AMIGA
Beginners Guide
1990

© RICK PARKS

Updated For 1990!

Two Disks Full Of:

Utilities, Music,
Animations, Fun Stuff,
Graphics, Virus Killers
and more!

Coverage For:

Animation, Paint,
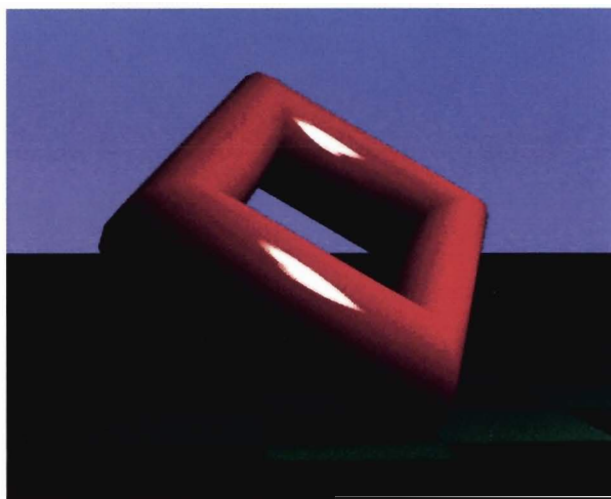Wordprocessing software,
Music, MIDI, BASIC
and more!

The Complete Amiga Graphics Resource

For a graphics computer as powerful as the Amiga, you need a magazine that can help you reach its full potential.

Whether you are interested in Ray Tracing, Animation, Desktop Publishing, Video or Fine Art, GRAF/x can provide you with the ideas and information to make your Amiga sing, dance and perform up to its full potential.

Each issue you will get timely news features, product announcements, reviews, tutorials, and a solid editorial content. GRAF/x also offers a companion disk set with fonts, objects, clipart, artwork, animations, and so much more.

Subscription rate $19.95 for 6 issues.
Special Charter Rate $14.95

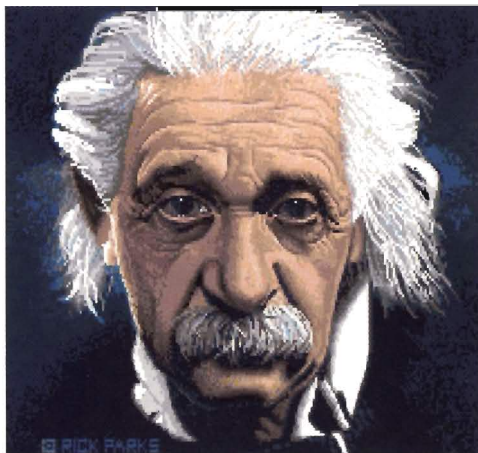Don't wait! Subscribe now and save 37% off of the cover price. Subscribe by using the order form, or for immediate service call toll free 1-800-284-3624.

CONTENTS

Paint & Animation Software

A stunning Amiga painting by Rick Parks.

Amiga Productivity

Prowrite by New Horizons

From Music to MIDI

Just some of the powerful music software available for the Amiga!

Special Items

Technical Support

If you have a problem operating part of your magazine, please give us
a call for help. Technical support is being handled by NewAge
Computers. When you call, state you are calling for A.X. Technical
Support, and please have the Issue number, and any other relevant
information ready. 301-220-1296 (10am to 5pm EST)

About This Special Edition

Welcome to the Amiga! But, after you
get the pretty Amiga boxes home, af-
ter you dig through all the styrofoam
bats in search of the power cords, af-
ter the monitor is connected, and af-
ter the electrical plug is IN the wall
socket. . . then what? Then. . . hit the
ON switch, and it's time to learn
about the Amiga. What it does, how
it does it, and why it does things that you might not under-
stand at first.

This publication is intended to help you with that learning,
and to give you some programs and utilities that don't
come in the box. The disk set contains an extensive collec-
tion of useful utilities, information files, pictures, programs,
and even an animation, all arranged in an easy mouse-
clickable way on the disks (except the sourcecode files
and such, but you'll get to those in good time). There's
advice, too, on what can go wrong, go wrong, go wrong.
. . Answers, too. Answers to questions that are frequently
asked by new Amiga owners.

The Amiga is an incredibly fine computer, and it does SO
many things and in so many varied ways, that there is no
possible way to tell all about everything. This covers the
basics, though, and in as simple, and easy to understand
manner as possible.

Getting to know the Amiga is just like getting to know a
new friend. Explore the Amiga's personality. Learn its wan-
ts and needs, and try to understand when it complains.

Have fun and be patient, and the Amiga will richly reward
your efforts.

J:

STARTUP SEQUENCES

by Mike Hubbartt

The Amiga startup-sequence file is a file full of commands that are executed when your Amiga starts up. It is found in the "s" directory of the Workbench disk, but don't worry if you don't see a drawer named "S" when you open the disk's window. It doesn't have an icon, but it's there. In computer terminology, the startup-sequence is known as a "batch" file, also referred to as a "script" file. It's a list of programs and their arguments, all of which are to be executed in turn, in the order listed, when the file itself is "executed". That means, when the computer starts running.

Since the startup-sequence is always executed (if there is one present) when the Amiga is powered on and booted with the Workbench disk, this file can be easily modified by the Amiga's owner to give a customized Amiga working environment. Various programs also do things in the startup-sequence to customize the system to the way they need them to operate - for example, setting up logical drives, ramdisks, computer "stack" space, etc.

You don't have to do anything to the startup-sequence, or even understand it, in order to enjoy your Amiga. You can ignore it totally, and live happily ever after. However, there are a few things that are nice to do by adding to or changing the startup-sequence, and this article will tell you how to do it, and a little bit about how and why.

To view your startup-sequence, you'll need a "text editor." The computer will NOT execute a startup-sequence that has characters in it that it doesn't like. That means, any old wordprocessor won't do. The computer wants pure, uncluttered TEXT, not formatted, and not containing any binary (as most wordprocessors normally save their files formatted with). There are many text editors on the market. The simplest, and most vanilla, is ED, which comes with your Amiga Workbench. ED is a CLI-ONLY file. That is, you must deal with the CLI window in order to use ED. *This Beginners Special contains a special program called HED, which can be operated from the Workbench, and which does exactly the same thing as ED. HED also offers an online HELP facility, so you can learn the editing commands easily. Use either one of these - or anything else - you like.*

First, open the file s:startup-sequence with the text editing program of your choice. The original startup file for Workbench v1.3 (some variation may be present, due to there being three different versions of the 1.3 Workbench in use) contains the following commands:

Addbuffers - add cache buffers for df0:;
SetPatch - patch ROM 1.2 & 1.3 kickstarts;
FastMemFirst - change memory access order;
BindDrivers - add extra system hardware;
SetClock - load in real time to system;
FF - Fast Fonts, to speed up text display;

SetMap - sets proper keyboard map;
LoadWB - loads in the WorkBench.

Addbuffers is used to specify memory for holding information from a disk. This can be used with all disk drives, and with hard drives also. The purpose of Addbuffers is to speed up disk access by storing what it gets in a place in memory. Using this command takes up memory, however. The maximum value to set Addbuffers to is 25 to 30 for each drive, anything over 30 does not help a lot on access improvement. For speeding disk access, and storing ("caching") stuff from the disk drives, there are two commercial programs that are much better than Addbuffers: Blitzdisk from Microsmiths and Faccll from ASDG. Both of these products yield a major improvement over Addbuffers.

Addbuffers is located in the c directory on the Workbench disk. That's another one you can't see from the Workbench, but it's there. You can explore these "invisible" directories and files with the CLI, however.

SetPatch is a program that is used to fix bugs in the 1.2 and 1.3 Kickstart ROMS. This **MUST** be the very FIRST line in the startup-sequence. Use the "R" option if your Amiga has more than the standard 512K of Ram. SetPatch is also located in the c directory.

FastMemFirst is a program in the System directory, and it is used to change the order of memory allocation. You need to use this program only if you have memory in your Amiga beyond the standard 512-K. If you don't need it, you can eliminate it from the startup-sequence, as it is just a waste of time.

BindDrivers is a command that adds extra hardware expansions, such as some types of harddisk drives, automatically to the system. The additional hardware, must have a device driver (a small piece of code) in the "Expansion" drawer on the Workbench disk. If you don't have expansion devices which need it, you can get rid of both the BindDrivers command in the startup-sequence and the Expansion drawer that it looks for. BindDrivers is located in the invisible c directory.

SetClock is the command for loading the time from the battery-backed up system clock (if there is one). An unexpanded Amiga 500 or 1000 has no clock. If you purchase the A501 (or a third-party equivalent) for the 500, you need the SetClock command to get the time from the clock into the computer. Only the clock's tiny memory is battery backed up (otherwise the battery might be bigger than the computer!), so the computer needs to read the special clock memory on startup. Amiga 1000 clocks, of which there are several, none made by Commodore, have their own clock-reading and setting utilities, and generally don't use SetClock. SetClock is located in the c directory.

The Amiga's time can also be set or changed using the Preferences program, or by invoking the "DATE" command from either the CLI or (ahem!) in the startup-sequence.

FF is FastFonts, a commercial program previously released separately by C.Heath of Microsmiths, Inc. This program speeds up text display to the Amiga screen. If you want to turn it off (for what reason, who knows), the command FF -N turns it off, and FF -O turns it back on. This program is also found in the c

From Day One

*Some of the things you should know when
you first open your computer's box.*

By John Thompson

An article for new Amiga users? Me? At first I was hesitant to attempt it, but AX's editor, can be quite persuasive. I will admit it IS a bit difficult typing with one hand twisted behind my back like this, but I'll do my best. As a matter of fact, the more I think about it, who could do a better job on an article for beginners? Why, even after using an Amiga for two years, some people still say. . . well, nevermind.

In this article I will cover basic mouse operations, including point-and-click, double-clicking, dragging, and menu selection. My primary example will be familiar to even the newest Amiga owner: the Amiga Workbench screen. What you learn will not be restricted to the workbench, however. Thanks to some smart planning back in the first days of the Amiga, these same operations are used just about the same way in almost every Amiga program.

Let's start with the basis of all mouse operations, the mouse (what else?).

Go ahead, take a look right now! As you can see, your mouse has TWO buttons. Put your hand on the mouse; the buttons should fall naturally beneath your index and second finger. In the paragraphs ahead, you will find out that each of these buttons serves a clear-cut role in the Amiga user interface.

Move the mouse around; unless something is very wrong, you should see a little arrow on the screen, mirroring the movements of the mouse. This is called (surprise!) the MOUSEPOINTER, or sometimes it's called just "the mouse." Move the mousepointer down to one of the little pictures ("icons") on the screen. Make sure the arrow is right on top of the center of the little picture (the "icon"), not just pointing under it, and not just pointing to the icon's name underneath it. Now press the left mouse button, the one under your index finger if you are right-handed. Just once. Quickly, and let up. Did the icon light up? Or move? It changed in some way? Good! You

have just done a 'point-and-click'.

Let's practice. Click some more icons. Once each. After you do this awhile, your hand will automatically move around on the desk in perfect synchronization to the motion you want to happen on the screen. It becomes second-nature quickly.

Ready now? Okay, take a look at the Workbench picture that accompanies this article. (It's on the disk, too, so you can actually see it on the computer screen) That picture should look familiar; it's a couple of windows from the Workbench screen. I am going to refer to it a lot in this article; just refer to 'Picture 1' whenever you want to take another look. While the picture is being displayed on your screen, don't try to click on anything in that picture, though. Well, you can TRY, but nothing will happen. It's not really a Workbench, it's just a *picture of a Workbench.* I am going to talk about it as if it were a real Workbench, but remember, nothing works in a mere *picture* of a Workbench.

Three types of things appear on a Workbench screen: WINDOWS, GADGETS, and ICONS. The windows are those big rectangular boxlike things; this screen shows two windows, called 'Ghosted Window' and 'Active Window'. 'Active Window' is written in nice clear print because it was the last window used. 'Ghosted Window' (notice the fuzzy, ghostly print?) can be made active by clicking on it (in its top border), or on something inside it. Don't worry about whether a window is active or not, just click on whatever you want to. Doing so activates the window you click in, automatically.

What do windows do?

A window is like a box; actually, BOX would have been a much better name!. A window holds things. . . things called ICONS. The icons, those small pictures inside the window, contain about half the power of the Workbench.

*Three types of
things appear
on a
Workbench
screen:
WINDOWS,
GADGETS,
and ICONS.*

Sample Workbench Screen

Each icon represents something on your disk. It could stand for a program - like a wordprocessor or a music making program - or a data file (like a song, a picture, or a text file) that can be used by a program, or even another window, variously called a "drawer", a "subdirectory", or a "folder". "Drawer" icons are mainly ways of inflicting a pattern of organization on the Workbench screen, so you can sort things out easily.

Use a DOUBLECLICK on the mouse's left button to activate any icon, no matter what type of icon it is. To do a double click, point at the icon you want and press the left mousebutton two times. Fast! Click-click. If an icon stands for a program, a doubleclick will usually start that program running. A doubleclick on a data file icon will attempt to start the program that created it, usually, and if it fails, you'll see the screen flash, and you'll probably get a nasty message like 'Cannot Open Error #09349039'. Don't worry; all it means is that you have to be running some program to get that icon to work with that data file.

A doubleclick on a DRAWER icon (look at the Picture to see what a drawer looks like) opens another window. Yes, that's right, open a drawer and you get a window! One window can hold another, just like a big box can hold a small box (I told you box was a better word!). And inside the second window, what do you find? More icons! Not in this picture, though. A window can also be empty. The Amiga has no limit to the number of levels of subdirectories or windows it will keep up with. You can have as many as you have patience to put up with.

Not all icons are inside windows. Look in the top right corner of Picture 1. You should see a drawing that vaguely resembles a disk, with the subtitle 'DiskIcon'. This is a DISK ICON (I bet you could never have figured that out on your own!). This icon stands for the contents of an entire disk; double click to open it, just like any other icon.

You should have two disk icons if you have two drives. If you have only one disk icon, it probably means one of your drives is empty, and THAT means you are hearing an annoying click every thirty seconds or so. Your Amiga is hungry; feed it a disk. Seriously, put a disk, ANY disk, in the drive and the clicking goes away. The clicking doesn't hurt anything, though. It's the Amiga, checking to see if there IS something there that it should worry about. If it does find something, it will load the disk's disk icon and put it on the Workbench screen for you, in case you want to open it up.

What about GADGETS? Gadgets are how you control windows, and a lot of other things too, across the Amiga operating system. Using gadgets, you can change the size of a window, move it around, or even get rid of it all together!

How can you move a window? Use the DRAG BAR, the top section of a window, where the window title and the lines appear, is "active". It knows when you click it, and if you want to move the window, that's its job. To DRAG the window around, move the mouse pointer to the drag bar, press the left button, and HOLD IT DOWN. Now, keep holding the button down and move the

mouse. You should be able to move the window anywhere on the screen you want! If you let go of the left mousebutton, the window repositions itself where you stopped. Try this now. Move a window around, and when you are happy with the window's location, just let go of the mouse button!

The SIZE GADGET is another handy little item. Located at the right bottom corner of a window, it is used to adjust the size and shape of the window. Take a look at the picture; the size gadget looks like two boxes joined at one corner. To operate it, click on it, hold the button down, and drag that corner around. The window can stretch out to fill the entire screen or squeeze in so small you can't see any of the icons. When the window is the size and shape you want, just let go. Not all windows have sizing gadgets, but the ones that do will let you adjust them to suit your taste.

If you shrink a window, it may be too small to show all of its icons. They are still there, even though you can't see them. To work with a window like this, you need to use the PROPORTIONAL SLIDERS. These are the bars located at the bottom and the right of the window. Look at Picture 1. The bars at the bottom and right of 'Active Window' fill their spaces completely. This means you are seeing one hundred percent of the window's contents. Big deal, 'Active Window' is empty!

The bar at the right side of the 'Ghosted Window', however, does NOT fill its space. This means the window is not big enough to show everything. The bar fills the same percent of its space as the window shows; that's why it's called 'proportional'. Here the bar fills most of its space; you are seeing about four-fifths of what is there. If the bar was very small in relation to its space, you would know there was a lot more to see. There are two ways to see what is down there; you could just stretch the window until it gets big enough to show everything, or you could move the slider bar, the same bar that told you there was more to see.

The slider bar, too is "active." It knows when you click on it, and it's there so you can scroll around a window's contents without resizing the window. Drag the slider (you know how to drag now) down to the bottom of its area, and the contents of the window will scroll up, showing you the bottom of the window space. Now you can't see the top any more, but you can see the bottom.

Proportional sliders are used in many, many programs on the Amiga. The ones described here works the way Amiga proportional gadgets are supposed to work, but some programs don't conform. However, try this method on them first, and if they don't behave in this manner, complain bitterly to the maker of the program.

