses the NEWLIST assembly language macro instead of AddPort. AddPort accomplishes the job of adding the port to the system's list of public message ports for that task. If a port is public, you must call Remove or RemPort before you use KILLAPORT. FreeSignal destroys the port and that isn't nice if it hasn't been removed. NEWLIST is derived from a macro in the AutoDocs Manual, in the listing of the exec/types.i include file. ■

**Daniel Wolf, Ph.D. is an independent Amiga software developer and co-author of "COMPUTE's Amiga Machine Language Programming Guide."**



and two film cannisters. One cannister holds 100 feet of film stock and the other acts as a take-up reel.

As I set out to expose my test footage, I first had to determine the type of film to use. Since I had success making slides with Ektachrome 200 ASA daylight film using the Liquid Light Ektachrome driver, I tried a daylight motion picture film of similar speed, Kodak's 5297 high-speed color negative film.

Next, the film had to be loaded into the source cannister. I used a film-changing bag from my local camera supply store for this, but other options include waiting until dark or locking yourself into a completely dark room and then loading the cannister. In any case, be sure the film is coming out of the cannister with emulsion side DOWN.

The camera had to be centered over the lens and Palette opening. This was done by attaching a cross-hair registration bar over the opening where the camera body itself will attach. After registration, all that remained was to place the camera body over the lens and thread the film through the camera housing, attaching it to the take-up reel in the other cannister.

The fixed-focus camera lens prevents any accidental adjustments. However, you do have the option of adjusting the aperture with seven f/stops ranging from f/2.8 up to f/22. Currently, you can use three Liquid Light film drivers—Ektachrome, Fujichrome and Agfachrome.

### Experiment With Settings

After experimenting, I found the optimum exposure level and true color saturation to be a combination of f/8 with the Ektachrome driver. The Fujichrome driver tended to shade my colors green, and the Agfachrome tended towards blue. You will no doubt want to run your own test footage, but a setting of f/8 with the Ektachrome driver and Kodak 5297 film should give you adequate results.

If you have never worked with 35mm motion picture film or equip-

ment before, some of the sounds take some getting used to. At first you may swear that the film has come off its sprockets and is bunching up inside the camera. Once you started exposing your film, resist the temptation to open up the camera body and see if the film is advancing properly. Opening up the camera to check the film may sound ridiculous, but I know someone who did it several times until I . . . (ahem) he was convinced the system was worked properly. If you find yourself unable to resist the

**My test footage is not Oscar nominee material, but it was thrilling to see something I had done at home come to life on the big screen.**

same temptation, be sure you advance the exposed film far enough before resuming your exposures. Also, be sure to reset the nifty automatic frame counter on top of the camera body.

After I completed my exposures, the film in the take-up cannister had to be unloaded in complete darkness. I removed the film and sealed it in its original film can, ready for the lab. You may have to call around to find a lab capable of handling motion picture film, but I found most local labs very friendly and willing to help. I settled on a lab with a sister company that could copy my workprint to a VHS cassette. After all, it's not easy to carry around a 35mm projector to show your friends your creation.

Just about any program offering IFF compatibility can be used with this system. Deluxe Paint III and PageFlipper Plus F/X worked well in my tests. Your 35mm film master can be archived and copied onto any

other format you desire. Using a commercial copying service, you can transfer to VHS, Beta, 8mm, S-VHS, ED-Beta, 3/4-inch, Betacam, one-inch, HDTV (when it finally arrives) or any future video format that comes our way.

Once you've got your print, you owe it to yourself to find a screening room or cut a deal with a theater owner to view your production on the big screen as well. While my test footage is not Oscar nominee material, it was thrilling to see something I had conceived and executed at home come to life on the big screen.

### Why Bother?

At a retail price of \$6,995, this unit is well within reach of the professional and corporate/industrial filmmaking market. It is even priced low enough for the dedicated hobbyist to consider.

There are those who argue that transferring computer animations to film is inconvenient and costly, and that mastering onto the one-inch or Betacam video formats is adequate. For editing purposes, videotape may even be easier to handle. However, you can always transfer your film to any video format you desire for editing, and the \$60,000+ price tag for Type C one-inch format video recorders quickly moves that rendering system out of the "desktop" category.

Until high-definition television arrives, film is by far the most consistent quality image format. If you are looking for a way to capture all of the depth and richness of Amiga computer images on film, this is the tool for you. ■

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*Steve Gulsvig is a freelance writer/producer living in the Orange County area of California. Currently he is working on a feature script which will employ the use of this motion picture system.*



# Elan Performer

HOT-KEY GRAPHIC PRESENTATIONS, MIXING ALL FORMATS

Review by Morton Kvelson

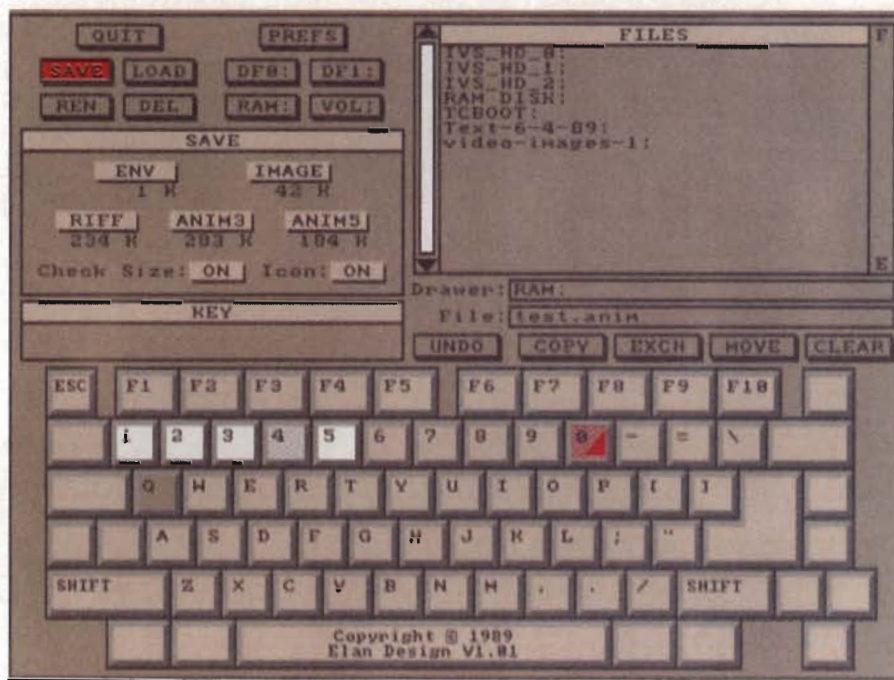
**RATING: +++++**

*Elan Performer is a high-powered, flexible and easy-to-use display program that handles any mix of IFF images, RIFF and ANIM animations. Unprecedented arsenal of capabilities at an excellent price.*

Until now there has not been a simple way to view a diverse collection of Amiga graphics. Even though a number of slide-show programs are available commercially and in the public domain, this software either cannot create automated displays, or it requires substantial effort by the user to set up the show.

At its simplest level, **Elan Performer** (\$59) is an easy-to-use slide show for displaying Amiga graphics. It accommodates individual images in any Amiga display format, including HAM and halfbrite. It handles sizes ranging from a simple brush to severe overscan, including interlaced and non-interlaced images. Palettes can range from just the two colors of a single bit-plane to the 4,096 colors of a HAM display. Elan Performer can also work with multiple images in the Amiga RIFF and ANIM animation file formats.

All of Elan Performer's functions are accessed from a single working screen. It may not be apparent from the accompanying screen photograph, but the working screen is a high-



Elan Performer's working screen. Images have been assigned to keys 1 through 5. An animation is being created on key 0.

resolution, eight-color, interlaced display which shows no flicker on a standard Amiga monitor.

By using a high-resolution interlaced display, Elan Performer has been able to place all of its controls on a single, mouse-driven screen without any menus. The lower half of the screen is a representation of the Amiga's keyboard. Images, animations, or complete environments can be assigned to any of the alphanumeric keys and the function

keys. The number of assignments can be doubled by using the shift key. Images can be assigned to keys by selecting them from the file requester and clicking on the appropriate key.

Although the control panel only shows drive selection buttons for DF0:, DF1: and RAM:, Elan Performer automatically lists all the currently mounted volumes in the file window when the program is started. The VOL: button is used to update this list

CONTINUED ON PAGE 74






ON  
DISK

- Includes 20 ready-made pointers on AMIGA Plus Disk

# POINTER CONSTRUCTION



**AmigaBASIC and C utilities save and display your custom pointers**

*Here's everything you need for designing, saving and using an unlimited number of wildly customized system pointers. They work with any commercial software that uses the pointer saved in Workbench Preferences. You can even build these pointers into your own programs in C or AmigaBASIC. Also, this issue's AMIGA Plus Disk includes 20 flashy ready-made pointers to get you started.*

## I: CUSTOMIZED SYSTEM POINTERS IN AmigaBASIC

By Todd Petit

One of the more interesting Amiga effects is customizing your mouse pointer -- not system-wide, but for just a single program. While the pointer remains the familiar red-and-black arrow on the Workbench, it could be a bright green dollar-sign within your BASIC financial program. You could change the pointer to an hourglass to show that your program is busy doing something, or perhaps change to a

pencil when your data entry screen comes up...

