What's new in System 6

by Tim Swihart

Here's an inside look at what's new and/or improved in Apple IIgs System Software version 6.0, better known simply as System 6. Here at Apple, we consider System 6 to be a major release since it introduces significant new functionality in the form of new tool sets, new applications, new NDAs, new control panels, and **much** more. Some of the new components were frequently requested by users (the HFS File System Translator (FST) for Macintosh disks is a prime example) and some are unexpected (like the Media Control Toolset).

System 6 is expected to require about as much memory as a similarly configured System 5.0.4 disk. It's important to note the words **similarly configured** — additional items that were not available with System 5.0.4, such as the new tool sets and FST's, require memory above and beyond what was needed for 5.0.4. A fully configured System 6 set up (fully configured equals all FST's, all NDA's, all Control panels, all drivers, etc. installed) will require slightly more memory than 5.0.4 did. All that extra functionality has to go somewhere.

When the System 6 Beta CD was released to developers, it could cleanly boot on a stock ROM 03 Apple IIgs and leave a small amount of RAM available while in the Finder. And the CD included more than just all of the FST's, drivers, etc. — it also included GSBug and NiftyList (both of which take up additional memory). The footprint of golden master System 6 may wind up slightly larger than the footprint at beta, but it should be obvious that the engineers behind System 6 took great pains in keeping things as small as possible while still providing some exciting new capabilities.

Speaking of exciting new capabilities, System 6 includes three new applications: Teach, Archiver, and synthLAB. Teach is an elegant text processing environment, perfect for Read Me files, perfect for quick notes to family and friends, and perfect for reading a variety of other file formats. Teach can read files saved in the standard Apple IIgs styled text format (text in the data fork, styling information in the resource fork), plain ASCII, AppleWorks (8-bit) format, AppleWorks GS format, and MacWrite v.5.0 format (right off of a Macintosh floppy if you have the HFS FST installed).

Teach can save documents as styled text files, as plain ASCII files, or as Installer scripts. Teach does not support saving files in AppleWorks, AppleWorks GS, or MacWrite v.5.0 files.

Teach includes the bare bones features you'd expect in a text processor: Find, Find Same, Replace, Replace Same, printing, and full control over fonts/styles/sizes. You won't find high-end word processor features such as a spelling checker, a ruler (where you'd adjust TAB stops, margins, etc), colored text, or the ability to mix text and graphics. Teach is intended to provide a general purpose solution for text handling on the Apple IIgs, not be the next great word processor to end all word processors.

Archiver is a hard drive backup utility with a desktop interface (unlike Backup II which is an 8-bit application). Archiver provides the basic services many users need in a disk backup utility: simple compression to reduce the number of disks required to hold the backup, support for tape drives, and the ability to backup either an exact image or individual files. There are third-party disk backup applications already available that have more functionality than

Archiver, but Archiver's definitely worth checking out if you own a hard drive.

synthLAB is a sample application that showcases the power of the new MIDI Synth toolset. Originally available in beta format from APDA for use with System 5.0.4, synthLAB combines a synthesizer, a sequencer, and a MIDI driver to let users create new instruments, record their own custom MIDI sequences, or play back other user's sequences. Until you've heard your Apple IIgs's sound hardware being put through its paces by synthLAB, you just haven't heard what that sound hardware can really do.

The MIDI Synth toolset is a second generation note synthesizer that handles most of the work required by an application in order to create incredible music. MIDI Synth requires about 25-30 percent of the CPU's time while running in the background (less if your Apple IIgs is accelerated). There's already a commercial game for the Apple IIgs that takes advantage of the power of MIDI Synth (*Dragon Wars GS* from Interplay), and XCMD's for using MIDI Synth from HyperCard IIgs or *HyperStudio* (*ClipTunes* from Triad Software).

MIDI Synth isn't the only new toolset in System 6. There's also the media control toolset, which provides a standard interface to nonstandard media devices such as laser discs and CD's. These devices have a common high-level feature set; they can play, jump forward or backward, pause, eject,and so on. But they have a very non-standard application interface; some players have a serial interface, others connect to the game port, some use numeric codes as commands, other use short ASCII strings. The situation is so bad that laser disc players from one company are controlled radically differently from those of another company, and in fact, different models of players from one company are controlled very differently from other models from the **same** company. Good examples are the popular consumer and industrial models produced by Pioneer. All are excellent players, but they are controlled very differently by computers.

Prior to System 6, few applications implemented support for
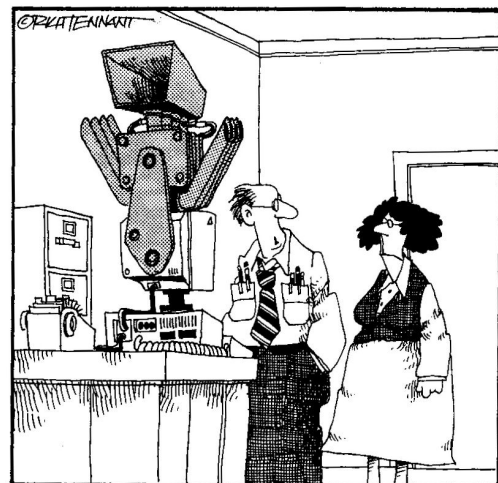
"ODDLY ENOUGH, IT DOES IMPROVE PC PERFORMANCE. BUT YOU'VE GOT TO MAKE SURE YOUR NITRO TO ETHYL - METHALENE MIXTURE IS JUST RIGHT, OR YOU'LL CRASH THE DISK DRIVE AND CRAP OUT THE VALVES."

such devices because of the inconsistent approach needed for each type of device. Those applications that did implement such support generally only worked with a small handful of players.