Almost every program has file selectors, used whenever you want to save or load stuff: text, music, a picture, anything. In a file selector the window holds a list of words, the names you have given your files. If you use a program regularly, you will quickly create so many files that the

names cannot fit in the window. The window will be full of names, but there will be more that you can't see. To look at (and select) any of the others, move the slider bar on the right.

Remember, the *proportion* of the bar to the slider area shows you pictorially how much of the window contents you can see. When you create a LOT of files, only a small percent will fit in the window, and the bar becomes very short. Dragging the bar still works, but it becomes harder to control. Fortunately, sliders can be controlled other ways. Most sliders have an arrow at each end. If you click on the arrow itself, the slider will move a tiny amount; in a file selector, it might scroll just one name. If you click on the empty space above or below the bar, it will scroll one windowfull; if a file selector showed ten names, a click here would display the next ten. Don't think you will ever have that many files? Just wait!

On the left side of the 'Ghosted Window', you will see something that looks a lot like a proportional slider. This is a "gas-gauge" indicator for how much of the disk is full and how much is free for you to use. The space remaining below the F shows how much disk space you have left. Not every window will have this gauge, only windows opened by doubleclicking a disk icon.

If you look in the upper right corner of the windows in the illustration, you will find the FRONT and BACK gadgets. See how 'Active Window' is in front of 'Ghosted Window'? If you wanted to see the bottom of 'Ghosted Window', you could click the BACK (left) gadget of active gadget, or you might click the FRONT (right) gadget. I always have trouble remembering which is which, but if I click the wrong one, my second choice is usually right. These gadgets are mainly used when the screen becomes cluttered with five or six windows.

Five or six windows? Like I said before, just wait. If you DID have that many windows, though, you would probably want to get rid of a couple. To do this, use the CLOSE GADGET, the box with a dot inside at the top left corner of a window. Click there and that window is history!

What you have learned about gadgets doesn't just apply to the Workbench! Almost every Amiga program uses these same gadgets. Not every window will have all these gadgets, but when they appear they will always look the same and be in the same place. Once you get the hang of them, you will be able to find your way around a new program with no trouble at all.

So far we have only used the left button; now we will try the right one. The right button is used for menu selection. When you press it, words will appear across the top of the screen; these are MENU TITLES. Amiga menus will appear, if there are any, no matter what else might be going on, and no matter whether there is a visible "titlebar" or not. Don't worry, whatever is underneath the titlebar is stored by the computer before it puts up the menus, and automatically restored where it came from when you're done with the menus and let go of the right mousebutton.

Move the mouse to one of the words (there are only two). By now you have noticed that you have to hold the right button down, otherwise the words disappear. When you touch one of the titles with the mouse, a MENU will appear. Now, STILL holding down that button, move the mouse up and down the list of MENU ITEMS. As you move the mouse, a sort of bar moves up and down the menu, HIGHLIGHTING the items. Each word represents a different option or action that you can take at this point.

In most Amiga programs, all of the various functions of the program can be controlled from the menus or by gadgets on the screen. This is one of the things that makes the Amiga such a friendly computer! If you use a program a lot, however, you may find that moving the mouse and selecting a menu item slows you down. You notice this more if you choose the same two or three items over and over again, and especially if you are using a program like a word processor, where your hands are on the keyboard, not the mouse. To speed things up, good programs offer KEYBOARD COMMANDS that duplicate many of the menu selections. Usually the keyboard equivalent for a menu command is written right on the menu, beside that selection.

Some key commands are even permanently built into the Amiga itself. If you are running and using two or more programs at the same time, you can use Amiga-M and Amiga-N to flip between them. Amiga-m means, "hold down the LEFT Amiga key and press the "m" key. Last, the most useful, and potentially the most dangerous, is CTRL-Amiga-Amiga. DO NOT TRY THIS NOW! That reboots the computer!

Sometimes called the 'Vulcan Neck Pinch', this command completely resets your Amiga. Anything in the computer is erased, and you will see the same 'Insert Workbench' message you see when you start up. If you were in the middle of something, you lose **all** your work. That's why you must press three widely separated keys, all at the same time, to make it impossible to reboot by accident.

What would happen if, instead of doubleclicking an icon, you only pressed the mouse button one time? The icon would be highlighted; that is, it would change colors, showing that it was SELECTED. In Picture 1, Drawer2 is selected. Selected for what? All sorts of things. If this were a real Workbench, you could get info about it, change its name, or even delete it from your disk!

First you would select (click on) the icon you wanted to work with. Next, you would press the menu (right) button, move up to the title bar, and pull down the menu and make the selection you want. In this case, it would be 'Workbench'. There is a whole list of things under that heading. Pull the mouse down to highlight a selection. If you choose 'Info', you will get a screen full of information about the program or data that your chosen icon represents. When you finish looking, click on 'Quit' to get back to the Workbench.

Sometimes called the "Vulcan Neck Pinch"- this completely resets your Amiga!

"**SELECTED Icon**
Instead of DoubleClicking, just press the left mouse button once. The Icon becomes highlighted.

How to RENAME something

Suppose you chose 'Rename'. A wide, skinny window would pop up, asking you for a new name. Type it in, then press the RETURN key once. (If you decide you like the old name after all, put it back the way it was and press RETURN.) The new window disappears, and there is your icon, newly renamed. You can rename a disk too; just select the disk icon instead of an icon from inside a window.

How to get rid of a file

Discard is used to get rid of files and programs you no longer want. It works much the same as 'RENAME', but it asks you if you are sure - that is really, REALLY sure - you want this file or program deleted. Be careful here, because as the window warns you, once you delete a file or program, you *can't* get it back.

To 'unselect' an icon, just select something else, or, if you don't want anything selected, just click on any blank area in the Workbench or any open window. If you press the menu button (right mouse) and look at the menu now, you will see that some of the menu items are written in that fuzzy Ghosted print. This means they are inoperative; you won't be able to use them until you select an icon to use them on.

How to copy a file

Once you get rolling with your Amiga, one of the things you will want to do is copy files or programs from one disk to another. Again, the Workbench makes it super-easy for you. First, you will need to open two windows: the window where the icon is now and the one in which you want to place your copy. You will probably have to do some disk swapping to do this, especially if you have only one disk drive. Put in one disk, double click to open the disk window, and maybe open a window from there if you need to. Pop that disk and insert the other, and open your windows for THAT disk. The order doesn't really matter. You may need to drag some windows around to see everything, but you should be able to handle that now. Now that you have your two windows set (there may be more, but we are only interested in two), drag the icon of your choice to to the window where you want it. Move the pointer to the icon, click on, and hold the button down. Now, still holding the button, move the mouse, and the icon should follow. Slide the icon wherever you wish and release the button to 'drop' it.

At this point, a window will probably appear, telling you to 'Insert Volume So-And-So in Any Drive'. "Volume' just means the disk with that name. You may have to change disks two or three times, especially if you have a one drive system. I used to worry that I would put the wrong disk in the wrong place, and mess up everything, but the Amiga is smarter than that. If you slip up, all you get is a message telling you to fix it. Just follow the messages on the screen about the disk swaps and you will have no trouble.

How to back up a disk

MAKE A BACKUP COPY OF THIS DISK. USE THE COPY AND KEEP THE ORIGINAL IN A SAFE PLACE." If you are not familiar with these words already, you soon will be; almost all commercial software (except games) has this in the documentation somewhere. Do it; it's good advice. First get a blank disk ready; now insert the disk you want to copy. To make a backup, select (singleclick) the icon of the disk you want a copy of, press the menu button, and select 'Copy' from the file menu.

Well, that about covers basic mouse technique. We have covered windows, icons, gadgets, and what to do with them. Once you have mastered these simple operations, you are ready to dive into almost any Amiga program. I hope everyone found SOMETHING useful in this article! Have fun.
-=-

> ### To unselect an icon, just select something else, or click on a blank part of the Workbench screen.

Printer Drivers

Making that printer work on your Amiga. Each type of printer requires a very specific driver to make that printer work.

by Jay Gross

What is an Amiga printer driver?

On the Amiga, a printer can be installed into the system, and actually WORK with any correctly programmed Amiga software, if it has a correct "printer driver" installed. A printer driver is like a little program. It takes the directions that a program sends out, such as "boldface", and translates them to what the printer understands, e.g. "<ESC> B 1".

See, printer codes that actually command the printer to go into its various modes are different from printer to printer. The codes would be particularly different for different types of printers, for example, dotmatrix, versus laserprinters, versus color printers, etc. The Amiga's approach to this immense diversity allows software makers to make software that talks to the computer's printer "device" in a language that is standardized. If you want boldface, you don't have to know what printer is hooked up, or what its specific code for boldface is. All you do is tell the machine to tell the printer you want boldface.

The computer can do just that - relay the message - as long as there is a correct "printer driver" in place. The driver is the part of the system's printer support that deals with the specific codes on the printers themselves. So, only the printer driver is specific to the printer. Nothing else.

The Amiga comes with a bunch of printer drivers for a number of common types of printers. Many of these - particularly the Epson ones - will also correctly address other manufacturers' printers. There are, however, some printers which are not represented, so if you have one of those - and they are *real* esoteric - you'll need to find or buy a printer driver to make the computer honor the printer's tricks. Until then, though, you should use the "GENERIC" driver that comes with your Amiga. It doesn't do any graphics or fancy printer tricks, but it *will* print characters on almost all printers on the planet. You can look for printer drivers at the store where you bought your Amiga, on computer bulletin boards and commercial computer networks (such as PeopleLink), or at usergroup gatherings.

All printer drivers aren't the same. An AmigaDOS 1.3 printer driver won't work with any other version of the system software (except Kickstart 1.2), and a 1.2 printer driver won't work with AmigaDOS 1.3 (even with Kickstart 1.2 in place). Make sure you get the pieces to match correctly. The best way to assure this is to use the printer drivers and other parts of the system code from the Amiga Workbench disk that comes with your computer.

Remember, many Amiga software packages are shipped on bootable Workbench disks, and the printer drivers and system software included on those disks will NOT contain any custom printer driver you have, unless you put it there, and even if you do, it won't work unless it's built for the right version of AmigaDOS. If you have trouble printing (mismatched versions will usually just refuse to print anything), boot the computer on your own boot disk, and run the software from the Workbench screen. Harddisk users will have none of this problem to deal with.

J:

> **All printer drivers are not the same. Make sure you match the printer driver to the version of Workbench you are dealing with.**

Introducing Amiga
M I D I

by John Thompson

This isn't a how-to-use-MIDI article, mainly because I'm just learning how to use MIDI myself. I have had my little MIDI setup for a few weeks, and I'm still exploring just what it can do. So what am I doing writing a MIDI article? First, every MIDI article I have read seemed to be written by a MIDI expert, writing for other MIDI experts. Second, if I write (and sell) this article, my MIDI setup becomes tax deductible.

Experienced MIDI users won't find any advanced tips here; just skip on, unless you are looking for a good laugh. On the other hand, if you are or have been as confused about MIDI as I was, read on.

I thought about getting into MIDI for a while, but the articles seemed technical and intimidating, and the price appeared astronomical. Finally, I bought a small MIDI system. That's when I made a surprising discovery. *MIDI is EASY!* Hooking up the setup is about as complicated as plugging dubbing cables into a VCR. Plug a MIDI interface into the Amiga, plug two cables into your MIDI instrument, and boot up the Amiga. That's it! *MIDI really is easy!*

MIDI is the Musical Instrument Digital Interface. Musicians hook up MIDI so that one keyboard (or guitar or drum machine) can use another as a 'slave'; you press a key over HERE but the instrument over THERE plays. MIDI is also used for sequencing; a musician can play a line of music, edit and change it, combine it with other lines, and store it to be played back later. Have you ever seen a three- or four- member band on stage and wondered where all those other parts were coming from? That's MIDI sequencing.

I wanted MIDI to overcome the Amiga's four-voice limitation. I wanted more; I wanted drums <u>and</u> bass <u>and</u> piano (and not just one piano note, either) <u>and</u> horns <u>and</u> organ... all at once!. Now I can use up to sixteen notes at a time, with nine different instruments. That's counting the four Amiga voices, each on a different instrument, and twelve MIDI voices and five instruments from the keyboard. What a difference!

Getting into MIDI wasn't nearly as expensive as I feared, either. The interface, a little beige box that plugs into the serial port, costs about fifty bucks. The expensive part is the synthesizer; they can run into thousands of dollars. Since I was not planning on performing on stage or recording an album any time soon, and since I couldn't afford a full-blown synthesizer anyway, I decided to make do with an electronic keyboard.

You can't use just *any* keyboard, though, it has to have MIDI IN and MIDI OUT capability. Look for round, five-pin sockets on the back. Be sure and check for this! A lot of big, fancy looking keyboards don't have it. Most stores that carry keyboards will have one or two MIDI models. I have seen some models (with MIDI!) for less than a hundred dollars. Well, okay, it was $99.95, but a lot less than I expected. After checking around, I bought a Yamaha PSS-480, available in department stores everywhere in the $160 to $180 price range.

To connect the keyboard to the MIDI interface you will need two cables. In a music store, these will be called MIDI cables, and will run about seven or eight bucks each. Make sure your cables are long enough; I almost bought four-foot cables, but I decided to spring an extra dollar and get six-foot cables instead; now I find that a couple of feet more would have been even better.

Before I actually bought anything, I tried to collect as much information as possible. I quickly discovered that the only people who knew anything about Amiga MIDI were those who had their own setup at home. People in music stores were amazed that you could hook a keyboard to a computer at all. Computer dealers, on the other hand, knew almost everything about MIDI interfaces: the price, the different companies, MIDI in, out, and through, DIN cables, the works. They just didn't know what the keyboard would *do* when you hooked it up.

The Yamaha PSS-480 is a five-channel multi-timbral instrument with 100 presets and twelve polyphonic voices.

These are the sort of terms that got me confused, so let me try to explain. A *preset* is a sound which is, well, pre-set at some factory in Japan. Each instrument has a number; instrument 15 is a trumpet, say; 85 is alto sax, and 97 is a kazoo. To select the sound you want, you ask for it by number. Many pro synthesizers don't have sounds programmed into them; you create you own sounds or load them in as you need them. Still, the sound is 'pre-set' in the sense that it is set up and given a number before a song starts. You can even change presets - that is - change from instrument number eight to instrument number thirty-nine, in the middle of a song. One more thing; just to confuse things, a preset selection can also be called a patch.

Everything I read about CHANNELS just made me more confused. Originally, synthesizers could only make one sound at a time; you could make it sound like a flute, or a sax, a who-knows-what, but only one at a time. The next synthesizers (and keyboards) were POLYPHONIC; they could sound like five flutes or seven saxes, but not a flute and a sax together. Along comes MIDI, the Musical Instrument Digital Interface. Want a flute? Set up a synthesizer to play a flute, plug it in, and send it a signal. What if you want a flute and a sax together? Get another synthesizer! Want drums? Add a drum machine. How will these machines know which signal is which? To keep things organized, the signals are sent in CHANNELS. The first synthesizer, playing flute, is channel one. It ignores stuff on channel two (the sax) and channel three (drums). With this setup you could have five flutes, six saxes, and all the drums you could stand. The MIDI system supports sixteen channels, so theoretically (if you had the money) it is possible to control sixteen different devices!

Technology marches on. Suppose you took the circuitry and chips from several synthesizers and packed it all into one case. Now you could have flute, sax, and drum sounds all coming out of the same box! You would only have one physical instrument, but you would hear three. When you sent the MIDI signals, channel one would still be flute (or flutes!), channel two would be sax(s), and three would be drums. A synthesizer like this is called MULTI-TIMBRAL.

The Yamaha PSS-480 is a five-channel, multi-timbral instrument with a hundred presets and twelve voices. Does it make more sense now? It comes with one hundred possible sounds. You can play five different sounds at once. You can even have several notes of each 'instrument' at the same time, so long as the total doesn't go over twelve. To top it all off, you can still use the four Amiga voices too! Not only does that give you a total of sixteen voices, you still have access to the Amiga instruments you like, especially digital sound samples.

Almost all Amiga music packages support MIDI. I have used my MIDI keyboard mostly with Deluxe Music Construction Set, but I have also tried it with Sonix. It works well with either. I like working with Deluxe Music because it supports standard music notation; it is easier for me to write (and especially edit) music that looks like music.

How much trouble is it to control the MIDI instrument? None at all! With Deluxe Music, you normally load an instrument from a disk and use the Set Instrument function in the Measures menu. To change this to MIDI, you choose a channel (it doesn't matter which), choose the preset sound you want, and use the Set Instrument function in the Measures menu. Think of it as simply having sixteen Amiga voices! The only possible confusion is if you have set channel two to piano, for example, and later, maybe on a different staff, you absentmindedly set channel two to flute. Suddenly your piano part turns to flute! To avoid this confusion I give my MIDI channels, one through five, staves one through five of the score.