You'll find two AmigaBASIC programs that let you save and display your own customized mouse pointers -- along with several sample BASIC pointer files -- in the Programming drawer of this issue's AMIGA Plus Disk.

In order to use GetPrefs.BAS and CustomPtr.BAS, you don't need to understand every detail about how the program works. But some elementary knowledge of AmigaBASIC is required. If you can load, merge, and run BASIC programs, and do some simple editing, you should have no trouble using GetPrefs.BAS and CustomPtr.BAS. In fact, it should only take a few minutes to complete the entire process.

GetPrefs.BAS will locate the pointer data in RAM, extract it, and format it as BASIC language DATA statements that you can use for setting up this same pointer in your own program.

First, find AmigaBASIC on the Workbench Extras disk. Since you will need to have AmigaBASIC available to these programs, you should copy both AmigaBASIC and the Programming drawer to a fresh disk and use it as your work disk.



# SET

*Replace the mundane  
Workbench arrow with the  
image of your choice!*

Load AmigaBASIC into your Amiga and then use the `chdir` command to change your directory to `:Programming`. You want to do this for the three `.bmap` files necessary to run this and the `CustomPtr.BAS` program. The `.bmap` files that AmigaBASIC requires to access many of the Amiga's system functions must be either in the current directory or the `LIBS:` directory of the bootdisk. If you move `GetPrefs.BAS` and `CustomPtr.BAS` to another disk, make sure you move the `.bmap` files too -- or put them in the `LIBS:` directory of your bootdisk.

Create a custom pointer (see how in sidebar) and while using that pointer, load and run `GetPrefs.BAS`. The program will ask you for a filename for the new pointer data. Give it a legal filename -- such as `df0:PtrData` -- and press the RETURN key. That's it! The data for your custom pointer is now safely tucked away for later use.

## How GetPrefs Works

Preferences refers not only to the Workbench program you ran a few minutes ago to edit your pointer, but also to the data block created by that program. Your Preference settings control everything from text size (60 or 80 columns) and keyboard repeat rates to printer settings and pointer definition. All of this data is trans-

ferred into RAM from your system-configuration file at bootup. If you change these settings (as you did earlier when you edited your pointer and selected USE), the definition block of data in RAM is updated. This data block can be read by the system function `GetPrefs` in the Intuition library. If you follow the comments in the `GetPrefs.BAS` program you will see that getting preferences is exactly what it does.

First, the program allocates memory for the Preferences data block. In this case, since we are only interested in pointer data, only the first 108 bytes of the data block are retrieved. The first 28 bytes of this are ignored by the program because they hold data on things such as baud rate and keyboard delay values. The next 72 bytes hold the pointer image data. Bytes +100 and +101 hold the X-offset and Y-offset of the pointer's "hot spot." All of this data is written out to the first two DATA statements in the output file.

Six bytes are then used to hold the color information about your custom pointer. These bytes hold the RGB values for the three color registers used by the pointer (registers 17, 18, and 19). Two bytes are used to hold each set of three values. The first byte alone holds the red color value.



## Make Your Own Pointers

To design new pointers of your own, use the excellent pointer editor that Commodore provides in the Preferences program. Call up Preferences on your Workbench disk -- it's in the Prefs drawer on Workbench 1.3. Click on the Edit Pointer box and design yourself a new shape by filling grid squares in the colors of your choice. Make sure you use Set Point to put the pointer's hot spot in a logical place, ideally at the tip of the pointer (if it has one). The hot spot, or point, is the part of the pointer that activates icons or gadgets when you click on them. Trying to click on a narrow icon can be pure frustration if you can't figure out where the hot spot is.

After you have finished creating your custom pointer, go back out to the first screen of the Preferences program. Down in the bottom right corner is a box labeled USE. Click on this box. This makes your custom pointer the system pointer, but does not save it to your bootdisk. The data for this pointer is only held in RAM at this point and would disappear forever if you shut down your Amiga.

You can save only one custom pointer to replace the default arrow on your boot disk by clicking SAVE in Preferences. To have a variety of pointers available, ready to load at a double-click, you need the special programs in AmigaBASIC and C on this issue's AMIGA Plus Disk...



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## ON DISK: 20 Ready-Made Pointers

The Pointers drawer of your AMIGA Plus disk contains dazzling new mouse pointers created by our staff, along with some old favorites. To view any of these ready-made pointers, simply double-click on its icon. (All the pointer filenames end in .p.) For some of the smaller images, you may need to click around a few times before you actually hit the icon.

Also in this drawer you'll find *PutPointer* and *GetPointer*, two stand-alone C programs that let you save and retrieve your own custom pointers. Double-clicking on *GetPointer* saves the current mouse pointer. You will probably want to rename the new pointer, since *GetPointer* saves each pointer as *NewSprite.p*. Double-click on the *PutPointer* icon to restore the original Workbench arrow.

*PointerDemo*, another small C program in the drawer, demonstrates the use of custom pointers in a program. Just double-click on it, then click on various windows to see the mouse pointer changing.

Both *GetPointer* and *PutPointer* have several additional options when you run them from the CLI. For example, *GetPointer* can save the pointer data as C-Language declarations for use in your own C programs. Source code for these programs is in the Programming drawer.

The green and blue values are combined into the second byte. *GetPrefs.BAS* will decode this and pass the correct values to the output file in the third DATA statement it writes.

## Displaying Your Pointer

At this point, the data describing what your custom pointer looks like is now stored in the file you specified, ready to be displayed with the program *CustomPtr.BAS*.

If you have *AmigaBASIC* and *CustomPtr.BAS* on the same disk, you can run *CustomPtr.BAS* by clicking on the icon. The program will request you to type a pointer filename. Or you can just press RETURN, to see the custom pointer already in this program. You can even use *CustomPtr.BAS* to display pointers created with *GetPointer*, a C program on this issue's AMIGA Plus disk. When the program asks for a filename, specify one of the files ending in .p from the Pointers drawer.

Using the DATA that you saved for your custom pointer is a bit trickier. First, go to Preferences and, on the first screen, click on the LAST SAVED box. This will reset the entire Preferences data block to the values contained in your bootdisk's DEVS: system-configuration file. This has the effect of wiping out any custom pointer you're using. (If we didn't do this, you wouldn't see any change when you ran the *CustomPtr.BAS* program to show your pointer.)

Don't click on the icon, but instead load the program directly from *AmigaBASIC* and LIST it. At the bottom of the listing are a group of DATA statements labeled *Pointer.data*. These define a custom pointer shaped like a pencil. Delete these lines -- including the *Pointer.data: label*. From the output window, merge in the data file you created earlier (type MERGE "df0:PtrData"). The DATA statements defining your custom pointer will now be at the end of the listing. The funny spacing between the numbers and the commas is caused by the way *AmigaBASIC* outputs numbers. It will not affect the operation of the program.

Run *CustomPtr.BAS*. Press RETURN to select the default pointer. This time your new data lines in the program will be used, and your custom pointer will appear just as you designed it.

Your new pointer will work just like a normal pointer until you click on a window outside of your program's window. Use the front-to-back or resize gadgets to get to the Workbench screen and click on it. Your custom pointer will disappear, replaced by the old system pointer, although your custom pointer colors remain. Click on your BASIC window again -- the custom pointer is back! This new pointer shape is available to your window only.

In fact, if your program opens up multiple windows, you must set up the pointer in each window you open. This may sound like a bother, but it has its advantages. This way you won't need to look at a dollar sign when you leave that financial program and pop into some other application.

Press any key to stop the program. Your custom pointer is gone again, now that the program is over. There are a few examples of other custom pointers on the disk. These data files can be identified by their .ptr extension. Just merge them into *CustomPtr.BAS* and try them out.

## How CustomPtr.BAS Works

So how did we do all that? LIST the program and look at the comment beside the program lines. First it allocates 72 bytes of Chip RAM to hold the image data for the custom pointer. Before loading the new pointer, the color values of the old pointer are saved to integer arrays. You need to save these because you will be placing new data into the color registers and we want to be able to set everything back the way it was when we exit the program. It isn't necessary to save the original pointer image data because we don't overlay that. We put our image data somewhere else and point to it.

Next the program loads the custom pointer image data from our DATA statements into the memory block we previously allocated. To turn on our pointer, the program calls *SetPointer* from the Intuition library. This call tells the Amiga several things. The



first parameter WINDOW(7) indicates the window in which to place the custom pointer. The second parameter points to our image data block. The next two parameters indicate the height and width of our pointer. Since the editor we used always produces data for a 16 x 16 pointer you can safely set these values. (Pointers don't need to be 16 x 16, however. Larger or smaller pointers are possible.) The final two parameters set the "hot spot" of the pointer -- the part of the pointer that the Amiga actually reads when you click on something.

SetRGB4 (from the graphics library) is then called three times, one call for each of the three color registers of the pointer. The new colors you chose for your pointer are now installed and will stay in place even if you go to the Workbench. The pointer image will change back, but not the colors.