I hope this article has made MIDI a little more comprehensible. I haven't talked about sequencers; that would be a bit advanced for this article, and besides, I don't have one yet. MIDI is a very powerful system that can expand your Amiga's musical capabilities greatly; if you are interested in music, and you find the Amiga's four voices just aren't enough, MIDI is the way to go. Remember, MIDI is EASY.

-=-

Wordprocessing Overview

Updated for the '90s, this overview includes all the latest in Wordprocessing Power available on the Amiga today!

by Jay Gross

When I first heard it, the term "wordprocessing" conjured a vision of a Laputan mechanism plucking prose from random wordlists. That was long ago. In "those" days, a "small" computer would have filled a warehouse, and a "wordprocessor" was a massive collection of electronic gadgetry requiring both a skilled artisan to operate and the services of a mysterious wizard known as "programmer," who fixed things when they didn't work, which was frequently.

Mercifully, those days now are as much a part of yesteryear as zeppelins and Monkeys. Slimmed down, streamlined, and no longer requiring even a competent typist, much less a studious programmer, wordprocessors have insistently insinuated themselves into the fabric of our existence. These days, typewriters are old tech. These days, too, when you talk about wordprocessors, you no longer talk about hardware, but about plain or fancy software packages.

Even as software, today's wordprocessors do everything but clean out the refrigerator. Especially if you get the ones the computer trade refers to as "full-featured." Wordprocessors align text left and right (justify), center lines, automatically page-break, generate page numbers, keep track of whether a page is even or odd and put the page number to the right or left as required, and a host of other neat tricks of ever increasing complexity - lately even including incorporating graphics and variable typefaces (fonts). They allow the user to format all these things simply (hopefully), and the better ones (by some opinions) go to the trouble of showing the document on the screen exactly as it will appear on paper. Some even compile tables of contents and indices. Automatically. The higher end ones offer spelling, and even thesaurus assistance.
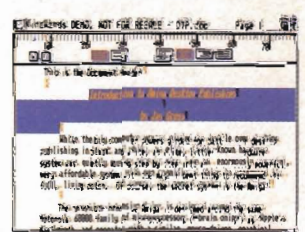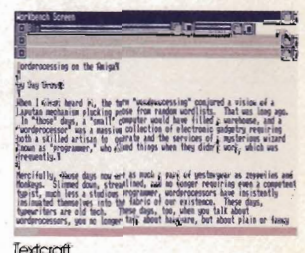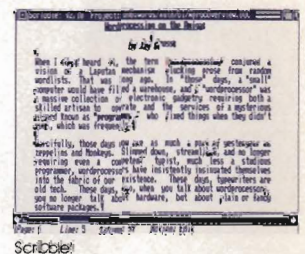
Like magic, only better.

Amiga wordprocessing has, debatably, caught up to the bluer machines in higher level features, and the Amiga has wordprocessing well covered on the home user level. Although there is not yet an immense variety of programs to choose from, you won't go lacking for features you'd like to have, and the Amiga has some stellar tricks of its own to add. Color, for example.

Wordprocessing has its own jargon.

Since the early days, people have been using 'W' codes to talk about wordprocessors. First were the wonders of WYGIWYG.

ProWrite 2.5

excellence! v1.14

Pen Pal 1.0j
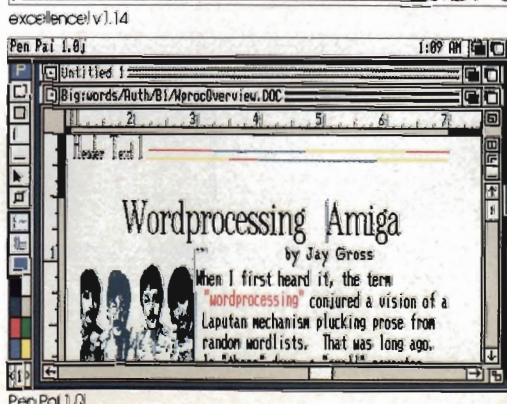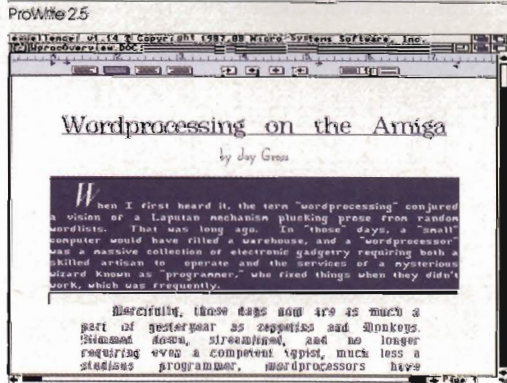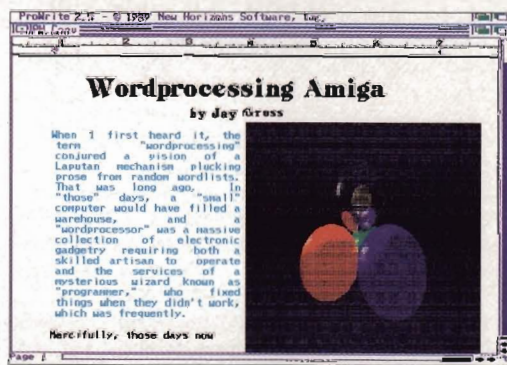
In search of the ever elusive WYSIWYG

Scribble!

Textcraft

KindWords

WordPerfect

Got The Music In Me
A Beginner's Guide to Amiga Music Software

by Sally Ann Hubbard

There it is. The best affordable creative tool available, your new Amiga. You've played with Workbench and Basic. Now you're eager to start creating music like the demos at the store, but there are so many software packages and you can't buy them all. Which one do you choose? All the programs have their own strengths and weaknesses. No one program fulfills all needs. Some programs specialize in true-to-life graphics and sound, some in synthesized instruments creation, some in ease of use, and others in MIDI capability. Here's some advice on sorting it all out.

The Amiga's sound chip can play sampled sounds or it can synthesize sound. Sampled sounds are created from real sounds. Special equipment, called digitizers, converts the analog sound into numeric values that the computer can use. The numbers are a representation, or sample, of the actual sound. Depending on the software used, these samples can be manipulated to create different pitches, playing styles (staccato, legato), durations, volume levels, etc.

In order to standardize how this information is stored, Electronic Arts developed, and Commodore has endorsed, the Interchange File Format (IFF). This basic format also has specifications for graphics, scores and text files. That's why you read so much about "IFF pictures". Instruments and sounds conforming to this standard are called IFF-8SVX (8 bit Sampled VoX). Scores are designated as IFF-SMUS (Simple MUsic Score). You don't need to have a working knowledge of these formats, but should know of them when choosing programs. Otherwise, you might find yourself stuck with software that won't let you exchange instruments or scores with other or future products.

Sound reproduction on the Amiga is done basically by setting the duration, volume and frequency of the note, the timbre (sound wave data) and the channel to use. With sampled sounds, the timbre is the instrument. The duration, volume and frequency settings are computed by the scoring software. Some programs also allow you to specify which of the four channels to use.

Almost all commercial music software provides some type of MIDI compatibility. MIDI (Musical Instrument Digital Interface) is a "standard" for handling external instruments. In general, some software allows realtime MIDI input. Others only allow sequencing. Since some programs that allow MIDI sequencing will also allow the internal voices to play simultaneously.

Deluxe Music Construction Set

*DMCS has a strong emphasis on traditional music notation. Features include:*
- Maximum eight staves, two tracks per staff, eight notes per track
- Maximum nine IFF instruments per score
- Duration values from thirty-second to whole notes
- Single dotted durations
- Limitless tied values and slurs
- Triplets and Quintuplets
- Octave Raise and Octave Lower
- Individual or group dynamic range control (PPP to FFF) plus crescendo and decrescendo
- All 15 standard key signatures plus change key control and transposition
- All standard time signatures plus ability to set unusual signatures like 25/16.
- Repeats with first and second endings
- Complete tempo control by measure
- Sixteen note play styles, e.g., legato, staccato modulation
- Cut and paste editing options
- Repeat play, section play, flash notes, and player piano playback options
- Sixteen-channel MIDI sequencing, in addition to four internal voices
- Limited MIDI input.
- Excellent score printing quality
- Selection of staff sound on/off, play staff one octave higher or lower than written
- Score printing options include staff hide, spacing below and above staff, hide instruments, hide key/clef, paged score format, score width and number of bars per line
- Include text like lyrics, special score markings using any Amiga font
- Enter notes into score directly on the staff, through MIDI input or by clicking on the graphic piano keys
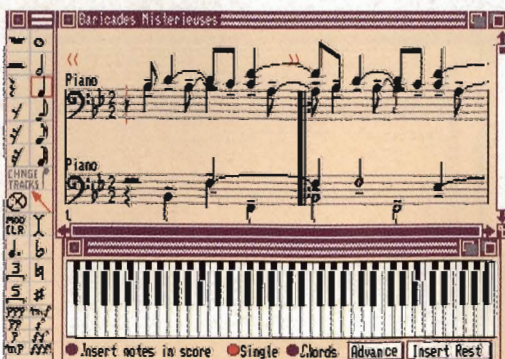- Store scores in IFF-SMUS or special DMCS format

And now for some of DMCS's weaknesses:

Sonix ▶
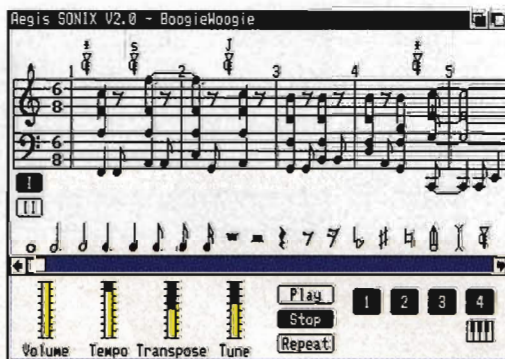
Deluxe Music Contruction Set ▶

The Latest Amiga Music

by Jay Gross

While this special issue was in preparation, at least two new Amiga music titles were preparing to go onto dealers' shelves. They are Bars&Pipes from Blue Ribbon Bakery, and Music Modules from Musicomp Technologies. These titles are worth a look, if you're looking for something to spruce up your Amiga music with. In addition, serious MIDI musicians will definitely want to consider the several Amiga MIDI-specific titles, like the new Music-X from MicroIllusions, and a host of other titles.

Music Modules comes in two flavors. The "Music Modules Starter Kit" which includes five modules, goes for $49.95 list. The whole kit is $99.95. Music Modules Starter Kit contains these five modules:
• Keyboard Controller lets you use your Amiga's keys like piano keys, adding mouse-driven pitchbend & mouse-controlled volume setting.
• Mouse to MIDI enables using the Amiga mouse to jam with any one of 144 musical scales with pitchbends & volume controls
• Sampled Sounds Player permits using up to 40 IFF sound files at once, each having independent volume, pitchbend range, and tuning settings.
• Harmony automatically sweetens your music with one of 29 types of harmony while you play the melody, and uses multiple modules for automatic chords
• MIDI Delay & Shift provides realtime delay for MIDI playing, adjustable from 16 msec to over 8 seconds. It also gives pitchshift and feedback).

Music Modules - the whole kaboodle, that is, not the Starter Kit - will have extensive MIDI capabilities for the professional musician - in addition to all of the above, of course. The company says it will remain "easy to use and entertaining for the hobbyist," in addition to being a professional product.

Musicomp Technologies, makers of Music Modules, makes Sound Effects, too. Sound Effects gives you Echo, Flange, Chorus, Tremolo, Reverse, Harmonize, Fuzz, Compressor, EQ and other sound effects on the Amiga IFF sounds. List price is $59.95. It's not a "module," but a separate music product. Sound Effects could be used to modify an Amiga IFF sound file that would later be used by Music Modules' (or anybody else's) Sampled Sound Player.

Bars&Pipes

One of the newest newcomers to the music software shelves on the Amiga side of the store is Blue Ribbon Bakery's Bars&Pipes. The program's claim to fame is that it puts a simple, mouse interface on the more complicated things that you get to do with the program - and with MIDI.

Blue Ribbon has cooked up musical software, on which there are lots of little pictures that you can work on with the mousepointer. The "pipes" part of the name comes from Bars&Pipes' screen metaphor that describes the flow of musical information. As a plumber would install a faucet to modify the flow of liquid through a pipe, you plop a picture icon down on a "pipe" of musical information to change the way it is played, recorded, etc. The Pipeline is the basic musical boilerroom, where the main solution is cooked up, and each of the screen's pipes can process information either before or after recording from the MIDI channels.

Bars&Pipes is, nonetheless, a product aimed at professional musicians. Besides the Pipeline, the program sports a well-supplied toolbox. The musical toolbox contains magic icons that process MIDI information on its way through the pipes. Take the Keyboard Splitter, for example. And Event Filter, and Randomizer, Chord Substituter, Inverter, Transposer, Phrase Shaper, Counterpointer (wouldn't Bach be jealous?) and the Quantizer.

The Bars&Pipes Sequencer has no limit to the number of tracks you can record. Use the mousie to drag your choice of tools onto the Pipeline and have a go at the keyboards, pitch-followers, guitars, whatever. The "bars" part of Bars&Pipes is its editor, of course. Although you don't get notes, you do get musical staves, and bars on those staves to represent the music that's in the pipes. The editor also offers piano roll format, if you prefer. Type your lyrics directly over the music, and the program will print out a lead sheet. The editor lets you hear each note as you edit, and you can edit key, rhythm, and chord change information for algorithmic composition.
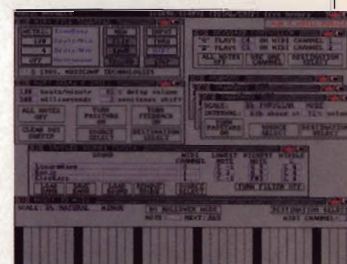
Bars&Pipes
Blue Ribbon Bakery
List price: $250
1248 Clairmont Rd Suite 3D
Atlanta, GA 30030
404-377-1514

Music Modules
Pricing listed in article
Musicomp Technologies
176 Broadway, 3rd Floor
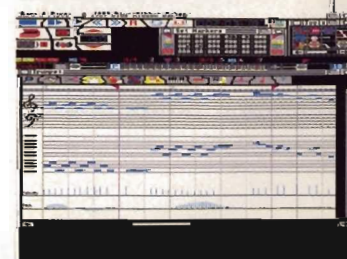Methuen, MA 01844
508-688-0599

J:
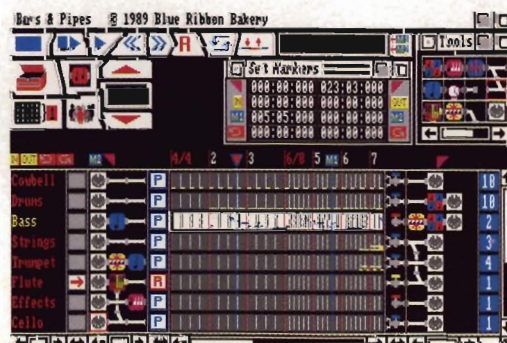
The program's claim to fame is that it puts asimple, mouse interface on the more complicated things you get to do with the program... and with MIDI.

▲ Music Moduless

▲ Sound Effects

◀ Bars & Pipes ▲

The Amiga Guru's Numbers

Q: Do those Guru Meditation numbers really mean anything, or is it just a joke?

A: Like the finest of high-end computer hardware, which the Amiga was at one time intended to be, the Amiga started life with a sense of humor. The Amiga guru is but one still-visible example. Alas, the guru has fallen victim to incessant criticism from people who don't take the humor lightly, and will be eliminated from the system software after version 1.3. However, in addition to entertaining its creators and providing its critics no end of joy, the Amiga's guru does indeed serve a useful purpose. Those numbers are not just computer-random numbers. They mean something to programmers, and most importantly, during the machine's development, to the hardware and software geniuses that

Insert Volume...

Q: Why does the computer keep asking for Workbench?

A: The Amiga system is designed to load parts of itself from disk. A program can specify which of many diskbased "libraries" and other files it wants to use, and the computer will load them. If the disk on which those files exist isn't present, the Amiga will ask you for it, and of course, those are most often found on your Workbench disk. In addition, the computer assumes that you wish all of the system to come your the disk you've booted on, even if files by those names might appear on another disk you've inserted. The computer KNOWS which disk you booted on, too, even though you might have another one named the

Questions & Answers

brought the Amiga to life. The numbers have very technical meanings for programmers, but they are very useful in debugging programs and tracking the exact cause of a crash.

So, the answer to this question is yes and no. To normal computer users, the guru messages don't mean much, but if you're writing programs, they can be very valuable.

Clicking Disk Drives

Q: Why do the Amiga disk drives click when there isn't a disk in them, and does it hurt anything to leave them clicking?