When you exit the program, three calls are again made to SetRGB4. This time we are restoring the original colors. ClearPointer (from the Intuition library) tells your Amiga to forget about a custom pointer being assigned to this window. As soon as this call is processed, your old pointer will return. Finally, the memory block we allocated to hold our custom image data is given back to the system through a FreeMem call. CustomPtr.BAS can be easily modified into a routine for you to use in your own programs.

## II: CUSTOM POINTERS FROM C

By Aki Rimpilainen,  
AMIGA Plus Technical Assistant

You can customize your own application's pointer with the help of the three C programs in the Pointers drawer on this issue's AMIGA Plus Disk. GetPointer grabs and saves the present pointer image, PutPointer displays a pointer you have saved, and PointerDemo is provided as an example for using these custom pointers in your own C programs. All files can be run both from CLI (or Shell) and

WorkBench, though CLI usage gives you many added options. We have also included 20 ready-to-use pointers. Just open the Pointers drawer and double-click on your favorite pointer images.

### GetPointer

GetPointer lets you save pointers created with the Preferences pointer editor. You can save the pointer either as a data file with icon, or as a C-language text file for use in your own C programs. With the data file and icon, you can just double-click on the icon to use the new pointer -- just like the sample pointers in the pointers drawer.

GetPointer can create an icon for the pointer that you created, but you must have the file DefaultIcon.info in the same directory as GetPointer. The resulting icons look narrow on a high resolution screen (640 pixels wide) because pointers are always displayed in low resolution. Loading your pointer by double-clicking on its icon can be tricky, because the icon may be very narrow. You might need to click around it a few times before you actually hit the icon. This can be especially difficult if you have a strange pointer already loaded and aren't sure where the hot spot actually is.

When you have a pointer you want to save, USE that pointer from Preferences and then run GetPointer by double-clicking on its icon. To use the CLI to save your pointer as data and icon, type:

```
1>GetPointer D filename
```

Your pointer will be saved in a file labeled filename.p. In full, the CLI options are as follows:

```
1> GetPointer (C|D) [filename]
[structurename]
```

The first argument specifies the save mode of the pointer data: C for a C language SimpleSprite structure, D for raw data. Depending on your choice the program will add .p (raw data) or .h (include) to your filename. If you are saving your pointer as an include file, structurename defines the

variable name for the structures and tables within that file. You can omit the last two arguments, in which case the program will name your file DefaultSprite and your structure DefSpr.

### PutPointer

PutPointer reads and displays a pointer data file you have created with GetPointer. Use it from the Workbench by double-clicking on any of the pointer icons, or from CLI. To display the pointer saved above, you would simply type:

```
1> PutPointer filename.p
```

Other options from the CLI use the following format:

```
1> PutPointer [S|R] [filename]
```

Using option R restores the system pointer after you have played with our pointers, while S saves the specified pointer as your default system pointer. Whenever you boot with this Workbench disk, the pointer you just saved will appear, instead of the standard pointer. To get the Amiga's default arrow pointer back, simply omit both arguments (or double-click the PutPointer icon).

PutPointer should be in the same drawer as the pointer file. The icon created by GetPointer will have the same settings as the icon DefaultIcon.info. If you want to change where the Amiga looks for the PutPointer program, click once on the pointer icon, go to INFO on the Workbench menu and edit the Default Tool setting for that icon.

### PointerDemo

PointerDemo is a simple program which demonstrates using the include files created with GetPointer's C option. Double-click on the PointerDemo icon and it opens two windows. Each window displays a different pointer -- try clicking on the windows and the Workbench to see them all. As with the BASIC pointer program, all the pointers use the same new set of colors. Click on the close gadget to exit. ■



# Thinker

## Outliner/hypertext combo brings Amiga new one-two punch

Review by Richard Bielak

**THINKER** +++  
*Combining hierarchical outlines with hypertext results in a powerful program that can be very helpful in organizing your work. Setting hypertext links to IFF pictures and other applications is also very good. But lack of user-friendliness makes learning Thinker harder than it ought to be.*

**Thinker** is a program that combines outline processing with hypertext. A Thinker document consists of a collection of "statements" (text paragraphs) arranged in a hierarchical order. Since each element of a document can be a paragraph, instead of just a simple heading, Thinker is more than just an outline processor, it is a "hierarchical text" processor.

The hypertext features of Thinker allow you to set up links between words or phrases or statements. Every statement within a document can have a "label" -- a word or a phrase enclosed between parentheses or brackets. By clicking the mouse on a label you jump elsewhere in the document to text with the same label.

The combination of these text handling features results in a powerful and useful program. Here is a simple example. I used Thinker to create an outline of a class I taught, called "Introduction to Programming in Pascal."

A portion of the Thinker document looks like this:

### INTRODUCTION TO PASCAL

+Class #1  
 +Class #2

Two levels of text are shown above. The + preceding Class #1 and Class #2 indicates that there is more information hidden at a lower level. Clicking on the plus sign produces this display:

#### -CLASS #1

+Introduction to programming  
 +Input/Output  
 +Variables, assignment and expressions  
 +Example problems  
 +Lab and homework

Further detail can be seen by clicking on the + gadget attached to an appropriate statement. Clicking on the - in front of Class #1 will hide all the sub-statements.

To insert a new statement into a document, you select the insert option from the menu or click on the insert gadget. A new statement could be inserted into the hierarchy at the same level, up on a higher level, or down to a lower level. When the mouse is used to select an insertion point, a



small menu appears right under the mouse pointer so you can choose from "after, down, up."

Thinker provides only rudimentary editing features, which are used when new statements are typed in. For example, the BACKSPACE and DELETE keys perform as you'd expect. Portions of text can be selected with the mouse. Statements within the document can be deleted, or moved around in both position and hierarchical level.

To change an existing statement, simply click the mouse pointer on the appropriate text and begin typing. The mouse pointer changes to a vertical bar when it is over text that can be modified.

### Hypertext Features

Hypertext links are set up in documents by placing the same labels on



## Outliners And Hypertext

One of the most universal, though not the most glamorous, applications of personal computers is text manipulation. Word processing -- writing with computers -- was the first such application. However, computers can perform more sophisticated tasks than being "glorified typewriters."

As personal computers get more powerful, other ways of dealing with text are slowly emerging. Two such applications are outline processing and hypertext. Outline processing software allows the user to create text as a collection of imbedded outlines. The elements found under each heading in such a document are either another outline or simple text. The program can hide the details of the document beyond a certain level, so that the user only sees the headings and text that exist "above" that level. For example, viewing at the highest heading level shows the outline of the document. This ability to display or hide details of a document makes it easier to organize one's work. It is possible to concentrate on the details of particular points, yet at any time easily switch to view the structure of the entire document.

Outline processing programs have been with us for a while on small computers. (For example, ThinkTank first appeared on the Apple II.) Hypertext only existed on larger (read "expensive") machines. Only with the arrival of personal computers as powerful as the Amiga can hypertext programs appear on our desktops.

The idea of hypertext dates back to the 1940s, although the name "hypertext" was not invented until the 1960s. A hypertext document is a collection of text and possibly graphics or sound, with "links" that associate related pieces of data. For example, an encyclopedia entry describing impressionist painters could contain links to digitized images of their paintings. To see the painting, you would click the mouse pointer on the title of the painting in the text, while clicking on the artist's name would lead to a biographical entry.

In a hypertext document every word, phrase, or image could potentially be a link to other information. The potential for a large number of links, combined with the fact that really useful hypertext documents must be large, explains why hypertext did not appear on earlier, less-powerful personal computers.

separated statements. The following label is in the outline for my Pascal class:

### -Example problems

(Cash Register) Write a program that will "simulate" a cash register. The input to the program will be the price of the item and the amount of money given by the customer. The program will compute the sales tax, total amount of sale and the change.

The label for the statement above is (Cash Register). The same phrase is then used as a link to paragraphs elsewhere in the document:

Let's use what we have learned so far about assignments and expressions, and write a pro-

gram that works like a smart <cash register>.

Above, the link is the phrase enclosed in the <> brackets -- <cash register>. When the mouse is clicked on that link Thinker will jump to the statement with the corresponding label.

When jumping to a new statement, you have the option of opening a new window. This way the source and the target of the jump can be seen together. Thinker links can also point to statements in other Thinker documents, to IFF images, or even to other programs. When a link to an IFF picture is selected, the picture will be displayed. The picture can be shown on the entire screen or can be compressed to a small window. I used Thinker to catalog a number of pictures of the Mandelbrot fractals set.

This way I can view a number of the generated pictures at the same time.

Selecting a link to another program causes that program to execute. For example, the program that generates the Mandelbrot fractals can be started from the same Thinker document that catalogs the images.

## Hypertext links are set up in documents by placing the same labels on separated statements.

Thinker provides a number of different ways of "jumping" around the document. Following hypertext links is one method we have already seen. The Quick Jump command (QJUMP) allows the user to position any displayed statement at the top of its window, just by clicking the mouse over that statement. Other jump commands allow movement within the text hierarchy. For example, you could jump to the next or previous statement at the same, higher or lower level. Thinker also remembers your last six locations within the document, and you can jump to any of them.