A: Being a multitasking machine, the Amiga has to know at all times what if anything is in its disk drives. You wouldn't want your home budget files saved to your cookbook data disk! So, the computer polls its drives every few seconds (that's what the click is) to see whether a disk has been put there. If it has, it fires up the drive and finds out what volume is there. (An icon will appear on the Workbench screen to inform you of the computer's findings.)

No, it doesn't hurt anything at all to let the drives click away. However, the little noise, like the drip-drip-drip of a leaking faucet, might drive you slightly nuts. If the clicking bothers you, feed the Amiga a disk, and that will shut it up. The Amiga freely distributable libraries, particularly the Fred Fish collection, contains some utilities to stop the drives from clicking. However, the best and simplest way to stop the drives from clicking is still to feed the computer a disk.

same thing. It can tell the difference! So, ANY old Workbench won't do. It has to be the one you booted the computer on, for the Amiga to accept it. Although this might seem sometimes like an annoyance, it's a necessity, to avoid potential disasters in writing data to the wrong disk, or loading incorrect libraries and such.

If you wish to reduce the amount of disk-swapping required in running a program, boot the computer on a program disk, instead of running them from the Workbench window. This is the best way to deal with the system if you have only one disk drive, anyway.

Opening a RAM disk

Q: How do I open (and close) a disk based in memory?

A: RAM disks behave exactly like real ones, but they work many times faster, since there is no waiting for the mechanical parts of a disk drive to spin, seek, and fetch. The Amiga's operating system has built-in, automatic support for RAM disks. This is really an area of memory which the machine configures to work like a disk drive, as far as the system knows. To make one work on the Amiga, there is no need to edit the "system configuration." Just tell the computer to DO something to a device named RAM:, and it will create a RAM disk to do it with. On the Amiga, the RAM disk cannot be eliminated entirely once created. However, the

memory allocated to the task is dynamically allocated - the more you put in it, the more memory it takes from the system, and as you take stuff out, the memory is automatically freed. If you empty the RAM disk completely, it will still occupy about one kilobyte of memory. A RAM disk can be created only from the CLI window. A good way to force one, without putting anything in it, is to issue the command: DIR RAM:

ENDCLI

Q: How do I get rid of a CLI window once I have one open? There isn't a close button in the corner.

A: The CLI window, for reasons known only to the people who designed the Amiga operating system, requires a command entry to close down. The command is, simply, ENDCLI. Enter that at the prompt, press the RETURN key, and the window will go away. EXCEPTION: IF you have things that you have used the RUN command on, and IF they're still operating, the CLI from which you RUN them cannot close. If it did, the computer wouldn't know how to address the processes you've set in motion with the RUN command. If the ENDCLI command doesn't end the CLI, this is probably what's wrong. After those other processes are completed and closed, if you have given the ENDCLI command, the CLI will indeed close down.

IFF Graphics

Q: What is meant by the term "IFF"?

A: The term IFF is applied to the Amiga's file formats for things like pictures, music, sounds, and text. This is a "specification" for files developed at the outset of the Amiga by Electronic Arts and maintained and endorsed, since then, by Commodore. Much of the strength of the Amiga's graphics are directly traceable to the IFF picture file format's being honored across the board by the programs that do painting. You can literally create a picture in one paint program, edit it in another one, and perform further manipulations on it in still other programs, both paint ones and otherwise. You can,

for example, make title screens in one Amiga program and animate them with another one. It is this "IFF" file format that permits this magic, a wondrous joy to computer owners that is not known on other machines, where every program saves its own proprietary format and may or may not support any others.

Aside from pictures, where the IFF support has been the strongest, the IFF specification does indeed apply to music, sound and other things. However, the music software developers haven't followed suit, and there is much format incompatibility among them, though some offer IFF support as an option. Sampled sounds, too can be IFF or not, but if they're IFF they're editable, usable, and useful in a wide variety of Amiga programs that honor the IFF sound formats.

Text, too, has an IFF specification, but almost no Amiga text programs use it, though some have adapted it to their own purposes and support a variant of IFF. The bottom line on text is, still, that the only way to exchange files is through pure ASCII characters, omitting any folrmatting and special characters.

Playing Sampled Sounds

Q: How can I make the Amiga play a sampled sound without buying a sound digitizer?

A: Many Amiga programs make use of sampled sounds, notably those "calendar" type programs that remind you of appointments with a friendly "You imbecile! You fathead! You..." There are many sampled sounds available in the freely distributable libraries. All you need to hear them is one of the (also freely distributable) player programs. Click the player program's icon, then, while holding down one of the Amiga SHIFT keys, double-click the icon for the sound you want to hear. Don't forget to turn up the volume!

Playing Amiga Music

Q: Can I play music files without buying a music program?

A: Yes indeed! There are many Amiga music files available in the public domain and in the freely distributable software libraries, and your Amiga can play them happily without a

Questions & Answers

Much of the strength of the Amiga's graphics are directly traceable to the IFF picture file format's being honored across the board...

music program. Turn up the volume, click the player program's icon, then, while holding down a SHIFT key, double-click the icon for the musical selection you want to hear. Remember, though, that in order to play the music, the program must have all of the piece's instruments available to it when it loads. Look for information on how to arrange this feat in the documentation file that comes with the player program you select.

Facing The Unknown

Q. What does "Unknown Command" mean?

A: If you are venturing into CLI, you will eventually be

MAKEDIR DF0:Pictures

Where MAKEDIR is the command, and DF0:Pictures is the arguement for the command MAKEDIR to work on.

Finally, remember, your Amiga doesn't always know where a command or program is. It can only assume that a command is located in the "C" directory of the disk you booted on, or in the current directory. So if the command is on another disk, or in another directory, your Amiga will tell you that the command is not found. Some quick pointers to find out "where you are" current directory wise, is to type CD - this will return your currect directory. And to find out what commands or programs are located in the currect directory, just type DIR

If you want to know what is in the "C" directory, just type

faced with this error message. Basically, "Unknown Command" means that the Amiga didn't understand what you typed, or it couldn't find the command you were refering to. This could be caused by several reasons.

But before going on, remember one thing. Commands and programs are the exact same thing. When you type DIR or LIST or any other CLI commands, you are just executing programs called DIR and LIST. So "Unknown Command" should be thought of as your Amiga tell you "Excuse my, I couldn't find that program in any of the normal places, maybe you misplaced it, or spelled it wrong... no harm done." - Don't you wish all computers were that friendly.

So one possibility is that you spelled the command incorrectly. For instance, instead of typing DIR, you typed DOR or some other typo. So look over the spelling of the last command line you just typed. A watchfull eye is the best remedy for this. Typos could be as sneaky as using "," commas instead of periods in file names, or using the letter "o" ("oh") as opposed to the number "0" (zero).

Another mistake some beginners make is to break a command into two words. All basic commands are ONE word only. For instance MAKEDIR is one word, not MAKE DIR. By typing MAKE DIR, the Amiga would politely tell you, "Unknown Command MAKE." This kind of error is hard to catch, and usually goes away with familiarity of the commands.

NOTE: Do not be confused with command arguements. A command has two parts, the command and its arguement. So the above example should be:

DIR C: and you will get a directory of the "C" directory which was on your boot disk.

Amiga Stereo and Enhancing Amiga Sound

Q: Do I need anything special to hook my Amiga up to my stereo system.

A: All you need is a pair of audio cables with standard RCA connectors on both ends. Connect the left and right audio out from your Amiga to the AUX IN of your stereo system. Since your Amiga is true stereo separation, there is no mixing of sound from the left to right channels. Stereo, like the kind you hear on the radio mixes a little of the left channel with a little of the right channel (this is called the center) in addition to the regular stereo separation. This adds a more fuller sound to the stereo. When you first listen to your Amiga stereo it may seem a little shallow (too separated.) To remedy this you can use your standard $45 Radio Shack mixer that allows you to adjust the balance. Just wire your Amiga to the mixer, then from the mixer to your stereo system. The Amiga's stereo sound is some of the best, so enjoy.

ON DISK

This Issue

What's on Disk?

What's on Disk?

Here's a short description of the items included on the disk set. These are just quickie comments, so see the program's "read.me" or other documentation for the whole story. Some of these programs are Shareware. Please, if you find the program useful, send the author the appropriate Shareware fee.

Animation.Utilities

FantaPlayer: This program plays animations created by the popular "Fantavision" program, by Brøderbund. A simple animation is also included. Just doubleclick the FantaPlayer icon, and the Lighthouse animation will miraculously run.

Movie: Many freely distributable animations require this program, Movie, to work. Here is the latest version at this writing.

ShowAnim: Most Amiga animations will yield to THIS show utility.

WatchME.Kaleidoscope

Watch-Me is a program that fills in the gap where the current Amiga software kit leaves off. Buyers of the original Amiga Model 1000's got a nice, kaleidoscope program called Polyscope with the machine. This is no longer supplied, so here's an AmigaBASIC program by George Trepal, to take its place. The clickable icon is a compiled version of the BASIC program. However, the sourcecode is included on the disk, too. Read Watch-me.DIRECTIONS for further information.

Mackie

Mackie is a screen blanker. While you're away from your computer, if you leave the monitor on a static image for any length of time, the picture will burn into the phosphors. The only way to cure the problem is to replace the picture tube in the monitor. This program keeps count of how long the machine isn't used by checking for mouse motion, keyboard activity, ets. When there's no action, it blanks the screen, putting up a pretty, animated fireworks display. C source code, for the programmers among you, is included.

Music

The following instruments are on the disk: Bassdrum, Cymbal, EchoWoop, ElcGtr, ElecBass, ElectricPiano2, Fluty, GateBassDr2, GateSnare, GateTom, HighHat, HR.Bass1, Hr.bell, Hr.guitar, Hr.spesh1 (and 3 and 3), JayGuitar+, Martians!!!, Organ3, pitchbender, RideCymbal, Saxophone, Sinister, Snare, Snaredrum, StarSynth, StudioBass2, Synth1 rev, Synth1 (and 2), Synthbass1, TomDrum, and Tubesynth.

The above are for playing IFF SMUS music Scores (compatible with Sonixplay and other SMUS player programs). The instruments are in SONIX format and can be used with the SONIX music program. SONIX is a commercial program (not included) - refer to Sally Hubbard's article for more information. But the songs included in this issue can be played without SONIX by simply clicking their icons. Music and instruments created by Vincent Chu, and by John Thompson.

PopDir

If you need to get the directory of a disk, and you're having trouble, move this icon onto the target disk, and it will give you a pop directory. Just double-click the icon. ·

Virusx

Here's the primo virus checker and obliterator program. WAIT! Before you tell this program to fix a "non-standard" boot block that it finds, read the documentation!

Fun.Stuff

Wondering why the Amiga crowd is always talking about Boings and Boing balls? It's goes back to an early Amiga demo program. Here it is, complete with sound files and a mouse interface that will allow you to change the speed of the bounce.

SOUNDS

The following sampled sounds are provided for your entertainment, amusement, and enjoyment, along with the Sound program that will play them: Compute.IFF, Friend.IFF, and HAL.IFF. C source-code for the Sound program is also provided, if you're into programming in C.

Garden

Garden is a fractal display program that ISN'T a Mandelbrot set plotter. It makes nice pictures while you watch. Let it run for about 10 minutes or so to get a really interesting effect.

The Art Department

Pictures

Jaguar & Moonlighting

These are two older pictures that really showed what Amiga graphics were capable of. They can both be run by simply clicking on their icons (double-clicking). If you try to move these pictures to another disk by their icons, be sure to also take the Superview icon along with them. The Superview icon must always be in the main directory of the disk where the pictures are. (The main directory is the one that first appears when you click on the DISK icon.)

ABOUT.ColorBars&Greyscale tells you about those two utility pictures.

The nicest freely distributable picture-viewing utility on the planet is Superview. This version plays animations, even, and will display the first frame of an ANIM file, so you can see what it's going to be before it loads forever.

HED

HED is a text editor program that will run from the CLI. To do things that the Amiga system is going to use, you need pure, non-fancy, unformatted text files. HED saves those, and offers the convenience of a mouse driven interface, as well. This program, like many of the others in this disk set, is a Shareware project.

-=-

Two Amiga Disks Full Of Utilities, Music, Animation, Graphics, Fun Stuff and more!

The Telecommunications Department

Telecomm.Utilities One of the best termincal programs on the Amiga is a Shareware one called ACCESS!. It's included here in its un-compressed state, pre-installed so you can get it running without further tinkering. Be sure you have your Preferences set correctly for your modem, or change the settings in Access!, either one.

Zoo, ARC and LHARC are utilities for file compression in common use on BBS's and pay networks. The problem is, everybody has 'em, and nobody bothers to post 'em in their uncompressed state. Here they are. So, you don't need ARC to unARC ARC.

INSTRUCTIONS

The two disks included with this special issue are NOT BOOT DISKS. This means that they are not Workbench disks.

After you boot Workbench normally, insert your Beginner Issue disks. Double click the disk icon to bring up more icons. From here, everything else can be run from their icons.

So just point, and double click on an ICON that you want to use.

Some ICONS are DIRECTORY icons. This means that they open up a subdirectory full of more programs.

Some icons are only there as a reference. When you double click these, the screen will flash and the Amiga will print a message on the top left of the screen.

If you have problems, contact New Age Computers at 1-301-220-1296.

Questions & Answers

Amiga Monitor TV??

Q: I heard that I can use my Amiga monitor as a TV?

A: Yes, it is true, in fact, quite a high resolution TV at that. If you have an Amiga monitor (1080, 1084 or 1084S) or even the Commodore monitor with a composite signal you can use it as a Television. The only thing missing is a tuner. For under $50 you can find a tuner at your local Radio Shack or electronics store. Or, you probably have a spare tuner in your house, and don't even realize. Even the oldest, cheapest VCRs have a built in tuner. But the tuners are rarely used since the VCR is connected to a television. Just use a standard RCA audio/video cable to connect the VIDEO OUT of your VCR to the VIDEO (Composite) IN of your monitor. You can also connect the AUDIO OUT of your VCR to the AUDIO IN of your monitor. Add a simple antenna to your VCR and *poof* - instant TV. Be prepared to witness on of the better pictures you will ever find.

Amiga Fonts

Q: What is meant by the different Amiga fonts?

No matter what you say, the important thing is to say it in a nice FONT! This is all, well some, about Amiga fonts. What the computer business calls a font in the computer business is not a font in the strict print shop sense of the word, but a "typeface." Now, before you dismiss this discussion as irrelevant, look around you. You are surrounded by fonts. Typefaces, even. The newspaper headlines - those are a bold, attention-getting font. The label on the soup cans? Those are stylistically script. If the headline "World Ends Tuesday" were written in the Campbell's Soup font, it wouldn't really have the same impact, now would it?

Fonts, then, convey a graphic meaning independent of the words on the page. The aim of most designers is to use that graphic subtlety to their advantage, to sell you some soap, get you to buy a new car, tune in to the Rock and Roll station THEY choose, or whatever. On the computer, fonts are most useful for, well, the same purpose. And on the Amiga, there are fonts aplenty to convey whatever you like, however you like.

The Amiga comes with a few fonts to help your communication efforts, and there are plentiful ones in the vast freely distributable libraries. In addition, many commercial software packages come with fonts of their own - particularly desktop publkishing packages, and even some games. You can also buy colections of fonts for various purposes.

Amiga fonts are stored in an invisible drawer on the Workbench disk named "fonts". Programs that use them will be able to display a list of the available fonts, and to do so, they might bug you to insert the Workbench disk. In addition, the Amiga has a FONTS: "device" that it recognizes. That means, anything you put in the FONTS: device can be accessed by the system. Unless you change it, the FONTS: device is conveniently assigned to the "fonts" drawer. Do NOT name a disk "FONTS", tempting as it might be. The computer will then assume you want it to look THERE for any fonts you might request.

There are many Amiga wordprocessors, desktop publishing programs, titlers, and graphics paint programs etc., that use Amiga fonts. If you don't find one you like, however, you can make your own, using (what else?) a font editor. There are also several of those, including Font-Works, from ACS Software. Font-Works lets you do things to fonts like twist them, add shadows, colors, etc.

COLOR FONTS

Speaking of color. The Amiga's regular fonts are plain black and white. To make the system honor special color fonts, you have to run a program called "ColorText," which enables color fonts. The Amiga will not honor color fonts unless you run ColorText, even though the program you're using might support them. A color fonts is, of course, a font that contains more than one color. Some can have sixteen or more. Color fonts consume large quantities of memory - just in case you hadn't guessed.

J:

No matter what you say, the important thing is to say it in a nice FONT!

Beginner's Special Issue Order Form

☐ **Free 1 Megabyte Expansion Memory Sweepstakes!** Please enter me in the sweepstakes. I have filled out the questionaire below. I have read the rules below and accept them.

☐ **Yes!** I'd like to take advantage of the special subscription rate and subscribe for the next 6 issues of <u>A.X.</u> <u>Magazine</u> for only $69.95, which is a savings of over 22% off of the cover price! (A savings of almost $20!)

☐ **Paper Only Subscription** Please subscribe me for one year (6 issues) of <u>A.X. Magazine</u> for the low rate of $14.95. I will get 6 issues of the paper version of <u>A.X. Magazine</u> - a savings of 37% off the newstand rate.

☐ **Yes!** I'd like to take advantage of the special subscription rate and subscribe for the next 6 issues of <u>GRAF/x Magazine</u> for only $69.95, which is a savings of over 22% off of the cover price! (A savings of almost $20!)

☐ **Paper Only Subscription** Please subscribe me for one year (6 issues) of <u>GRAF/x. Magazine</u> for the low rate of $14.95. I will get 6 issues of the paper version of <u>GRAF/x Magazine</u> - a savings of 37% off the newstand rate.

☐ **Animation Special Issue** Please send me the Animation Special Edition for the special price of $12.95 (a $2 dollar savings off of the cover price!).

Total Amount	☐ Bill Me (For orders over $10)	☐ Mastercard/Visa	- - -
	☐ Check or MoneyOrder Enclosed	Signature	Expiry /

Please make checks payable to A.X. Productions.

Name _____ Phone _____

Address _____

Reader Survey

1. What other Amiga magazines do you subscribe to? _____
2. Is your combined income Under $30,000 $30,001-$40,000 $40,001-$50,000 $50,001-$60,000 $60,001-$70,000 $70,000+?
3. What is your age-group? Under18 18-24 25-45 Over45
4. How long have you owned your Amiga? New 1/2Yr. 1Yr. 2Yrs. MORE
5. How much do you plan to spend on Software/Hardware in a year? $ _____ /$ _____
6. What type of hardware do you plan to purchase next? _____
7. What type of software do you plan to purchase next? _____
8. What kind of games are you most interested in? _____
9. Have you subscribed yet? If not, why? _____
10. Would you buy a special issue again? Why or why not? _____
11. Is there a topic you would like to see covered in the near future? _____
13. What products would you like to see tutorials on? _____
14. How many other people do you show your magazine to(paper or disk version)? _____

Name _____

Address _____
_____

Ami Exchange's

AMIGA
Software & Information
More affectionately known as A.X. Magazine
6006 Greenbelt Road Suite 189
Greenbelt, Maryland 20770

Beginners Special

Fold into thirds, with this side on the outside. ▲

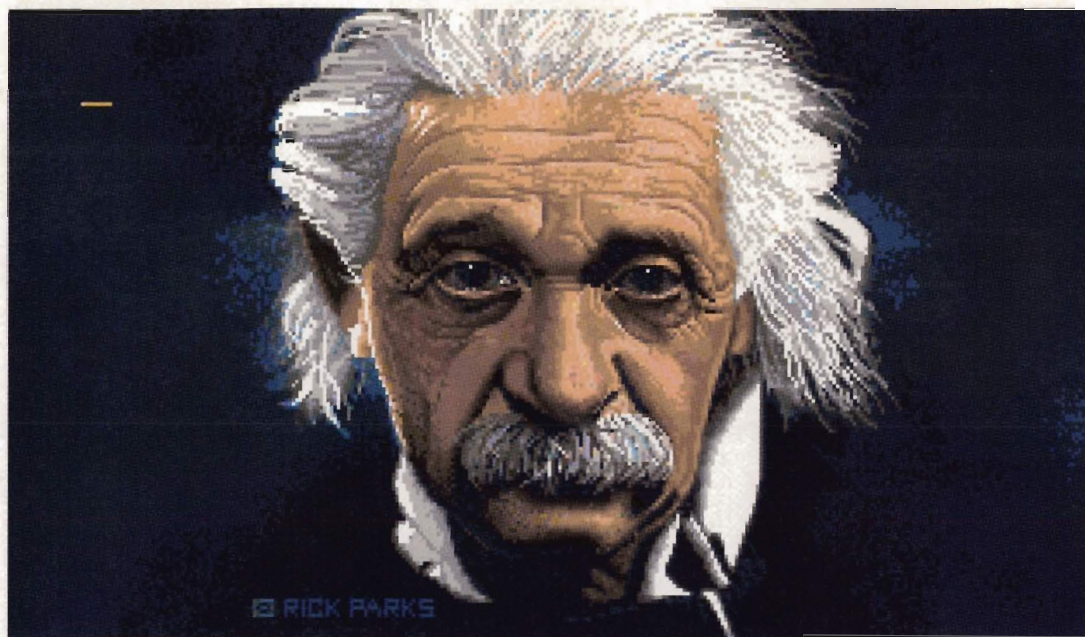# Only Amiga Makes It Possible... But A.X. Magazine Makes It Happen!™

Our world is a democracy, and so is A.X. Magazine. Tell us what you want. We will listen.

_____

_____

_____

_____

_____

For Office Use Only

C   CK   MO   BM
S   SI   CC   PD

ORDER FORM B _____

_____

_____

© RICK PARKS

Painting With The Amiga
by Jay Gross

Pick A Paint

The Amiga's strongest point is its graphics, but you can't make pretty Amiga pictures (or ugly ones, either) without a "paint" program. Here's a quick summary of the state of the art in Amiga painting, to help you choose.

■ **ComicSetter**

First off, there isn't an easy answer. There isn't a single product that does "it all". You either have to buy a kit of several programs to do everything, or you just pick the items that are important to you, and disregard the programs that don't have what you want. Thanks to the Amiga's IFF graphics format, you can exchange files readily among all of the programs.

Big Deluxe

■ **Professional Draw**

The premier Amiga paint program is still Electronic Arts' DeluxePaint, now sold in two forms, DeluxePaint II and DeluxePaint III. Get the "III" if your Amiga has more than the regular 512K of memory. For unexpanded memory, get the "II". The Newer, III product adds animation capabilities and some other nice tricks.

Both offer a truly "full-featured" paint box, including perspective manipulation, draw and fill with arbitrarily-shaped brush, load and save a custom brush (that's a chunk of a picture you can literally paint with), and adjustable screen size and changeable resolution. The DeluxePaints' user interfaces are nearly identical and very intuitive, and have set a sort of a standard that many other Amiga paint (and other) programs follow.
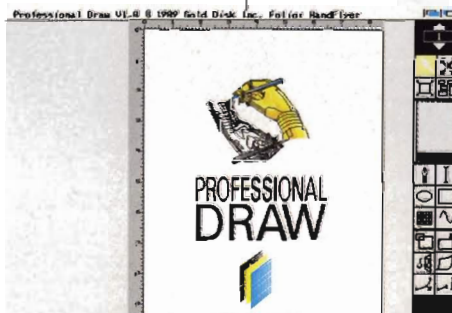
The DeluxePaints, written by Dan Silva, don't work in HAM. That's computerese for "those nice, 4,096-color pictures". They do work in any of the screen resolutions, and in any number of colors up to 32 or 64 - DeluxePaint III works in 64-color mode, also known as "halfbright" for the way the computer generates it. There are many Amiga paint products that do work in HAM, and even a few that work ONLY in that mode.

Electronic Arts' HAM paint program is Deluxe PhotoLab, written by Digital Creations. PhotoLab is the closest thing to having absolutely all of the paint tricks on the market. It handles all of the screen resolutions, and even handles gigantic "superbitmaps" that you can scroll around

in, to do your painting, even in HAM. PhotoLab also allows as many windows open as you have memory to open windows in. A "window" in this case means a painting, although the program permits opening paintings that aren't as large as a whole screen (to conserve memory).

PhotoLab doesn't worry about animation, and it doesn't do perspective, like DeluxePaint III. However, it has a few tricks of its own that the venerable DeluxePaints don't offer. Chief among those is the "load at" function, which will match screen resolution, palette, number of colors, etc., for virtually ANY imported graphic image. The loading function also performs some very elaborate computer smoothing and dithering on the incoming image. Indeed, if you need to swap pictures from one resolution to another, particularly UP in resolution, Deluxe PhotoLab is an excellent choice to do the job. The program also comes with Posters and Colors, additional sweetening to the package. Posters prints posters. Big ones. Turn smoothing on (and be *patient*), and Posters will print a VERY impressive billboard, either color or black and white, from your Amiga painting.

■ **DigiPaint**

Photon

If you're looking for HAM painting tricks and features, Deluxe PhotoLab is excellent, but there are newer products with more tricks. That title goes to either MicroIllusions' Photon Paint 2.0 or to NewTek's DigiPaint 3. Matter of opinion on which is the "state of the art", but they're both out there in the running. Their bags of tricks are stuffed to overflowing with the fanciest of the electronic painter's features. Check them out in person, if you possibly can, to make your choice.

■ **Transfer-24**

DigiPaint 3 does have one bonus program to recommend it. That's Transfer 24, which is pretty much the same software as NewTek includes with their digitizers, but without the digitizing code (i.e., you can't use it to digitize with, only manipulate pictures). The Transfer 24 program offers some extremely nice, but poorly documented features and possibilities for manipulating your work, either in HAM mode or otherwise, or in converting your HAM DigiPaint pictures to other modes and resolutions.

■ **Deluxe Paint**

The NewTek programs main strength is their dithering algorithms, which do a great job of blending colors for smooth transitions, and the controls permitted the user on those features. Both DigiPaint 3 and Transfer 24 (which comes with it, but is a separate program) use the dithering, but Transfer 24 gives you direct control over it.
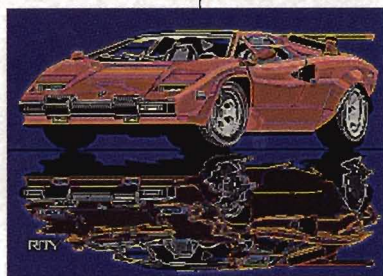
PostScript Painting

There aren't many programs that can mix text and painting as readily as ExpressPaint 3.0, from PAR Software. The program allows you to "fill" an arbitrarily shaped object with text from a file you simply import (i.e., **not** have to retype from the keyboard!). It's a neat trick, and of course, the text can be in whatever Amiga font you like. ExpressPaint also permits multiple clips (custom brushes) in memory at once, and you can switch from one to the other just by clicking on the one you want. The "unlimited" undo will also be nice if you have enough memory in your computer to take advantage of it. The program lets you "undo" things in the order in which you did them, and then RE-do them in any order, skipping a step if you like.

ExpressPaint is, so far, the only Amiga paint program that prints to PostScript. That's important if you have a PostScript printer, or if you want to print to the fabulous, and fabulously expensive, color PostScript printers, or if you want to produce work at typesetting resolutions for use in published work. With non-PostScript paint programs, you'd have to move your paintings into a page layout program in order to print to PostScript.
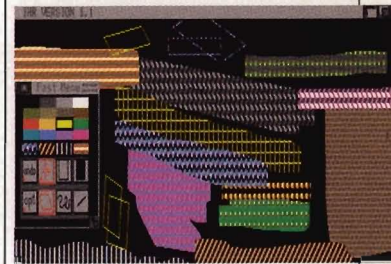
Tracings

Those are the main units on the Amiga paint shelves. There are several others, however. One of the "others" that's worth a mention is Impulse's Diamond, a HAM paint (and regular, as well) program that directly supports Turbo Silver's RGBN files. RGBN is a special raytracing output file that the Turbo Silver raytracer generates. It contains a full 16-million-color palette, which the Amiga cannot currently display. Turbo Silver also creates an Amiga picture, of course, but the RGBN file is there, too, if you want to work on it. Diamond does that. Although it can't display all of the colors, it bases its display on the original full palette, instead of on the abbreviated one contained in the Amiga picture. Yes, it's a fine point, but it's worth a mention for the avid Turbo Silver raytracing enthusiasts out there.

There you have it, and hitting only the high points. If you're serious about computer painting, no matter what machine you use for your work, you'll no doubt end up with a bunch of paint programs from which you choose for various types of projects. Again, there isn't any buy absolutely all of the tricks and capabilities in a single package. Pick and choose, and good hunting.
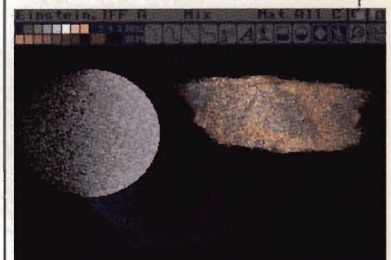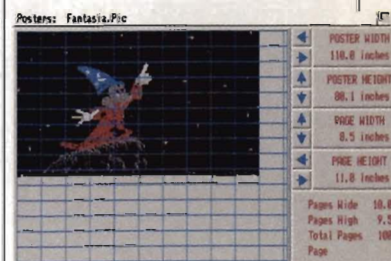
J:

■ **Aegis Images**

■ **Photon Paint**

■ **Transfer-24**

■ **Posters program from Photolab**

Amiga Animation

by Jay Gross

Yes, the Amiga is THE Animation machine, going where no computer (none that peple can afford, anyway) has ever gone before...

When it comes to animation in desktop computers, nothing, absolutely nothing touches the Amiga. Even its icons animate. Click on a jack-in-the-box; it springs open. A windowshade pulls down. A telephone metamorphoses into a computer. An airplane skypaints over a city skyline - those are just the *icons!* The Amiga was born animating, it *lives* animation, and its users love it. And *live* it. And a lot of them do it for a living. That's called *professional* animation. The Amiga's software blazes new, previously unheard-of trails when it comes to creating animations, either computer ones, or the stuff you'd see at the local Bijou, or gracing the television networks between commercials.

Yes, the Amiga is the Animation *machine*, going where no computer (none that people can afford, anyway) has ever gone before. . . no, wait, that's another movie. Anyway, the Amiga's animation software puts the power of animation into your hands. You can be as silly, or as serious, as amateur or as professional as you like. The Amiga can handle it all.

The "classical" method of animating is called "cell" animation. Its name derives from "cellophane" which is the medium on which classic cartoon animations are painted, one frame at a time. To create a moving character, you layer a number of transparent "cells" onto a painted background. Then, a motion-picture camera films the cell sandwiches one frame at a time. When the film is projected, motion appears on the screen. Simple.

No! Not so simple. "Laborious" is a better word. Imagine painting cell after cell after cell, repeating and repeating till you build up enough layers and frames to make a standard seven-minute cartoon. Or even a *one*-minute television commercial. It takes a *lot* of drawings. For film, multiply the number of seconds of animation you want by 24 - that's the number of frames that flash by in one second. The video frame rate is 30 frames per second. That means you need to change the "cell" at least 15 times a second, so the motion will appear smooth. Actually, the human eye will begin perceiving individual frames as motion at around eight or ten frames per second. Some contemporary animation (the popular "Japanimation", for example) is produced at even lower frame rates. Even with a slow rate of playback, if each of your characters requires several overlays, a little applied mathematics will quickly show you the massive amount of work required to do animation in the classical way.

Computers to the rescue - but you figured that out already, most likely. Computers don't mind doing repetitive tasks, they're good at step-and-repeat functions, they have memories for pictures that are easily changed and re-saved, and some other niceties - rendering and raytracing, for example. Computers are *so* nice for animation that Walt Disney Studios (they're into animation in a **big** way, and yes, they even have a bunch of Amigas to help them with the job) recently announced that after they finish their current projects, they will do *all* their animation projects entirely on computers.

This is how things are moving in the animation business (pun intended). In fact, Disney's a good bit behind the times on this one, since almost all of the fancy animations you see on television have been computer-produced for a long time. Those intros for the features and shows, where the letters fly through space, and look absolutely, impossibly real. They're not real. They're raytraced (or "rendered"). Computer animated.

◄ Movie Setter ►
Right, is the main story board and animation controller. Above, is the frame animation interface.

Fantavision ►
Right, is the main interface from which animations are created and controlled.

Tracing Rays

For animating on the Amiga, the approach you choose depends on the "look" you want to get, on the purpose of the finished output, and on the amount of time (and money) you have to spend on the process. Many Amiga animations are produced with the various raytracing packages. These products use the same computer techniques employed by television networks' animation computers to figure out mathematically how a fictional object would look and then draw it on the screen one pixel at a time.

That's how you can have gigantic glass spheres floating above a brick-tiled floor, scenes that could *not* exist in reality, no way, no how, but nonetheless look absolutely real. The computer starts at the screen and figures out how each pixel is lit. If it's reflecting the red surface of a Boing ball, it turns the pixel red. On the other hand, if the exact piece of the ball that it's reflecting is *dark* red - on account of a shadow - it turns it a deeper shade of red accordingly. The computer does a *lot* of geometry (same as math, but more complicated) to accomplish this, and it takes a long time to raytrace a complicated scene, sometimes weeks, for those really complex ones that some Amiga raytrace artists like to produce.