## Good & Bad

The best feature of Thinker is the idea of combining hierarchical text with hypertext. The result is a powerful program that can be very helpful in organizing your work. The ability to set hypertext links to other Thinker documents, as well as to IFF pictures and other applications is also very good. Using these features it is easy to set up libraries of pictures along with their descriptions, or use Thinker documents to provide interactive documentation for programs.

However, although Thinker is a useful program, it could be improved in many areas. First of all, the 50-page manual is hard to read and lacks

CONTINUED ON PAGE 81



# Games Galaxy

GUNSHIP, BALLISTIX, TV SPORTS FOOTBALL,  
AIRBALL, GRAND PRIX CIRCUIT

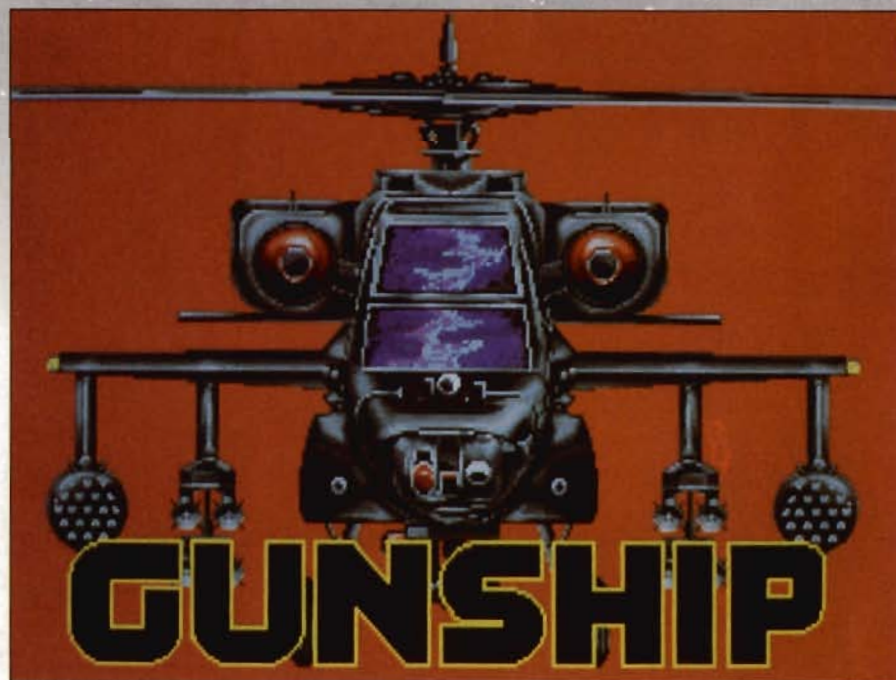
## GUNSHIP +++++

*Gunship delivers fast action, good response, great colorful graphics, and one of the best interactive playing fields I've seen. The best Amiga helicopter simulation yet.*

I set Collective up a notch and Cyclic forward for lower altitude and some more speed. With Weapons Select set to AGM-114A Hellfire, TADS up on a T-74 tank, I fire and fire again. Impact on the tank, tap the TADS and get the BMP-2 in back of it, with the Hellfire in flight. Turn and dive -- that lost weight caused me to climb. S-60 gun is at .3 kilometers and may be tracking me, go to the cannon and fire a burst. Good! TADS is clear, but a HIND attack ship was in the area when I flew into this mess. Look for it and make turns to get it off angles. Go for a Sidewinder missile, lock on and fire. Splash one HIND. Luck and time in the seat have kept me alive again.

Yes, MicroProse finally brings **Gunship: The Attack Helicopter Simulation** to the Amiga. One of the best-selling computer games of all time, Gunship has already been certified platinum for selling more than 500,000 copies in the C64, PC and ST versions.

Gunship is built around the AH-64A Apache helicopter. At \$7-million-plus apiece, the Apache carries lots of today's most advanced weapons and



Gunship ... at last, the best

avionics. To operate this high-tech ship the pilot has two devices that put a computerized fire control system into the look-and-shoot category -- the IHADSS (Integrated Helmet and Display Sighting Sub-System) helmet and TADS (Target Acquisition & Designation Sight).

Once TADS is active and the targeting mode is selected, an aiming box appears. The pilot identifies the target and decides whether or not to fire. If the weapon is the chain gun or a laser-guided missile, TADS will

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**Ballistix --  
life-size  
pinball**

Explosive Dual Purpose) ammunition.

The avionics package begins with a CRT display that has map, radio message, or TADS modes. Below it is the weapons stores selection display. The standard instruments are the VSI (Vertical Speed Indicator), Altimeter, Airspeed, Attitude & Artificial Horizon, Engine and Fuel Gauges. Other items will be new to some pilots -- System Damage lights, Threat Display, Radar and Infra-Red Warning and Jammer lights, a Rotary/Digital Compass and INS (Inertial Navigation System).

This array of weapons and equipment are needed to offset the equipment you'll meet in combat, such as Russian tanks, combat vehicles and armored personnel carriers.

Before you hot-shot jet jockeys try to fly this beast, read the 79-page manual. Fixed wing is not rotary wing. Here you point the nose down to fly forward!

You also need training to go with the knowledge you'll gain from the manual. The Duty Assignment menu offers pilots "Flight Training in the USA". Here the bad guys don't shoot back while you work your way through two tutorials.

After graduation, it's combat time. You have a choice of four Duty Assignment Areas -- Southeast Asia (SEA), Central America (CA), Middle East (ME) and Western Europe (WE). The type of weapons and enemy quality (reality levels) range from third-line guerilla forces with outdated, visually sighted weapons, to first-

line Warsaw Pact Soviet Divisions with the latest in high-tech weaponry.

You are then briefed on the mission -- primary and secondary objectives, grid coordinates, the type of mission (destroy depot, support infantry, clear LZ, etc.), day or night, password and conditions.

Completed missions gain points and promotions. The Army figures on a 14-to-1 kill ratio to pay for their investment in training you and the cost of the ship. Try to improve on that.

-- WOLF GRIFFEY

#### **GUNSHIP**

**\$49.95**

MicroProse Software, 180 Lakefront Drive, Hunt Valley, MD 21030. (301) 771-1151. Minimum 512K, joystick recommended, key-disk copy-protection allows loading onto hard disk.

**CIRCLE 245 ON READER SERVICE CARD**

#### **BALLISTIX ++++**

*Futuristic pinball/soccer combination with "show off your Amiga" graphics and sound. You can even customize the playing conditions to match your skill level.*

Combining pinball and soccer with a grimly futuristic scenario, Psy-clapse's **Ballistix** puts you into an inventive high-speed arcade game on an alien world.

In the one-player version, Ballistix plays like a pinball machine, with gravity pulling the ball toward the bottom goal on a tilted playfield.

You shoot at the ball and try to knock it back up the screen into the top goal. The two-player game gives you a level playfield.

Obstacles make the going tough. Arrows push the ball aside and mines destroy it, restarting the round. Randomly-placed symbols can cause an explosion of a dozen balls, tilt the playfield, or place a protection shield in front of your goal.

Game play is smooth, with less than 15 seconds of loading time between each level. There are 50 levels for one-player games, and 80 for two players.

Especially good, if you don't like the way the game plays, you can modify eight different values on the options screens. You can tailor Ballistix to your ability, whether you're a beginner or expert.

Graphics and sound are top-notch, from the elegantly tiled floors to the gruesome crack that the ball makes when it hits the skulls lining the playfield. Ballistix definitely falls in the "show off your Amiga" category. Game play seems perfect -- I couldn't come up with any ideas for improvement. It is nice to see a game so direct in concept and original in execution. -- J. DOUGLAS ARNOLD

#### **BALLISTIX**

**\$34.95**

Psy-clapse (Psygnosis Ltd.), distributed by Computer Software Services, P.O. Box 483, Addison, IL 60101. (800) 669-4912. Minimum 512K, joystick required.

**CIRCLE 246 ON READER SERVICE CARD**

#### **TV SPORTS FOOTBALL +++**

*TV Sports Football's stunning graphics are really comparable to watching a game on television. Just be prepared to learn a lot of joystick movement commands (some awkward) and how to use them quickly.*

Cinemaware's **TV Sports Football** tries to do a little bit of everything. All 28 NFL teams are represented on the game's two disks, though the player names are strictly fictional. You can alter ratings of players and



teams, or take one or more teams through an entire season, including the playoffs and the Super Bowl -- if you're lucky enough to get that far.

Your four game options are: exhibition, league, practice and clipboard. Believe me, you'll need to practice all those joystick commands. Just selecting plays takes three different joystick moves. If you don't pick a play in 15 seconds, the computer selects one for you. (Supposedly the computer learns your play-calling tendencies to aid in that selection.)

In actual play, you control the player with the ball. Making the required split-second decisions and joystick moves is challenging, exciting and occasionally frustrating. Offensive play requires special moves. If you want a pass play, you must pull the joystick toward you when snapping the ball. Otherwise the quarterback will hand off to the nearest running back. Your control shifts to the runner, and it's up to you to get past the defense. Calling and executing defensive plays is much easier.

What's most attractive about TV Sports Football is its graphics, as attractive as any sports game on the market. It really is almost like watching a game on television, and will wow your friends. But overall, the game doesn't feel much like real football and seems more difficult than necessary. -- RICK TEVERBAUGH

**TV SPORTS FOOTBALL** \$49.95  
Cinemaware, 4165 Thousand Oaks Blvd., Westlake Village, CA 91362.  
(805) 495-6515. Minimum 512K, joystick required.  
CIRCLE 247 ON READER SERVICE CARD

### **AIRBALL ++1/2**

*You're a ball with a slow leak, wending your way past lots of sharp objects. Airball performs nicely once you master its control interface.*

The premise of **Airball** is that an evil wizard has transformed you into a ball with a slow leak. Before your air pressure runs out, you must search the 250-room wizard's mansion for air

pumps -- and a spellbook to restore yourself to human form. Most of the chambers are bewildering concoctions of deadly spikes and killer green carpets.

It is necessary to move carefully and stay alive until you get to the next pump. Then jump atop it and re-inflate. Don't get greedy -- too much air and you explode. After you find a pump, explore all the rooms around it. But don't even try to map -- you've got to move too fast for this luxury. Memorize the passageways.

The manual gives very little of the game away, challenging you to explore its many intricacies. Some rooms require use of special items, such as a flashlight to push back the darkness. And don't forget about the jump button. Often you'll have to bounce. Most players will need many weeks to locate the missing spellbook.

Although I didn't particularly care for the pastel color scheme, **Airball's** graphics are arcade quality, as are its sound and responsiveness. While the four movement commands are easily learned, **Airball** has the same problem inflicting many games which have 3-D playfields in forced perspective. You must move the joystick in directions that don't correspond to your on-screen movement. But give **Airball** a try and you just might have a ball.  
-- STEVE PANAK

**AIRBALL** \$39.95  
Microdeal (MichTron), 576 S. Telegraph, Pontiac, MI 48053. (313) 334-8729.  
Minimum 512K, joystick recommended.  
CIRCLE 249 ON READER SERVICE CARD

**GRANDPRIX CIRCUIT +++1/2**  
*Grand Prix Circuit is a well-executed road racing game that's a bit different, but lives up to the standards that Accolade established in its Test Drive series.*

This time, **Accolade** has even made it legal to go thundering down the computer roads at 200+ miles per hour in **Grand Prix Circuit**, a Formula One racing simulation featuring

eight of the world's top race courses and three of the hottest cars.

Formula One drivers are sharp, the cars designed for one purpose only, and the courses test the limits of each car and driver. It's you against the clock to qualify for each race.

Grand Prix Circuit gives you as many as 99 laps of the curving course in Monaco and the high-speed straightaways in Germany. Detroit and Japan run part of their races on the city streets and through a tunnel or two. Other choices are Brazil, Canada, Britain and Italy.

For the qualifying lap you choose one of the three team cars. The Ferrari is the best in handling and a little slower. The Williams is in the middle in speed, control and braking. The McLaren car is the most powerful and the most likely to spin out on turns. There is no top speed given for these cars, and chances are that few drivers will top out. With engines showing 680 to 790 horsepower, handling and braking become as important as power.

Drivers begin by setting themselves up on the difficulty level bar. There are five levels, rookie to pro. Rookies get all the breaks, with automatic shifting and no blown engines or car damage. The pros treat them kindly. Higher levels take away that easy life on the track.

At the big-time pro level, the strategy is to gain a high position from your qualifying time, and then keep it or better it at the finish line. Each race you finish gives you points for your final position. That's how champions get their crowns. You don't need to be number one every time.

Grand Prix Circuit has good steady graphics and rich colors. Control response is well done, and the learning curve is right. This is a nice change from the highway and street racing programs. -- WOLF GRIFFEY ■

**GRANDPRIX CIRCUIT** \$49.95  
Accolade, 550 S. Winchester Blvd., Suite 200, San Jose, CA 95128.  
(408) 296-8400. Minimum 512K, joystick required.  
CIRCLE 248 ON READER SERVICE CARD



whenever you swap disks. To open a volume or a directory, simply click on its name in the file listing. To pick an image file, just double-click its name. The pointer then changes into a "TO" arrow which can then be clicked on a key.

Colors of the keys change to indicate their status and assigned file type. Gray represents an unloaded image while white indicates a loaded image. Elan Performer makes efficient use of available memory. To insure a smooth transition from one image to the next, the program tries to place two images into chip RAM. The first image is on display while the second image is next on the list. When running in automatic mode, the keyboard display order is from left to right and from top to bottom.

If you have enough memory, or if your presentation is small enough, Elan Performer will load all of the images into RAM. At this point, images can be changed as fast as the display's frame rate of 1/30th of a second. To avoid fragmentation of RAM, the program loads the images into a single block. Memory is not cleared until it has been completely filled or until the current environment is changed.

### **Animations**

In addition to individual IFF images, Elan Performer accommodates two types of animation files, RIFF and ANIM. The RIFF file format is very flexible in that it can be used to string together IFF images with different display modes. Thus, it is possible to create an animation that mixes interlace with non-interlace and even HAM with standard bit-map graphics. Of course, RIFF files require more memory than ANIM files. The ANIM file format only saves the changes between successive frames. This limits it to animations built up from a single display mode.

The editor window is where you assign the way an image or animation will be displayed. For images you can set the time it will be shown in minutes, seconds and frames. A frame is 1/30th of a second. You can also set whether or not the image will

color-cycle. As many as eight color-cycle ranges are supported, but these must be set from your paint program before the image is saved. Elan Performer does not provide any means of setting or adjusting the color cycle ranges of an image.

For RIFF files, the editor lets you set the number of times the sequence will loop, along with the speed of the animation. The speed setting ranges from 0 to 999, with 1 being the standard speed. Timing is in multiples of 1/30th of a second, except for the 0 setting which is 1/60th of a second.

## **The number of images and animations making up an Elan Performer presentation is virtually unlimited.**

RIFF files can also be double buffered to ensure smooth transitions when successive images in the animation have different color maps. The editor screen also shows the size of the RIFF file and the number of frames.

The controls for the ANIM files are similar to those for the RIFF files. The primary difference between the two is the reverse option. Turning on the reverse option loads the entire file into memory as a RIFF file so it can be played backward as well as forward.

The PREFS button at the top of the working screen sets the overall operating mode. Elan Performer can be told to run automatically for a preset number of cycles, or it can be told to cycle endlessly. You can also have it show the first image and await further instructions, or you can run the show entirely on your own. While the images are on display, the control panel is not shown. Only the images appear.

You can assume manual control of operations during an automatic showing simply by pressing an arrow key

or a mouse button. When Elan Performer is in manual mode, you can use the arrow keys and the mouse to move through the loaded image sequence.

The CAPS LOCK key turns the mouse into a remote. In remote control mode you can step through the images one at a time, in forward or reverse, by clicking the mouse buttons. Or you can hold down both buttons and cycle the show by moving the mouse. Images can also be directly displayed by just pressing their assigned keys.

### **Elan Environments**

The keyboard file assignments, along with the current editor settings, make up Elan Performer's "environment." Environments are an important concept for the open-ended operation of Elan Performer. The entire current environment can be saved to disk just like any other image file. A public domain player utility included on the program disk allows you to pass around your completed productions.

Like image files, saved environments can be loaded and assigned to any key. Environment files are very small because they only contain the file and path names for the various assigned images, animations and other environments. Note that an environment can contain another environment. In fact environments can be nested to any level. As a result, the number of images and animations making up an Elan Performer presentation is virtually unlimited.

Saved environments can be loaded two ways, as replacement for the current environment or as an assignment to a key. If you choose key assignment, the editor lets you set the environment to skip or run. If the run setting is chosen, the environment will be invoked when its key comes up for display. If the skip setting is chosen, the environment will not be automatically called up. Instead you can activate the environment by pressing its key at your discretion.

Elan Performer lets you create your own animations by simply selecting



images from assigned keys and appending them to another key. By using a very slow frame rate, you can create entire slide shows on a single key. Images and animations, which have been assigned to keys, can be saved back to disk. This process can also be used to convert an ANIM file into a RIFF file or to break up an animation into individual images. The last option does not let you choose individual frames of the animation. All of the frames are saved in sequence. Since a disassembled animation can use up a lot of memory, it is possible to run out of disk space. In this case you will have only the first few frames.

Before saving a file, Elan Performer can be instructed to show how much memory will be needed. For an animation file, the size of the first image along with the size of the corresponding ANIM3, ANIM5 and RIFF files is shown. Calculating these

statistics can take some time, so you are given the option of turning it off.

Several independent utilities are provided on the program disk for assembling and disassembling animation files. FrameCutter is used to break up an animation file into individual

### All functions are accessed from a single working screen.

frames. As before, there is no provision for saving selected images. If you run out of disk space you will only get the start of the sequence. The RIFFsplicer and ANIMsplicer utilities assemble individual frames into animation files. These three utilities can also be used to convert an ANIM into a RIFF and vice versa.