What do you need to do raytracing? First, an Amiga of your choice, but an Amiga 2500, or an Amiga with one of the speedup boards installed, traces rays much faster than a regular ol' Amiga, largely due to the presence of a dedicated chip for handling vast quantities of math. Plain Amigas do the job just as well, but take longer. Of course, you can multitask other projects while that process goes on in the background, if you have enough memory in your computer. The next thing you need is software. Pick from an array of products from totally free (in the vast Amiga freely distributable libraries) to several hundred smackers. The commercial ones that get all the press on this score are Sculpt-Animate 3D and Sculpt-Animate 4D and Turbo Silver 3.0 (or the newer Turbo Silver SV). The freely distributable software libraries include QRT and DW-Render, among others.

The well-known Amiga Juggler animation was created with algorithms that eventually became part of the commercial product Sculpt 3D, by Byte by Byte, and few products have rivaled the product for the brilliance of its raytracing, though most have managed to do the job in a lot less time. Sculpt 3D is sold now as a family of products, including "junior" versions of the higher end products. The top of the line is Sculpt-Animate 4D. Yes, that's FOUR-D: The fourth "D" is time, since animation occurs over time. The rather expensive Sculpt-Animate 4D product does basically the same thing as the lower end ones, but adds some very elaborate, professional features and capabilities, particularly in the object creation department, and traces its rays faster. Byte by Byte is aiming the 4D product at a very professional market (meaning broadcast video, where most of the world's raytracing finds a warm welcome), with features and options that permit interfacing the Sculpt-Animate package to some

of the extremely high-end broadcast rendering computers (e.g., Waveform, Pixar, CubiComp, and others in the quarter-million-dollar-up, no kidding, category).

The Heuristic Approach

Impulse, Inc.'s Turbo Silver product line does pretty much the same job as Sculpt-Animate 3D or 4D. In fact, it does some things Byte by Byte's product doesn't do. Turbo Silver's approach is to use heuristics (the computer equivalent of "second guessing") to figure out which rays to trace before actually bothering with the calculations, and rather than just tracing every possible ray in every possible direction. Turbo Silver 3.0 SV is the current version of the product. The "SV" means Stereo Vision, meaning automatic support for Haitex's X-Specs 3D glasses. The product will raytrace a scene which, when viewed through the X-Specs, will look *exactly* like you can reach in and touch the objects.

Although Turbo Silver traces its rays considerably quicker than Sculpt products, some of the subtleties present in the Sculpt images are not present in the Turbo Silver images unless you tell the program to go through much the same mathematical gyrations to arrive at the pictures, which evens out the tracing times. Turbo Silver's strengths are its glass and reflective objects, and its ability to map an Amiga IFF brush onto a surface and adjust shadows and reflections accordingly, both of which greatly increase raytracing times. The product also supports algorithmic surface mapping, though not particularly in a user friendly manner.

The user interfaces of the two ray tracing products are vastly different, so you really ought to have a look at them before you make your choice.

The SV in Turbo Silver 3.0SV means "Stereo Vision" so with 3D Glasses it will look exactly like you can reach in and touch the objects!
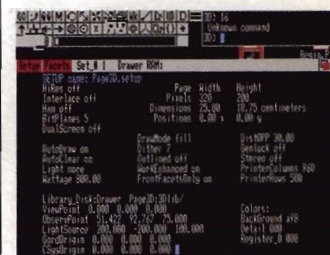
◄ **PageRender3D** ▲
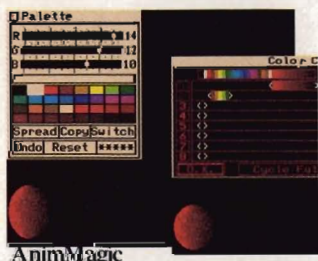Above, is the basic interface, and to the left are some of the end results.

◄ **Talking Animator**
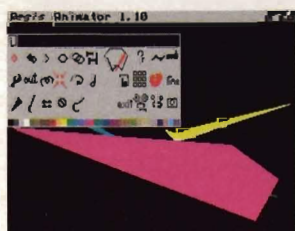An animation package for younger children.

It is now in vogue to include animation support in today's paint programs. Included are Deluxe Paint III and Photon Paint 2.0...

Although the output of the two products has a different "look and feel", both can produce extremely high quality images that show off the Amiga's graphic power - and your talents.

Painting Animation

The latest fashion in Amiga animation software is the inclusion of animation support in paint programs. So far, both DeluxePaint III - an upgrade from DeluxePaint II - and MicroIllusions' Photon Paint 2.0 support animation directly. In addition, MicroIllusions' Cel Animator contains a moderately-featured paint program, for touching up, or even creating the cels it animates. Animation support will undoubtedly become a standard feature of Amiga paint programs, as the trend catches on.

DeluxePaint III permits a unique "animated draw" technique, where animated brushes are pasted onto succeeding frames in an animation with but one stroke of the mousepointer. The program also supports animated "brushes," which are really "sets" of related drawings - an arm in a variety of positions, for example.

Photon Paint 2.0, an Amiga HAM-mode paint program, does its work in the ANIM format on multiple HAM screens at one time. The ANIM format is about the closest thing the Amiga has to an animation "standard" file format, but it isn't really very close. For pictures, the IFF standard is truly a standard. Programs that don't support it have mercifully died a peaceful death. Since there was never an "official" animation standard, there isn't much standardization. The ANIM format is common to many, however; a number of programs support it, either loading or saving in it, or both. Some programs do things TO ANIM files. Hash Enterprises' Animation:SoundTrack program goes to great pains to time Amiga sampled sounds to ANIM files for use in video editing (or they can be played back through the Amiga). Animation:Titler does its thing in real time, while your VCR tapes the animating titles, or it will generate an ANIM file that does the same animation without having the program running.

"HAM", by the way, is Amiga jargon for "those nice 4096-color pictures." Amiga writers have claimed the word, actually an acronym for Hold and Modify, as their own, thanks to its punning possibilities. All Amiga pictures with more than 64 colors aren't HAMs but most of them are.

HARDWARE Animation • It's A Live!

The Amiga's vast bag of animation tricks boasts a couple of *hardware* animating devices. A-Squared makes a device for all the Amiga models called "Live!" that facilitates some real-time frame capturing. Although its framing rate is somewhat limited to lower resolutions for capturing in real time, Live! does save an animation to disk while the motion is *still occurring*. It can even handle higher resolutions at a rather slow frame rate.

Another Amiga hardware animation device is Progressive Peripherals' FrameGrabber, now in version 2.0. Although the FrameGrabber doesn't

do the Live! trick of capturing succeeding frames in real time, it does grab a frame in a mere 1/60th of a second. The difference is that FrameGrabber can't do consecutive frames at that speed (or anything like it), but it can capture any resolution you care to ask for in that fraction of a second. The FrameGrabber hardware stores the frame of video in its own memory banks, then downloads it to the computer for further processing by its accompanying software. However, FrameGrabber supports the ANIM file format in its saves, so even though the time is longer than real time between the digitizing steps, the ANIM file can be played back in real time.

This technique for animating on the Amiga can be compared to the widely used "pixelation" techniques. Animators - the classical ones that don't use computers (yet) - use this technique to animate clay figures or other small models in a very realistic manner. The same skills would of course apply to the Amiga hardware method of capturing the frames, but computer images would be generated instead of film frames.

The Sprite Animators

The usual way computers, including Amigas, make things move on screen in regular programs is with "sprites." These are little chunks of memory that the computer knows how to move around without disturbing what's underneath them. The Amiga's a very talented sprite mover, thanks to its custom graphics chips, which do that sort of thing without even working up a good sweat. The Amiga's mousepointer, for example, is a sprite.

Amiga software developers have put sprites and BOB's ("Blitter objects", like sprites only more flexible) to work in animation development programs. These programs are "sprite" or "2-D" (Two-Dee-Mensional) animation programs, but that's not necessarily how they achieve their effects. The star of this category is Gold Disk's MovieSetter. MovieSetter doesn't trace rays. What it does is draw a screen on the fly from information the user provides when the MovieSetter animation is created. This information includes separate sets of data for sampled sounds, animated character positions, background motion, palette, etc. The program simply draws the screen as fast as it has to, according to the user's instructions. Those instructions are entered interactively, and easily, so you can see what's happening, replay from any frame, change things, add or subtract sounds, pictures, backgrounds, etc. Indeed, one of MovieSetter's many strengths is its friendly, easy user interface.

Vectors, Vectors

Another category of animation on the Amiga is based on mathematically described lines, blocks and shapes known as "vectors." A vector is just a set of math coordinates for an object, not the object itself. Rather than a collection of pixel information

AnimMagic

Aegis Animator

Amiga Basic
An Introduction

by George Trepal

Here's what I'm NOT going to write about. I'm NOT going to duplicate the AmigaBasic manual that came with your computer. I'm NOT going to give you simple sugar-coated instructions on how to use AmigaBasic. And finally I'm NOT going to lie to you.

Three big lies come with AmigaBasic right out of the box:
1) Computer programming is fun and easy
2) Writing in AmigaBasic is programming
3) AmigaBasic is a form of the BASIC computer language.

The first lie: computer programming is fun and easy. If you think piano lessons are fun and easy then you'll love computer programming. Many of you took music lessons as a child or had friends who were tortured by them. At first you do mindless exercises of learning to play scales. Later you learn how to play one or two songs. Later, and I mean much later, you compose your own music and can play any song you hear. Programming is the same.

Please don't get the idea that I'm trying to scare you. It's just that, like music, you'll have to invest a great amount of time before you get any return. Good musicians get a lot of respect, especially from those who listen to music but can't play it. The same goes for programmers and those who use but can't program computers.

You'll need to spend hundreds or even thousands of hours at the keyboard before you become really good at programming. When I got my first computer I fell in love with it. For the first year I spent eight to ten hours at the keyboard every day. I ignored food, sex, and sleep because they were no longer very important.

The best way to learn AmigaBasic, or any other computer language, is to take apart other people's programs. How did he do that? What does this line do? What happens if I change this or leave it out? Having several books to work from is helpful. Even if the book is about a Basic other than AmigaBasic use it anyhow. AmigaBasic is powerful enough to run most other forms of Basic. If AmigaBasic doesn't know a command such as Apple's PEN or IBM's LOCATE then read your AmigaBasic manual to find a command that does the same thing and substitute it.

Computer classes tend not to be helpful. They are geared to the slowest learners in the class and tend to be dull. Learning is easiest when it's fun and exciting. For AmigaBasic beginners there are a few books on the market. All are good but none is excellent. For the higher levels of AmigaBasic the only worthwhile book is Advanced AmigaBasic by Halfhill and Brannon (Compute! Books.) Ah! If only all computer books could be as well done as that one!

Now to the second lie: writing in AmigaBasic is programming. AmigaBasic is what's called a high level language because it approximates English. Using high level languages is called coding rather than programming. Programming is using languages like C or assembler that are close to the the computer's native tongue of ones and zeroes. The difference between coding and programming is trivial to the general public but not to programmers. If you tell a programmer that you're coding in AmigaBasic and want some information he'll probably be glad to help. Tell him you're a Basic programmer and see what happens. I'm telling you this for your own good. It's nice to be able to get help when you need it. Later on in this article I'll talk about programming in AmigaBasic but of course I really mean coding.

The third lie: AmigaBasic is a form of the Basic computer language. AmigaBasic is closer to the languages Pascal and Logo than to Basic. In fact AmigaBasic has taken the good parts from Fortran, Basic, Pascal, and Logo and combined them. Bravo for the writers of AmigaBasic.

Now that the big lies are out of the way let's look at AmigaBasic. How it is different from other forms of Basic? What are the pitfalls to watch for? I'm assuming that you already know some Basic but even if you don't just read on. A strange word now and then won't hurt you.

Basic, or more correctly BASIC, is an acronym

for Beginners All Purpose Symbolic Instruction Code. It was developed about twenty-five years ago to help students learn coding. Its developers never thought that it would be anything other than a teaching tool. How wrong they were! At last count there were over 250 dialects of Basic. Some, such as AmigaBasic, are so different from the original Basic that they really can't be called Basic with a straight face.

The original Basic used numbered lines of instructions. For example:

100 FOR J = 1 TO 10110 PRINT "Hello" 120 NEXT J

It didn't matter what the numbers were or whether they started with zero or a thousand. The computer found the lowest numbered line and executed it. Then it found the next higher number and executed that line and so on.

Basic's worst feature was a command called GOTO. If one thing happened the GOTO would go to line number X and if another thing happened the GOTO would go to line Y. If a lot of GOTOs were used, and they generally were, then following the program was like mapping spaghetti. Debugging - that is finding and correcting coding mistakes - was very hard, and expensive. In the business world over sixry percent of the cost of a program is in maintaining and debugging it.

The line numbers made debugging harder. What does GOTO 4590 mean? You have to look at line 4590 and the code beyond it figure out what it does. That takes time. Another bad feature of Basic was global variables. A variable is a word or abbreviation that stands for a number. For example, letting COUNT stand for how many things there are so far. Global means that a variable is the same everywhere in a program. It's easy to get confused and have a variable mean one thing one place and another thing another. Of course that's an error that's hard to track down.

Another disadvantage of global variables is that it's almost impossible to use subroutine libraries. A subroutine is a part of a program that does something specific such as sort or calculate. If I were to write a sorting subroutine for one program I couldn't use it for another unless the program's and subroutine's variables were identical. That's so much of a hassle that it's easier to rewrite the sort for each program.

Now let's look at AmigaBasic. Line numbers are optional, and variables need not be global. It's easy to write and debug code. That is, if you do things in an orderly way. AmigaBasic can do things so many ways that it gives you more than enough rope, however. Here's how to avoid hanging yourself.

If you've used other forms of Basic then for the first few days you'll miss using line numbers. After that you'll wonder how you ever put up with the stupid things. Here's how a call to a bubblesort subroutine looks in Basic and Ami-

gaBasic.

```
Basic       1670 GOSUB 5000
........

5000 FOR J = 1 TO N
5010 FOR K = J TO N
5020 IF W$(J) < W$(K) THEN T$=W$(J):
W$(J)=W$(K):W$(J)=T$
5030 NEXT K
5040 NEXT J
5050 RETURN
```

```
AmigaBasic  GOSUB Sort
........
Sort:
FOR J = 1 TO N
FOR K = J TO N
IF W$(J) < W$(K) THEN
T$ = W$(J)
W$(J) = W$(K)
W$(K) = T$
END IF
NEXT
NEXT
RETURN
```

Most important is that I've used GOSUB Sort rather than GOSUB line 5000. It's much easier to remember that sorting is done by a subroutine called SORT rather than by one called line 5000. I've named my subroutine Sort but I could just as well have called it Fido or Diana. YOU get to use labels that are meaningful to you.

Note that each loop in the AmigaBasic subroutine is indented. This is optional but it makes debugging much easier. By indenting, you can see what each part of the program is supposed to do. Good coders indent their code. Get into good habits early. The above example doesn't use all the power of AmigaBasic because it uses global variables. By slightly different coding I can use only local variables.

```
AmigaBasic  Sort P$(),COUNT
........
SUB Sort W$(),N STATIC
FOR J = 1 TO N
FOR K = K TO N
IF W$(J) < W$(K) THEN
T$ = W$(J)
W$(J) = W$(K)
W$(K) = T$
END IF
NEXT
NEXT
END SUB
```

Note that in calling this subroutine the command is not GOSUB Sort but simply Sort followed by the array you want to sort and the number of items in the array. In my example I've used an array called P$() and the number of items held in a variable called COUNT. The subroutine uses on array called W$() and the number of items held in a variable called N. Since the variables are local that's OK. It

doesn't matter what we call things because the computer keeps track of variables.

This may not seem important until you realize that I've added a command to AmigaBasic. If I save my Sort subroutine to disk I can merge it with other programs I write. Whenever I want something sorted all I have to do is give the Sort command. Another advantage to Amiga-Basic being open ended is that several people can work on the same program at once. Each writes subroutine modules and tests them. Then the separate modules can be combined to make the master program.

Unfortunately AmigaBasic recognizes the GOTO command, but you *don't* have to use it. If you use a master program that calls subroutine modules, your code will be cleaner and easier to debug.

Another advantage to AmigaBasic is that the code is easy to write and edit. If you want to write it on a word processor you can. In fact the AmigaBasic editor IS a word processor.

AmigaBasic is good but not perfect. Now I'll talk about some of its shortcomings and how to get around them. First, AmigaBasic starts with only 25,000 bytes to hold a program. You can get more bytes by using the CLEAR command. Clear,100000 gives you 100,000 bytes. If your CLEAR command is at the start of your program, then every time you run the program it takes an *additional* 100,000 bytes. Pretty soon there's no more memory left, and the computer crashes. The trick is to check the available memory before you ask for extra memory. If the amount of free memory is less than what you need, use the CLEAR command to get more.
To reset the machine use the command CLEAR 25,000. The commands for starting your program should be:

Something else that'll send the computer out to lunch is overwriting its stack space. The *stack* is sort of an internal map. When the program goes to a subroutine it puts the address of where it came from on the stack. After it executes the subroutine it looks at the stack to see where it should return to. Other things, especially thing that use sound, also use the stack. If you store more information on the stack than it can hold, then the computer tries to return to. . . um, to. . . well, your guess is as good as mine, but it isn't where it *should* return to. Usually the machine simply locks up, and you have to turn it off to reset it. Sometimes the operating system catches the problem and just gives you an error message.