Elan Performer is a powerful, flexible and easy-to-use display program that can handle any mix of IFF images and animations. Its possible applications range from simple slide shows to automated advertising displays, interactive presentations and video recordings. For video work, blank white and black frames are even provided on the program disk. I feel that Elan Performer is an excellent value. ■

#### ELAN PERFORMER

\$59

Elan Design, P.O. Box 31725, San Francisco, CA 94131. (415) 359-7212.

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*Morton Kevelson is an electrical engineer from Brooklyn who has a particular interest in video digitizing. He has been writing about Commodore computers for eight years.*

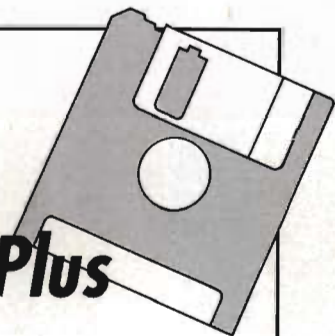
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# 50 OVER New Amiga Products

By Carolyn Cushman, AMIGA Plus Associate Editor



Deluxe Video III

## ART

### Deluxe Video III

A professional quality desktop video program, this latest version of Deluxe Video from Electronic Arts uses the full integration of sound effects, music and MIDI to make complete audio-visual presentations. External device control includes an ARexx message port, MIDI output, single-frame VCR control and control over the SuperGen genlock. Utilities include an Instant Slide Show and a freely distributable Player program that lets anyone with an Amiga play your videos. (\$149.95, 1 meg and 2 disk drives required; hard disk recommended.)

### 3-D Art Objects

Add to your collection of Sculpt-Animate 3/4D objects with Jason Twamley's disk containing a detailed, rotating "globe" of the earth. (\$25, \$30 outside U.S.)

### Caligari at Home

A home version of Octree's \$1,995 Caligari will be available from Electronic Arts. Caligari is a conceptual three-dimensional design and animation program, which uses a virtual three-dimensional space with real-time response and hierarchical manipulation. The user can easily modify 3-D objects simply by moving the mouse pointer and watching

the scene change. The home version does not include animation capabilities. (\$249)

## HARDWARE

### IMG Scan

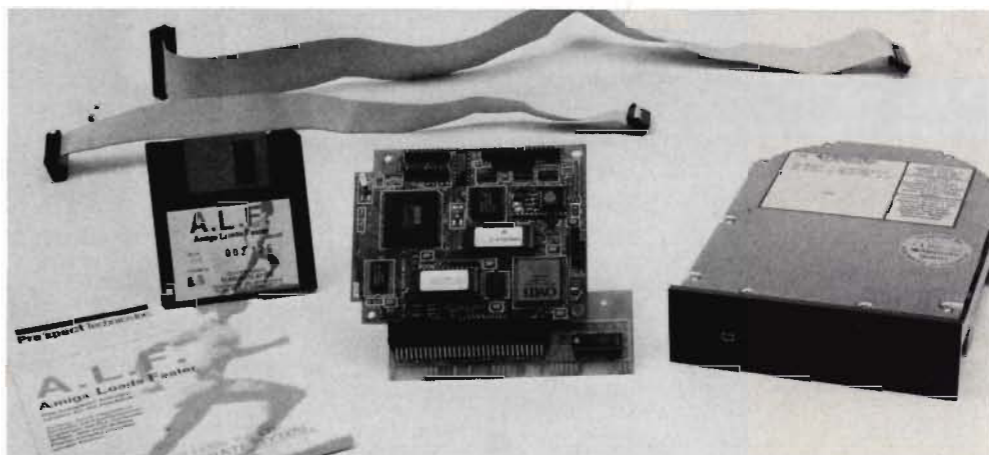
Turn your dot matrix printer into an inexpensive scanner with SunRize Industries' IMG Scan. This hardware/software combination lets you scan and digitize pictures in 256 gray scales at up to 360 dpi, and save images in both IFF and RAW formats. (\$149.99)

### HDA-506-2 Hard Drive Adaptor

A low-cost alternative to SCSI hard drives, this adaptor from Spirit Technology makes it possible to use off-the-shelf, IBM-compatible ST-506 hard drives with any Amiga 2000. (\$172 for adaptor board and software only.)

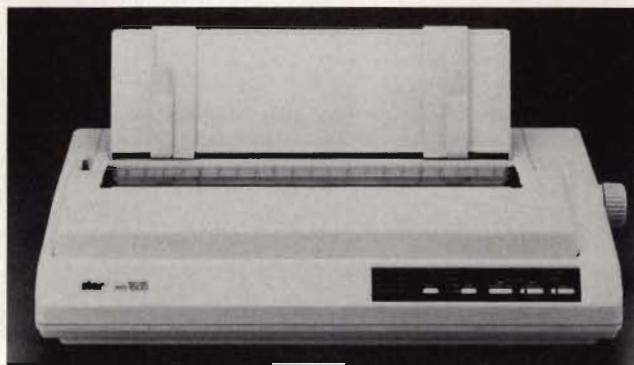
### A.L.F.

Your Amiga Loads Faster with ALF from Pre'spect Technics Inc. This adaptor lets you connect standard IBM-compatible hard disks (ST 412/ST 506) to your Amiga. (Prices vary, and packages are available complete with hard disk.)



A.L.F.





Star XR-1500

## Star Multi-Font Printers

Star Micronics introduces the XR-1500 and XR-1000 Multi-Font printers, two fast and quiet nine-pin printers featuring eight built-in fonts. Identical except for the XR-1500's wider 15-inch carriage. (XR-1500, \$799; XR-1000, \$579)

## Serial Solution

Now Amiga 2000 owners can stop switching between printers and other peripherals with the Serial Solution from Checkpoint Technologies. This dual-port internal serial board adds two serial ports to the A2000's built-in port. (\$299)

## Inky dink

Software Sensations' inky dink provides better color ink-jet printing at lower cost. This high brilliance ink is available in four colors (cyan, magenta, yellow and black) and works with most color ink jet printers, including the Sharp JX-30 and Diablo C-150. (\$11.95 for 17cc)

## S-View: The Connection

Also from Software Sensations, S-View breaks the S-Video barrier with a cable that lets you record on Super-VHS, ED-Beta and Hi8, or display your images on a large-screen S-Video moni-

tor -- with graphics almost as clear as on high-cost RGB multisync monitors. Compatible with all Amiga S-Video encoders. (\$79)

## Auto Droid

Speed up your Digi-View color digitizing with Micro-Search's Auto Droid (\$59.95), a servo motor that turns the Digi-View filter wheel for you, cutting digitizing time by nearly 50% (\$59.95)



Powerdrome

## GAMES

### Populous, Powerdrome, Twilight Swords

Now you can play God with **Populous**, the hot European strategy game brought to the U.S. by Electronic Arts. Build land, gain worshippers and with enough mana you can even lay waste to your opponent God's population with earthquakes, floods and volcanoes. Guaranteed addictive by the AMIGA *Plus*

staff. (\$49.95)

For futuristic thrills, Electronic Arts presents **Powerdrome**, a high-speed air race that combines arcade action with the strategy of Formula One racing. Or you can travel a magical pathway through eight medieval worlds in **Swords of Twilight**, a multi-player fantasy role-playing game that allows up to three people to play simultaneously as companions on a quest for seven magic swords. (Powerdrome \$39.95, Swords of Twilight \$49.95)

## FanFare

A new entertainment line from Britannica Software, FanFare brings two unusual British arcade games to the U.S. In **Archipelagos**, you must destroy the obelisk on each of 10,000 eerie island chains, building land bridges while avoiding the weird and deadly creatures all around you. The AMIGA *Plus* staff can't get enough of this game's Twilight Zone atmosphere. In **Eye of Horus** you play the Egyptian god Horus, on a mission to avenge your father's death and destroy the evil god Set. (\$39.95 each.)

## Lucasfilm Games

In **Loom**, the first fantasy adventure game from Lucasfilm Games, a young member of the mysterious Guild of Weavers must use the magic distaff to save the world from a terrible catastrophe. (\$59.95)

Beyond Battlehawks 1942, there's now **Their Finest Hour: The Battle of Britain**, a WWII air combat simulator with an enhanced replay mode, improved graphics and the ability to

save your exploits -- plus the option to fly for either Germany or Britain. (\$59.95)

## Accolade

**Jack Nicklaus' Greatest 18 Holes of Major Championship Golf** features 18 of the world's most challenging holes, with variable winds, course hazards, random pin placement and beginning or expert levels. An add-on course disk is also available: **Jack Nicklaus Presents the Major Championship Courses of 1989**. (\$49.95, add-on disk \$19.95)

For would-be arcade game designers, Accolade's **Shoot 'Em Up Construction Kit** gives you the tools the pros use to make top-quality arcade games, which can then be saved in playable form for all your friends. (\$19.95)

## Dinowars

Eight of the best-known dinosaurs team up and battle it out in this new package from DigiTek Software. Combining an interactive strategy game with fully animated arcade sequences and a complete encyclopedia on the prehistoric era, Dinowars is both fun and educational. (\$39.95)

## Hoyle's Book of Games

For a Family Classic, try Sierra's new Hoyle's Book of Games. The games include such family favorites as Crazy Eights, Old Maid and Cribbage. More than a collection of card games, however, this program lets you play against as many as three onscreen characters, each with different personalities and skill levels. (\$34.95)



## Sega Arcade Classics

Two more Sega arcade classics will soon be available for the Amiga. Use your Ninja might and magic to fight relentless terrorist attackers in **Shinobi**. Or, for exciting air combat, take off in an F-14 in **After Burner**. (\$49.95 each.)

## Mindscape

Try your hand at six circus events, but watch out for Fiendish Freddy, the cynical circus saboteur in the satirical, slapstick-filled **Fiendish Freddy's Big Top O'Fun**. Or you can search the Dark Dungeons for treasure in **Gauntlet II**, a faithful reproduction of the arcade megahit, with 100 new mazes and spellbinding animation. (\$49.95 each) **Deja Vu II: Lost in Las Vegas** is a new interactive graphic adventure that takes you to a cheap Vegas hotel, where the mob wants \$100,000 from you, and doesn't care how you get it. (\$49.95)

## Miami Vice

Bring the sultry sizzle of the TV series to your computer screen with this interactive action-arcade game from Miami-based Intracorp Inc. Race through eight levels of challenging crime-fighting. (\$39.95)

## Kristal

Based on *The Kristal of Kronos*, an original stage musical, this science fiction epic puts you in the role of Dancis Frake, a space pirate seeking the long-lost Kristal. Cineware (\$49.95)

## Titan

Titan is a compelling game from Titus Software requires you to use strategy

as you solve puzzles and mazes, guiding the power sphere through eighty levels full of deadly death icons. (\$44.95)

## Turbo

Latest in MicroIllusions' One on One series of null-modem games, Turbo pits you against the clock or another opponent in a death race through crowded city street and twisting mountain roads. (\$24.95)

## Fright Night

Not for the squeamish, MicroDeal's Fright Night brings the horror of the movie to an arcade-style game. You play the vampire, slinking through the night in a desperate attempt to turn everyone else in the house into a vampire. (\$39.95)

## Artworx Three

**Tank Attack** combines the strategy and action in a two, three or four player game where each player commands a country's Tank Corps. (\$24.95) **Colossus Chess X** offers chess players a chance to play a computer opponent familiar with all the rules of chess -- and capable of learning from its mistakes. (\$34.95) **World Snooker (and Pool and Billiards)** offers five different types of pool -- two versions of snooker, straight pool, eight-ball, English pocket billiards and U.S. Carom billiards. (\$24.95)

## Mastertronic Megagames

Megagames is a new line of home computer games identical to the arcade versions produced by Arcadia,

an affiliate of Virgin Mastertronic. The games will require 1 meg or more of memory, but will provide home users with the same graphics, animation and sound seen in the arcade versions. First to be released, under the Melbourne House label, will be **Magic Johnson's Basketball**, followed shortly by **World Trophy Soccer**. (\$49.99 each.)

## International Championship Wrestling

Challenge opponents from around the world, each with his own "death move" in this exciting action arcade game from Avatar Consulting. (\$32.95, 1 meg recommended.)

## Taito Trio

Rescue your buddies held behind enemy lines in **Sky Shark**, a fast-moving arcade game that lets you take the stick of a World War II P-40 Tiger Shark. Or for a classic game of mental dexterity and strategy, **Qix** brings you into an electrically charged world of deadly roving sparks and waves of energy to avoid as you build your territory. Due also is **Rastan**, in which you as the ancient warlord must kill off a host of evil lords and their slimy servants. (\$34.95 each.)

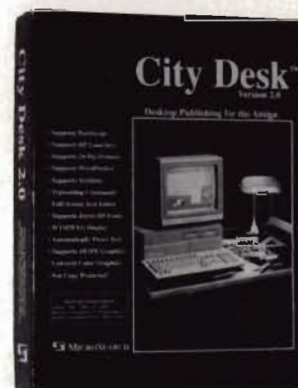
## Omni-Play Basketball

From SportTime Computer Software, a new affiliate of Broderbund Software, this basketball game lets you manage, coach and play. For a touch of realism, the game features players who age each year and even suffer injuries. (\$49.95)

## APPLICATIONS

### CanDo

Even non-programmers can create their own games, applications and complex interactive audio/visual presentations with CanDo from Inovatronics. A graphic interface guides the user through a step-by-step process that generates the software. (\$149.95)



### City Desk 2.0

Features new to this powerful desktop publishing program from MicroSearch include text flow around irregular graphics, macro capabilities, IFF color to gray scale conversion, an improved text editor and rewritten graphics editor. (\$199.95)

### VIDI-Mice

Using Tensor Productions' VIDI-Mice software with the LIVE! frame grabber from A-Squared, you can control virtually any Amiga program from your video camera input.

### K-Data

A new database from Kuma Computers Ltd., K-



Data makes full use of the Amiga's Intuition windows and drop-down menus. Easy to use, K-Data offers features normally associated with more complex relational databases. (\$9.95 pounds UK.)

## Source Level Debugger

The latest in a series of add-on products from Avant-Garde Software for use with Benchmark Modula-2, the Source Level Debugger uses a mouse-and-menu interface to make debugging easier. (\$149.95)

## MIDI STUFF

### Bars and Pipes

Make music with Blue Ribbon Bakery's Bars and Pipes, a four-part icon-oriented program that uses a plumbing metaphor to process music. Control the music's flow through icons resembling pipes and valves, then use tools from the Toolbox to modify and shape the sound. (\$250)

### Master Tracks Pro

Bring your music to life with this powerful professional sequencer program from Passport Designs. Based on Passport's award winning program for the Macintosh and Atari ST computers, the Amiga version also supplies all the hooks a musician needs to sync up to audio or video tape, with the ability to slave to SMPTE via MIDI Time Code. (\$395).

### Music-X

The long-awaited music processor from MicroIllu-

sions is finally here, with features including a Sequencer, Bar Editor, Event Editor, Filter controls, a Keymap Editor, Samples controller, Librarian, Patch Editor -- and the ability to create and edit scores. Music-X offers a wide range of MIDI capabilities. Not copy-protected, 512K required, supports MIDI-interfaced devices. (\$299.95)

### Synthia Professional

A complete sound synthesis editing package, Synthia Professional from The Other Guys features eight synthesizers that create and modify 16-bit instruments, which can be saved in several file formats. (\$395, demo disk \$10.)

### Manufacturers

Accolade, 550 S. Winchester Blvd., Suite 200, San Jose, CA 95128. (408) 296-8400.  
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Artworx Software Company, Inc., 1844 Penfield Road, Penfield, NY 14526. (716) 385-6120, (800) 828-6573.  
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Avatar Consulting, distributed by Digital Wizards Inc., 9307 Carlton Hills Blvd., Santee, CA 92071.  
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Blue Ribbon Bakery, 1248 Clairmont Road, Suite 3D, Atlanta, GA 30030. (404) 377-1514.  
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FanFare/Britannica Software, 345 Fourth Street, San Francisco CA 94107. (415) 546-1866.  
CIRCLE 213 ON READER SERVICE CARD

Inovatronics, Inc., 8499 Greenville Avenue, Suite 209B, Dallas, TX 75231. (214) 340-4991, BBS (214) 357-8511.  
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IntraCorp Inc., 14160 SW 139th Court, Miami, FL 33186. (305) 252-9040, (800) 468-7226 (orders only).  
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Lucasfilm Games dist. by Electronic Arts  
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Tensor Productions, 280 Mathilda, #9, Goleta, CA 93117. (805) 685-6245.  
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Titus Software, 20432 Corisco Street, Chatsworth, CA 91311. (818) 709-3692.  
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Jason Twamley, 515 Marjorie Mae Street, State College, PA 16803.  
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Virgin Mastertronic, 18001 Cowan Street, Suites A and B, Irvine, CA 92714. (714) 833-8710.  
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a reference section or an index. This problem is compounded by a somewhat non-intuitive user interface.

Many commands use menus that pop-up directly under the mouse cursor. These are nice, but they do not follow the Amiga standard. Furthermore, the menus do not appear in a consistent manner. I found it confusing that some commands have one pop-up menu, while others have many.

## When a link to an IFF picture is selected, the picture will be displayed.

It is impossible to close the current project and read a new one from disk without exiting Thinker, because existing projects can only be opened from Workbench or CLI. Expected commands such as New, Open, Save, Save As, Quit are all missing from the Project menu. Thinker's assignment of keyboard shortcuts is also very poor. For example, AMIGA-Q does not mean Quit, but instead is an insert command. AMIGA-S is not Save, but a jump command.

Thinker has a steep learning curve. Before you can use it effectively or even understand the manual, you must learn a number of definitions such as statement, clipping level, anchor, branch, group, etc. This could discourage less technical users from using the program.