Enlarging the stack is easy with the CLEAR statement. If you're having stack problems set it at 5000 but don't feel bad if you have to move it as high as 25000. Some programs require even more stack space. (See your manual for instructions.)

Now to a genuine bug in the operating system. The Amiga can't talk and play music at the same time. The machine goes bye-bye big time. When you write AmigaBasic be sure to

allow enough time for one thing to finish before another starts, especially if you're dealing with both sound and speech.

Another way to crash the machine is to stop a program that you're tracing. The TRACE function shows you which line is being run at a given time. If you don't turn off the trace before you stop the program, then WHAMO!

Take a Peek

If you've played with Basic on other computers you're probably used PEEKS and POKES. A PEEK shows you what's at a certain point in the computer's memory. A POKE shoves something into a part of memory you specify. You can PEEK all you want on the Amiga but don't POKE unless you really know what you're doing. The Amiga is a multitasking computer and it thinks nothing of moving things around in memory. Something that's in a certain part of memory one time probably won't be there the next time.

Other problems with AmigaBasic are that it's big. AmigaBasic itself is over a hundred thousand bytes. In a limited memory machine like an unexpanded Amiga 500, there just isn't much room left over for a program. AmigaBasic is interpreted rather than compiled. Each line of code is changed to a form the computer can use, and then forgotten.

If you need small code size and speed, then you need to buy a compiler. Compilers translate what you write into a form that takes up little memory and runs quickly. The disadvantage to compiled code is that it's impossible to correct bugs in it. You have to correct bugs in the sourcecode, and then recompile. Make sure your program runs perfectly in AmigaBasic before you compile it. There are several compilers on the market. Some require you to write in a special form of Basic that is NOT AmigaBasic. It's a hassle to translate from Amiga-Basic to the special form. Read the package before you buy.

AmigaBasic's list window - a text editor - lacks the ability to search and replace variable names. The way around this is to use any other text editor that strikes your fancy, and DOES have a search and replace function.

Yet another problem with AmigaBasic is that it prints words to the screen very slowly. The FF program that comes with operating system 1.3 makes printing about four times faster but AmigaBasic is still a bit slow getting text on screen.

In conclusion: Your first programs will of course be hard to write. Don't worry. Efficient programming comes with experience, and pretty much any program that works is a good program. Don't give up. One day you'll realize that you're thinking in AmigaBasic rather than translating from English to AmigaBasic. After that, things will get easy. Very easy. The computer can open whole new worlds to you. It's a long hard road to becoming a programmer but it's worth the trouble.

-=-

Don't give up. One day you'll realize that you're thinking in AmigaBasic rather than translating from English...

directory. If you remove it from the startup-sequence, it won't speed up text display for you.

SetMap is a program that lets you set the keyboard layout you prefer. The v1.3 Extras disk comes with thirteen additional keymaps that you can swap in at will. This command will also work from the CLI after the computer is running, so you can change keymaps anytime you like.

The keymap named USA2 is the Dvórák keymap. USA1 is for the Amiga 500 and 2000s. It enables the ( ) / and * keys on the numeric keypad. USA0 is the Amiga 1000 keymap. SetMap is located in the Systems directory.

LoadWB is the program that starts the Workbench. Remember, the Amiga Workbench is both a DISK, and a PROGRAM. The program's job is to display icons, accept mouse clicks, offer the familiar xxxxxx Free Memory message, and perform as your interface to the Amiga. The CLI is an alternative interface, and you can even have both at once, entering commands in one window, and clicking disk icons in another. This program is also found in the c directory.

Workbench v1.3 contains four additional startup batch files :

Startupll
CLI-startup
SHELL-startup
and Startup-Sequence.hd

These are all "script" files, lists of commands, exactly like the startup-sequence. Notice, however, that these can be set into motion ("executed") by the startup-sequence itself. One batch file is running AN-OTHER batch file. Startupll is called from s:startup-sequence, and it is mainly used to make some Ami-gaDOS commands memory resident, to establish environmental variables, and to mount some devices to the system.

Making a command "resident" means attaching it to system capability. A "resident" command takes up memory, but it permits the Amiga to execute the command without loading it from disk. The Amiga's command structure is enormous - many thousands of bytes of program code, and it's contained on the Workbench disk, mostly in the invisible c drawer. If all of it were "resident", there wouldn't be much memory left for doing anything else.

In Startupll, the standard commands made resident are *resident, list, cd, mount, assign*, and *makedir*. *Mount, assign*, and *makedir* are only temporarily resident - to speed up the startup process. Several new directories are created in this process: ram:T, ram:Env, and ram:clipboards. The ram:T directory is used for scripts and "temporary" files that the system needs to manage. Ram:Env holds "environmental" variables created with the SetEnv command (an available script command not used in the normal startup-sequence). Ram:clipboards contains the "clips" that are saved from the various Amiga programs that use the system's "clipboard" utility.

Additionally, Startupll mounts three devices to the system: speak:, aux:, and pipe:.

These devices, and any other mountable devices, are defined to the system in a file named "mountlist" inside another invisible drawer named "devs" on the

Workbench disk. The Amiga system was designed to allow "devices" to be mounted that it has never heard of. Programmers can create a "device", and have the computer "mount" it, and then treat it like any other hardware or software device. The cus-tomization potential is enormous.

Beginning with AmigaDOS (that means, Workbench) 1.3, the normal CLI window got some new tricks and capabilities in what is known as the Amiga "Shell." A "Shell" is a computer phenomenon. Basically, it means a command interface to a computer's inner workings. CLI is itself a shell, of course, but not much of one in computerists' circles. It doesn't, for example, permit editing the command line. If you make an error, you can't cursor backward and fix it. The new (1.3 and later) Amiga Shell adds that capability and more.

The startup-sequence enables the Shell by loading the L:shell-seg piece of code. Any new CLI windows that are opened with the NewShell command can then have the niceties of the Amiga Shell. One of those niceties is ALIAS. An alias can be defined for only one Shell window, but the SHELL-startup file con-tains aliases that are useable by all shells opened.

This startup file sets up aliases for xcopy, endshell,pro, sdate, ren, clear, reverse, and normal. SHELL-startup is executed everytime a new shell is opened.

CLI-startup is executed whenever a new CLI is opened. This initial file is merely used to define the prompt for the command line. Take the word of the pros. Forget CLI, and use Shell. It's a lot nicer. There's really no good reason for providing both.

The final startup-sequence file is Startup-Sequence.hd. It makes the proper directory assign-ments when using a hard drive. Harddisk setup varies greatly with manufacturer, however, so it's not possible to go into that can of worms here.

The vast Amiga public domain libraries are a great source of programs that can be run from the startup-sequence to enhance your Amiga environ-ment. Some useful programs you might want to consider are:

dmouse or qmouse - to speed up the mouse pointer, activate a window by moving the pointer over it, blank mouse and screen after x minutes of no activ-ity, etc.

Blank - a screen blanker

VirusX - a program to check all inserted disks for any nasty viruses

Dclock (or one of fifty others) to get a clock at the top of the screen. A watch on your wrist works, too, but the computer can keep time, too.

If you program, there is a commercial program called GOMF! to help trap errors that programs un-der development might generate. It should be run in the startup-sequence, too.

Okay, that's about it. Make a **backup** of your work disk, and go ahead and do some experimenting with adding different programs. You'll learn a lot about the way the Amiga works, and improve your working environment, too.

-=-

That's "What You Get Is What You Get," and you don't get much choice about it. Among wordprocessor COMPANIES, this feature is frequently mistaken for WYGIAYN. "What You Get Is All You Need." What they're really selling is WYGIWWWYTH, the state of the art of wordprocessing before competition set in. That's "What You Get Is What We Want You To Have."

The wonders of competition have brought a new "W" to the wordprocessor business. WYGIWYWTPF. "What You Get Is What You're Willing To Pay For," hence the more advanced features of the current batch of wordprocessors.

On the Amiga, there's another "W" thing. It's WYGINS. "What You Get Is No Surprise." For example, WordPerfect puts stuff on the screen where it's going to go on the paper. It doesn't show you headers and footers, though, and if you slap in a superscript or subscript, it won't display it as such.

Scribble! too, now in "platinum edition". Change margins in mid document with those infernal dot commands, and what you see on the screen isn't what you get on the paper. But it's "no surprise," since you can "preview" the document before you print. Same with Gold Disk's Transcript, which doesn't even count lines for you, but a quick preview will tell you where things are going to break.

WYSIWYG is one thing, but the easiest, user-friendliest way to wordprocess is WYSITWYG, that's "What You See Is TRULY What You Get." The closer the better.

Taking WYSIWIG to its logical next steps, many of the Amiga's wordprocessor products have migrated toward the desktop publishing end of things. However, the more elaborate you get with screen graphics and graphics-oriented wordprocessing, the more likely it is that you will need an expensive printer to get them to come out, especially with any speed, on a piece of paper. Several Amiga wordprocessors can handle the situation, however, including some that do their thing not only in graphics but also in color. Assuming you have a color printer, of course.

For some folks, the most important thing about a wordprocessor is not WYSIWYG or fonts, but how easy it is to learn to use. Several Amiga products blaze trails in ease

of learning. TextCraft Plus and KindWords (kith and kin, if you believe the trade gossip). Very easy to use. Lately, PenPal, too. Its online help makes learning its processes simple.
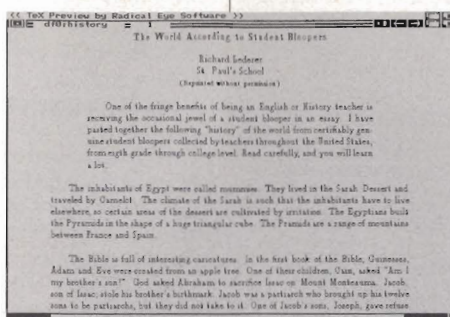
Amiga TeX
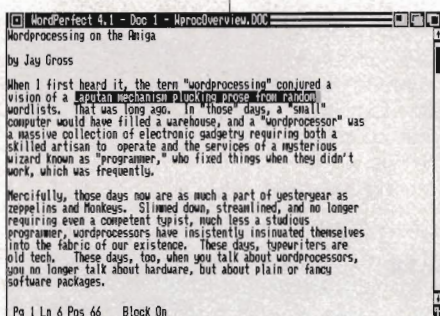
WordPerfect Basic Screen
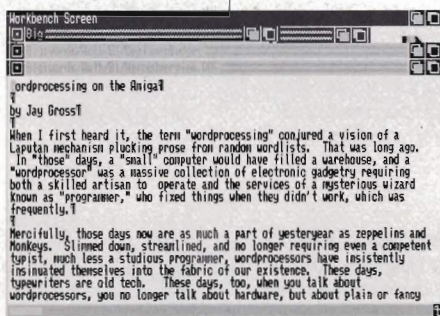
Transcript
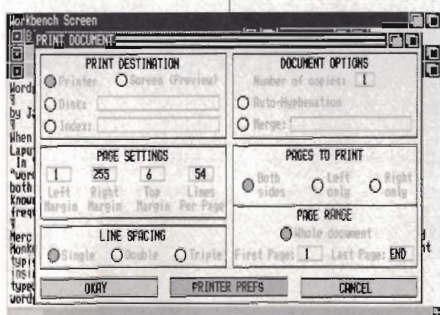
More Transcript

What to look for

Picking a wordprocessor is like picking a spouse. If you choose the wrong one, your life will be miserable, you'll worry over details a lot, and you won't be happy with the output. Here are some pointers to help you choose.

Pick out the features you absolutely must have in a wordprocessor and arrange them in order of priority. Hint: If easy learning is present on your list at all, you might as well put it at the top of the list, 'cause the farther down the list it goes, the less likely it is that you'll be able to satisfy it. Wordprocessing isn't really all that complicated a task, but it's like anything else that runs on any computer. It takes some learning. The more complex the features, the longer learning will take.

Term papers probably account for a major portion of the wordprocessors sold these days. Those ubiquitous beasties of the educational systems are much easier to turn out on a computer than they are on a typewriter. Mainly, the computer can type and retype the document without complaining, and without a steady supply of Twinkies and Coke. Unfortunately, term papers readily rack up many of the more advanced wordprocessing features that are both costly and troublesome to learn.

You can do term papers without those features, but if you have the extra features, you can turn the work out quicker. Imagine all those footnotes automatically formatted to the bottoms of the pages, and numbered correctly, and if you add a paragraph into one page, the footnotes all shuffle down through the pages just like magic. Oh, joy! You won't get that unless you pay for it, however.

Outline format is another nice feature of the more advanced wordprocessors. WordPerfect, for example, lets you choose from a variety of paragraph numbering formats for your outline. It automatically indents the lines for you, and if you renumber something, the program adjusts everything else accord-

Those ubiquitous beasties of the educational systems are much easier to turn out on a computer.

ingly. If you do a lot of outlining, either choose a word-processor that makes it easy, or consider one of the Amiga's specialized outline processors, such as Flow, or Thinker.

Fonts and Graphics

Amiga wordprocessors fall roughly into two categories. Those which deal with fonts and graphics and those which don't. You don't need fonts and graphics if your main use for a wordprocessor is programming, or simple letter writing. If you want to include graphics in your documents - such as charts, mixed in with that dissertation on Municipal Bond Futures As Impacted by the Price of Tea in China - you need a wordprocessor that does it. On the Amiga, there are plenty to choose from. Excellence!, Pen Pal, and ProWrite 2.5 are the main ones here, but there are others, too. The only advice to give in choosing one of these is: go to your dealer and see it before you buy it. There are vast differences among these products.

The neat thing about Pen Pal and ProWrite 2.5 is that they output text with the printer's normal text style (NLQ, for example), and drop graphics in at the same time. This is quite a trick! The advantage is that you get nice, regular print, and graphics at the same time, with only one pass through the printer and NO cutting and pasting.

Other features to look for

A mail merge feature lets you print form letters easily. You know the story. Dear Mr. Blank, It's been Blank months now since you brought your lovely pet, Blank, in for a Blank, and blah-blah-blah. Well, would you rather type 5,000 individual letters?

A speller is another wordprocessing feature that has become an absolute necessity. If your choice of wordprocessor doesn't offer one, however, you can use one of the several standalone spelling programs for the Amiga to even the score. Gold Disk makes one called Gold Spell II, for example.

Within the program itself, some wordprocessors' spelling options can be more easily invoked to just "look up" a word to see if it's okay before proceeding. excellence!, ProWrite 2.5, and other wordprocessors permit "as you type" spelling, to check the spelling continuously.

As a selling point, spelling checkers invariably state the number of words they recognize. However, don't be overly impressed by the number of words in a spelling dictionary. An electronic speller has to count every possible variation of a word as a separate entry. Word, wording, words, wordy, and wordwise are all separate items to an electronic speller, though you could probably figure out how to spell the whole batch if you can manage the root, "word."

There is even a potential problem with spellers containing an enormous dictionary. That is, the larger the number of words that a speller recognizes, the more likely it is that you can misspell one word into another one. For example, if you add an inadvertent "e" to the word "for," a computer speller won't flag it as an error, since "fore" is indeed a valid word on the golfcourse. The more elaborate of the spellers check for duplicated words words, too, a frequent typographical mistake. The excellence! program does this. If your wordprocessing REALLY needs

help, you'll want to check for capitalized letters in the middle of a word, and for improper capitalization of proper nouns (like connecticut, and Cat).

The speller should allow you to add words. These can be words specific to your business or avocations, or an extension of the words the speller is lacking. Some will also let you choose which dictionaries (yours, theirs or a combination) are used in the spell checking operation.

One of the slowest spellers on the Amiga wordprocessing market is WordPerfect's. However, considering what it's doing, it's not really all that slow. The WordPerfect speller, like most others, looks up suggestions for words that it doesn't recognize, putting up a list from which you can take your pick (or do your own thing). It's actually looking up your misspelled words by how they SOUND, not by how you've approximated the spelling. Even the world's most creative spelling should yield to it, although good spellers will wait impatiently for it to do its thing. If your spelling is truly atrocious, this trick will be VERY helpful. Also, you should immediately become a magazine writer; you'll fit right in.

A more recent innovation in wordprocessing is an online thesaurus. You use a thesaurus to improve your word usage so that nobody really understands what you said, but you said it so elegantly that nobody will ADMIT they don't understand it. Works great for term papers.