Overall, Thinker is an interesting, powerful and useful program that shows how a computer can handle text in new ways. Although the current version (1.03) can be difficult to use, Thinker is a tool worth the learning effort. ■

**THINKER** \$54.95  
Poor Person Software, 3721 Starr King Circle, D9, Palo Alto, CA 94306. (415) 493-7234.

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**DD17: RAYTRACING** - learn about raytracing the inexpensive way; DBWRender - Ray tracing, RayTracedPics, C source included.

**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. If you have AmigaDOS 1.2 or 1.3 you should get ARP (see dd45), and DiskSalv - "DiskSalv V1.3 is a disk recovery program. DiskSalv will scan a bad disk volume for anything that can be recovered, and will restore these items to any AmigaDOS volume. It does not make any attempt to fix the bad device in place. Many other useful utilities are provided.

**DD45: AREXX PROGRAMS** - This disk contains several useful arexx programs and examples (rumor has it that arexx will be provided free with release with 1.4 AmigaDOS) including, AllZoo, EMake, McC (2.0), SpeechToy, StarTrek, TxxEd-SpeechToy, TxxEdref, Txxref, Txxref2, and the complete RxxArpLib2.3. Also included - SoundUtil. A set of C source code routines for using the audio device, by Robert Peck, IconMiester - great icon generating program, PopCLI4 - The latest of a must have utility. Now supports arexx in addition to many new enhancements, ArpUserDocs3.1 - Finally, the documentation for the 3.1 release of Arp which replaces most 1.3 AmigaDOS commands (see dd44).

**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. Many aspects of the plots are user variables so that almost any

**WB1: cont-** combination of rotations, perspectives, and parameters for any function can produce infinite results, 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 (or Surf for short) is a program for producing bezier surfaces of revolution. It produces awesome pictures of wineglasses and doorknobs, and other objects one could turn on a lathe. BezSurf includes the capacity to map iff image files onto any surface that it can draw. And others.

**WB004: Telecommunication** - This disk contains several excellent PD communication programs designed to get you on line quickly and easily. Access (1.42) - A very nice ANSI term program based on Comm v1.34, but with the addition of transfer protocols; Comm (v1.34) - The best PD communications programs ever made; Handshake (v2.12a) - Full featured VT52/100/102/220 terminal; JRComm (v0.93) - Another great full featured comm program.

**FunDisk0006: GAMES!** - This disk is chalked full of games including; Checkers, Clue, Gold - A new slide the pieces puzzle, Jeopard - An enhanced version of Risk, RushHour - Surprisingly addicting, and SpaceWar - Best described as a cross between Combat-Tanks and asteroids.

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

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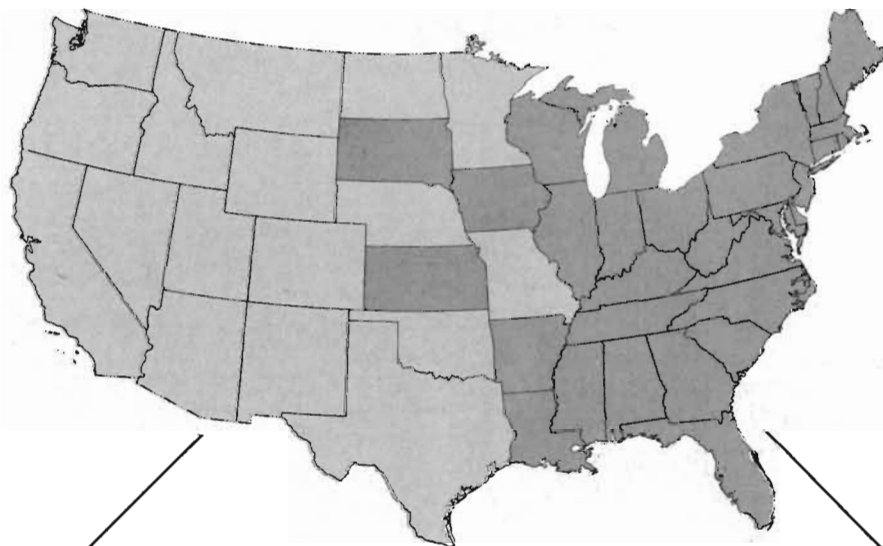
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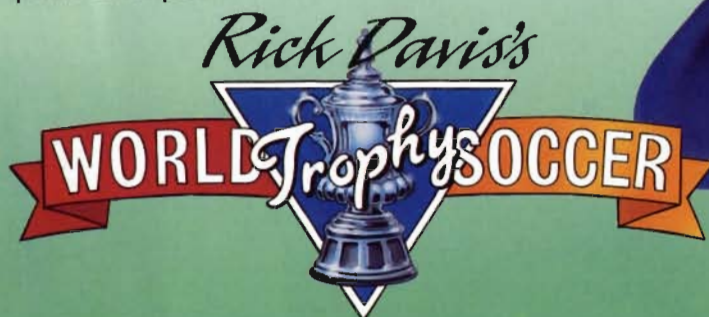
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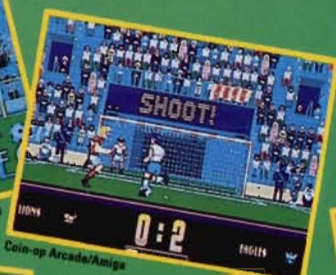
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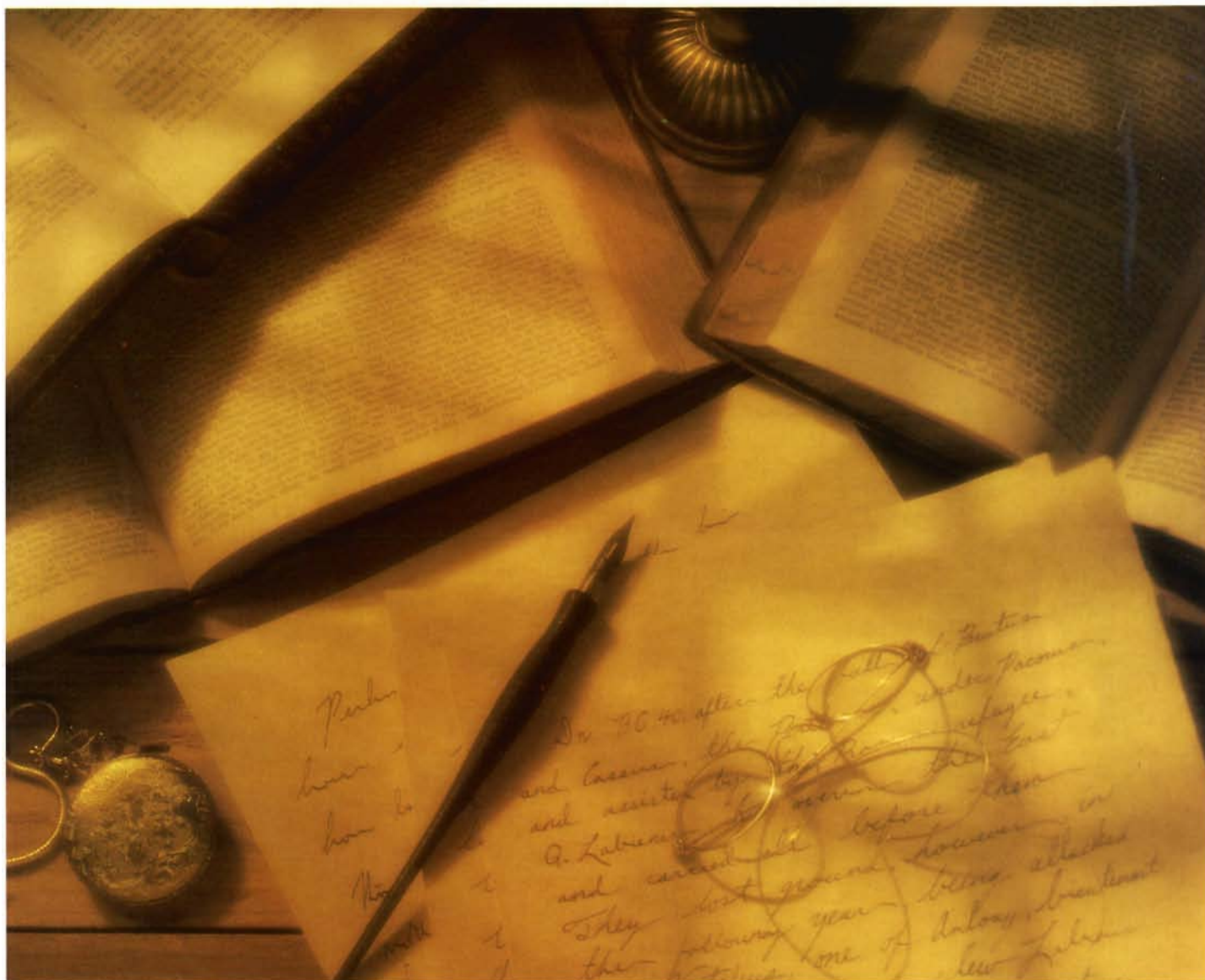
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