Electronically, a thesaurus is severely limited by the number of words (synonyms) recognized. In contrast to spellers, cop quantity. The higher the number of words and "key" words, the more likely you are to find synonyms (or antonyms) for the word you're looking up. WordPerfect, excellence! and the new version of Scribble! included in The Works! Platinum Edition are pretty much it for the Amiga's thesauri. Oh, for a multitasking one that's independent of the wordprocessing packages.

Wordprocessors aren't the only way of getting words onto paper these days. There are also things called "text editors", a delicate distinction by some accounts.

A text editor is usually a special-purpose wordprocessor intended for programmers. For some reason, the biggest consideration usually applied to them is speed. Have you seen any programmers who can type? Be that as it may, a text processor has no idea whether it's being operated by a programmer or a school teacher, so if you need automatic indenting a lot (say for outlines), you might want to check some of them out.

Tomas Rokiki's AmigaTeX is not a wordprocessor, really. It's a desktop publishing system that's not WYSIWYG (though it does have a preview option).

If your text normally includes things like complex mathematical formulae, you'll want to have a gander at AmigaTeX. It can handle ANY of those Greek letters, giant brackets, curly braces, radicals, and whatever else you care to throw at it. Has some glorious fonts, too, if you're into typography.

Okay, do you have your list ready? Is it a long one? Well, good hunting and good typing.

J:

• No control over channel assignment. Notes are randomly sent to left/right channels which is very distracting and can destroy a passage's continuity.
• DMCS has programming errors that can lock up the system, cause a system "GURU" and/or loss of data
• Program doesn't always release memory used by previous score. Rebooting required to "clean up"
• Instrument and tempo changes can only be done at the beginning of a measure
• The nine-instrument limit applies regardless of memory available
• Since only eight staves are available, only eight channel/instrument assignments are possible at any given measure, thereby negating the sixteen MIDI channel capability
• MIDI sequencing is limited. Special MIDI commands like pitchbending are not programmable
• Only IFF instruments can be used - no feature to create or use synthesized waveforms
• The special dynamic, tempo, and other playback information that makes DMCS scores so realistic are only available when played back through DMCS. Scores created by DMCS and stored in DMCS format can't be played back by any other program.

In summary, DMCS provides the most realistic scoring, printing and playback control using the internal voices. DMCS was an innovative and advanced program when first released in 1986; however, enough time has passed to warrant program code updating and debugging, which it has not received. Still, there are no competing products that do the same thing, yet.

Sonix

Sonix offers some unique features as a scoring program. Some of them are:
• Ability to create synthesized instruments using an easy graphic screen
• Ability to use IFF sampled sounds
• Ability to convert IFF sounds to program's own format and modify the attack, decay, sustain, and release portions of the waveform as well as the volume and amplitude modulation
• Scores are saved in SMUS format
• Ability to change instruments at any point
• Ability to specify channel
• All key signatures are available
• Common time signatures are available
• Good multi-tasking
• Simple to use scoring and editing
• Ability to score eight separate tracks for MIDI playback or four for both MIDI and internal sounds
• Sixteen MIDI channels addressable with detailed playback patches including control of pitchbending, volume and octaves
• Simple MIDI sequencing
• Computer keyboard can play an instrument or MIDI channel, allowing you to play along with the score
• Exceptional documentation. Manual provides basic music theory instruction in addition to detailed program directions
• Scores and instruments generally take up very little memory
• Up to 63 different instruments can be used within each score
• Freely distributable programs are available that can play back a Sonix score without Sonix

Sonix's weak points are:

• Volume level, key signature, tempo, and time signature are set once for entire score
• Score's graphics are difficult to read when all tracks are displayed
• Score's graphics are very unsophisticated, which also reflects in the printout
• No MIDI input capabilities
• Notes can only be tied within a measure and are not user selected. Sonix will create a tie if note durations selected extend beyond beat divisions.
• Duration values are from sixteenth to whole notes
• Since score is entered as tracks, only one note per track can be entered. Although only four internal voices can be used at any given interval because of the Amiga's hardware, external MIDI instruments can be polyphonic and more than one can be linked. Therefore, chording capability is important in an overall scoring program.

In general, Sonix provides the user opportunity to create unique sounds and simplistic scores which can be used more readily as background music for other programs. There are workarounds to some of Sonix's weaknesses, such as creating variations of an instrument at different volume levels to create dynamic changes. As a general music program, Sonix fills most needs at the very basic level.

SoundScape Pro Midi Studio - Mimetics (Retail Price: $149.00)

The Pro Midi Studio is a very sophisticated MIDI sequencing/recording program. It is mentioned here because it does allow sampled sounds to used by the internal voices in addition to MIDI. Included with the Studio is a utility to convert SMUS scores to Studio format and vice versa. Separate files are created for the note data and instrument assignments. Note data is stored as a sequence of events and specifies a multitude of MIDI playback data, such as pressure and program change, as well as the pitch, duration and position within the sequence. If a time signature is used, the duration and position are relative to the measure. Pitches are stored as the letter name and octave of the note. You can offset the octave and key. Soundscape is designed to be used alone or part of other programs. It is possible to link DMCS, for example, with it, while maintaining a true multitasking environment. The Studio also offers realtime MIDI input which is so precise that the slightest duration or syncopation can be recorded.

Other options allow quantization to a minimum duration value. Although a non-traditional approach to scoring, if your ultimate goal is to combine the internal voices and a MIDI within a score and graphic realism is not important, you may wish to use this program instead of purchasing a separate one for just internal voices. A sample editor is provided with the Studio in which more detailed information about a sample can be saved and modified in the Mimetics format, or in the IFF standard. SoundScape Pro MIDI Studio is a well written and designed program. Its documentation and user interface, however, are not at all easy for beginners to deal with.

Music Mouse

This is a fun little program that will also interface with the SoundScape Pro MIDI Studio and play IFF sampled sounds. However, very little scoring within the program itself is available except as patterns. One voice is established as the melody while the other three are automatically played as chords, arpeggios or randomized intervals. The program does offer a variation of the traditional twelve-tone chromatic values by user selection of diatonic, oriental, and other unusual toned scales. The screen is a colorful display of four graphic piano keyboards on which your voice lines play. The lines are moved by mouse movements and can travel in reverse directions. Without interfacing with SoundScape, however, this program cannot load or save scores as SMUS files, which detracts from its usefulness. One last note (no pun intended), you can drive four MIDI channels with Music Mouse.

The Music Studio 2.0

Activision's The Music Studio allows the user to design synthesized instruments and simplistic scores. Although the program does not support the IFF standards, a utility to convert its files is included. It does support MIDI sequencing as well as score merging, multiple repeats and lyric placement. The synthesized instruments are based on one type of waveform, but the user designs the sound with complex harmonic overtone manipulations.

Hot Licks

Hot Licks is has one feature not found in other programs - realtime note entry from the computer keyboard. The software doesn't record accurately at fast speeds, so record at a slower speed to ensure correct durations. All sounds are IFF standard, and the scores are saved as SMUS. A rhythm background can be loaded, which will use one of your internal voices, or you may play along on one of the voices. There is no MIDI interface whatsoever and no waveform manipulation, but if an unsophisticated, easy to use program fits your needs, check this one out. Remember that a SMUS file created by this program can be loaded into all the other scoring programs, which means you can be spruce up your scores later in another program.

SUMMARY

The best overall suggestion I can make to potential Amiga musicians is to have your local retailer demonstrate any software in which you are interested and to take time to browse through the software's instruction manual. Look for compatibility features such as IFF sounds and scores and consider your future needs. Music programs must suit your individual tastes, just as music itself is a personal preference. This article hasn't covered all the programs available, and there are new programs coming onto the market constantly. The creative world of Amiga music awaits you! Sally forth!

- Sally Ann Hubbard

The newest wrinkle on the Amiga animation front is programs that take ANIMS gener-ated from other programs, and manipulate them in ways that will turn on video directors!

("bitmaps"), vectors are directions on what to draw, how big to make it, and such. The Amiga can draw and fill objects at incredible speeds - plenty fast enough to do real time animation based on vectors. An early Amiga animation title, Aegis Animator, is vector based. It's still around, but it suffers from being an early release, and it hasn't been kept up to date.

A much newer Amiga title by Brøderbund, however, brings vector animation up to date. The program is Fantavision, which has an easy, mouse-driven user interface and performs a lot of the work of animation automatically in the "tweens" that it generates. Fantavision supports every possible Amiga screen resolution and mode, including overscan. Overscan capability is important if your work is intended for use in video, since the people who watch the video won't really want to look at those square, computer borders. The word "overscan" really translates: "No borders."

Two other vector-based titles are Antic's Zoëtrope and Forms in Flight. Zoëtrope is severely limited for video applications because it doesn't support overscan images, just as its predecessor, Aegis Animator, which was written by the same person for a different company (perhaps there's a correlation there?). Forms in Flight is noted mostly for its wireframe effects, although it renders, too, and some of its animations can get extremely complex and impressive.

The original vector-based animation product is Aegis' VideoScape 3D, now in version 2.0. VideoScape renders its objects in bitmapped form to an ANIM file format. The result is a highly compressed file which, when decompressed into the computer's memory, can be page-flipped to the screen in realtime. That means you can pack a lot of animation onto a single disk - many, many frames.

Many professional animators are using VideoScape (and other things of course) for their productions, including a company called Winners Circle Systems of Berkeley, California. Winners Circle's Amiga-based animation "Time and Again" was selected for showing in the prestigious Siggraph video theatre last year. In computer animation, that's about like winning the Academy Award, though of course not as widely publicized.

VideoScape's animations display a faceted quality to the objects, which lends quite an interesting "look" to Winners Circle's animation. For the animation enthusiast, however, VideoScape's object format is rather forbiddingly text-based. That is, you have to type scads of parameters into a cryptic text file, which the program them imports. It comes with good examples of the files you need, but avid VideoScape users will most likely prefer using an "object editor" program of some kind - there are several - rather than typing text files.

Although there is no Amiga "IFF" for object files, the objects are nevertheless almost completely interchangeable. Objects created for one program, either raytracing or other, can be moved to other Amiga programs using Syndesis'

InterChange, a program for translating object file formats.

New Developments

The newest wrinkle on the Amiga animation front is programs that take ANIMS generated by other programs, and manipulate them in ways that will turn on video directors. AniMagic, from Aegis, makers of VideoScape 3D and other software titles, is an example. It works on ANIM files generated by VideoScape (or other programs) to produce full, video style fades, wipes, dissolves, and video special effects. The program reads data from ANIM files and generates a new one that combines the others into one, composite picture. For example, many network television program intros move a picture block around the screen while the *both* of them are in motion. The block might appear to roll, twirl, whirl and swirl *while* its picture still moves, too.

You can do the same thing with ANIM files using AniMagic, but the work is done on the disk files that describe the graphics, rather than occurring in realtime as the pictures are coming in from Studio A, Camera B, Tape Deck 37, etc. AniMagic isn't an animation program. It's an animation *manipulation* program largely aimed at video production applications. It has competitors, too; it's an example of the genre, not the only choice.

An Animation Language

The most unusual and one of the most capable Amiga animation programs is really more of a programming language than an applications program. It's The Director, by The Right Answers Group. The Director, for a list price of $69.95, enables a very high-level, interpreted command language for making Amiga screens animate. The strength of the product is that it *is* a command language, and that's also its biggest problem. You have to write a program to make something work, and programming isn't everybody's niche. The Director's programming language is very similar to BASIC in its structure and syntax, but it adds a whole bunch of commands specific to doing animation on the screen.

The Director will load and play other programs' animations *(that's plural!)* while one of its own is proceeding. It will, for example, play an ANIM in a window on a screen of its own (memory permitting, of course). The Director language has commands for integrating music, sampled sounds, text, logically generated screens and backgrounds, and timing all of the above to the user's whims.

Another "language-based" Amiga animation product is Mindware's PageFlipper Plus F/X. The "F/X" part of that is moviemaker-ese for "special effects." The program permits mouseclicking your way to a script, however, rather than having to type one in (although you can just type it if you prefer). The images are then loaded and stored in memory, and the program performs many special effects and graphics manipulations as it displays them in the order and manner you've specified

with the script. To get animation to work on the Amiga screen, the screens eventually have to be "flipped." The computer, of course, does the work for you, but if you want to "flip" things independent of animation programs, PageFlipper Plus F/X will do it. The program's screen flipping speed capability is unmatched. It is suitable for many animation projects by itself.

PageFlipper Plus F/X and The Director are both extremely powerful script-based animation packages, PageFlipper being less language-intensive than The Director on account of its elaborate user interface that essentially produces the script for you as you click the mouse on its many buttons, gadgets, and menus, The Director being the more powerful.

Another title from Mindware, makers of PageFlipper Plus F/X, is PageRender 3D, a rendering and raytracing package. PageRender's strength, too, is its "script" based operation, even though the script can be easily, and intuitively generated by clicking on gadgets and icons. The script also gives PageRender the ability to do algorithm-based objects with little work on the user's part. Both programs contain support for ARexx, the Amiga's interprocess communication language by William Hawes. ARexx won't mean anything to you, as a beginner, but as time goes by, you'll see appreciate its vast power. The ARexx support in Mindware's products, for example, permits the programs to be controlled from an external program, to exchange data and commands with each other, or with external programs, and to control other things that you might like to go on. A PageRender 3D animation could, for example, be triggered by an event totally external to the Amiga - an opening door, a ringing phone - with enough manipulation of the ARexx language.

The Classical Approach

No matter how easy some of the Amiga animation programs are to use - and many of them are REALLY easy - classical animators pine for their long-loved "cells." Several Amiga products aim at just that - classical animation. These include Animation:Apprentice and a collection of support products by Hash Enterprises, and Microlllusions' Photon Cel Animator.

The Hash products include, as previously mentioned, Animation:Soundtrack, for pasting Amiga sampled sounds onto animations. The product supports SMPTE, which is the standard for doing such things in the video and motion picture industry. The company also markets Animation:Multiplane, Animation:Stand, Animation:Flipper, Animation:Titler, Animation:Quick2D, Animation:Editor, and Animation:Rotoscope. Hash's products are aimed at the professional animator.
Photon Cel Animator is what its name says it is, a "cell" animation program. Photon stores its frames in chunks of the computer's memory like everything else does. However, although most other Amiga animation players compress the frames into memory and then uncompress them on the fly, Photon takes the conservative

approach and stores the whole thing uncompressed. Although that consumes much more memory, that gives the program very precise and predictable control over the timing of the frame display, which is interfaced to video recording equipment for building full-scale, professional animations complete with synchronized sound track. It is the synchronization and timing which is Photon's strength, and its ability to interface to single-frame video recording equipment. This product is aimed at a professional animation market, and to a classical animator its tools are electronic heaven. Microlllusions also markets companion products for videotape editing and control from the Amiga - another requirement of professional-level animators.

For the Young Ones

Amiga animation is a fascinating thing, and there's no reason to leave out the younger set when you talk about being able to animate on the computer screen. For the kiddies, the Amiga even has a child-proof, scaled-down animation program, The Talking Animator, from JMH Software of Minnesota. It puts simple animation in the hands of the youngest of Amiga users - although these days, the younger set often starte their parents with their facility at the computer.

Looking Ahead

There are new animation products aplenty on the horizon, and the chances are that the task of making images move on the Amiga screen will get easier and more fun. For doing animations, you can't beat a computer, and for doing animations on an *affordable* computer... *Only Amiga Makes It Possible.*

J:

There are new animation products aplenty on the horizon, and the chances are that the task of making images move will get easier and more fun!
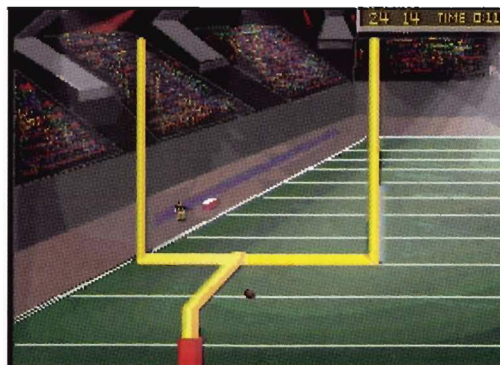
◀ **RayTraced Animation**
This animation featured a football that would spin and tumble through the air towards you then fly through the uprights right at you! The football was a raytraced object. This animation was offered in the disk set of A.X. Magazine Issue 2.5.

◀ **Raytraced Animation**
This was one of the classic Amiga animations which showed a man juggling three glass balls (not recommended at home) and all the reflections and refractions of the glass balls were true to life, as well as all the shadows on the ground and on the mans body!

In the previous issue...

All of this and more appeared in Issue 2.3 of A.X. Magazine.
1-800-2-THE-MAG
THE Magazine For The Amiga

Only Amiga Makes It Possible, But AX Magazine Makes It Happen!