During the course of providing support for multimedia devices from within HyperCard IIgs, it became obvious that a general purpose solution was needed; one that provided access to a multitude of radically different devices with essentially no impact on the applications. The Media Control Toolset offers such a general purpose solution, not just to HyperCard IIgs, but to any GS/OS application that wants to push multimedia to the limits. Up to eight different devices can be controlled at one time by assigning each device to a channel. A channel is defined as the combination of a type of device and a description of how it's connected to your Apple IIgs. For example, a channel might have a Pioneer 4200 video disk player connected via the modem port or a CD-drive connected via your SCSI port.

Instead of changing the application to support a new type of player, developers can simply create a media control driver for that player, drop it into the user's System folder, and all applications that support the media control toolset now work with that new type of player.

The Media Control Toolset includes drivers for Apple's CD drives, Pioneer's consumer models, and Pioneer's industrial models. Other drivers may appear later, released separately from System 6 itself by Apple, or they may come from third parties. Their format is fairly straightforward and documented on the System 6 Beta CD, which means the information should be available to all developers once System 6 is released. Essentially, third parties could provide packs of drivers for a variety of devices just like the current products that provide printer drivers for printers that aren't supported by Apple's drivers.

Included in System 6 is a new NDA for use with the Media Control Toolset. Called the Media Control Remote, this NDA acts like a super remote control; it controls all eight channels, provides access to device-specific controls, such as turning on or off the left and right sound channels on a laser disc, and provides status information, such as which track is playing, or how many tracks there are on the disc. Coupled with the Video Overlay Card, the Media Control Remote opens the door to some exciting new possibilities.

The next release of HyperCard IIgs (version 1.1) includes a stack that takes advantage of the Media Control Toolset. Called the Media Control stack (ok, so the name's not all that original, at least it's obvious what it does), it marries the ease of use of HyperCard IIgs with the power of both the Video Overlay Card and the Media Control toolset. Think of it as a user-scriptable super remote control for all those multimedia devices, you just point and click as you create whole new stacks that take advantage of all this new technology. No scripting is required. The Media Control stack creates or contains most of the scripts you'll need for a very wide variety of media activities.

The Media Control Remote isn't the only NDA being introduced with System 6. There's a Find File NDA which quickly searches any online volume for a file. It can search in the background, allowing users to keep working while a large volume is being searched. Find File NDA allows users to control whether the search string should be the exact file name, the beginning of a file's name, the ending of a file's name, or exist anywhere within a file's name.

There's also a Calculator Desk Accessory in System 6. Nothing too fancy, just your typical 4-function calculator that also handles hexadecimal. Users enter numbers by clicking the numbers on the calculator itself, pressing the corresponding number keys on their keyboards, or pasting a number in from the clipboard. To access the hexadecimal functions, just click in the Calculator's zoom box and it will widen, revealing the hex keypad and two buttons that control whether the calculator is working in hex or decimal format.

System 6 is the first release of Apple IIgs System Software to incorporate the Universal Access suite. Designed originally to aid users with a variety of disabilities, the components of the Universal Access suite are useful for all users. This suite is composed of CloseView, Video Keyboard, and Easy Access, which in turn is composed of Sticky Keys and Mouse Keys.

CloseView magnifies the screen from two to twelve times its original size, making the pixels much fatter and thus easier to read by users with some visual impairments. It also makes it easier to line up objects in any desktop application that doesn't already provide a fat bits mode. Since the desktop can now be several times its original size, only part of it shows on your Apple IIgs's monitor. How then do you control which parts show and which parts don't? Simple — the area around the mouse is always shown on the monitor. To scroll the desktop so that other parts of it are shown on screen, simply move the mouse toward the area you want to see. As the mouse gets close to the edge of the visible area, the desktop will automatically scroll to show a previously hidden area. CloseView only works with desktop applications, but does have key equivalents for all of its major operations so that you can turn it on or off and even adjust the zoom without having to actually open the CloseView NDA.

Video Keyboard has been around the longest of any component in the Universal Access suite. It's been available in beta format from APDA for quite some time and has been a regular on the *develop* CDs. *develop* is a technical journal published by Apple that focuses primarily on the Macintosh, but its CD contains some useful Apple II material that's often not available to the public anywhere else.

Video Keyboard is a special window that exists above all other windows and even above dialogs and alerts. This window contains the layout of a regular keyboard, allowing users to click on the keys in the window instead of having to press a key on a physical keyboard. Coupled with an alternative pointing device such as the *HeadMaster*, Video Keyboard provides much richer access to the Apple IIgs than might otherwise be possible for some users.

Users familiar with desktop applications are sure to point out that often modifier keys have to be held down while a key is pressed in order to access certain characters within a font, issue key equivalents, etc. No problem! Video Keyboard allows users to click first on the modifier (or modifiers if more than one is needed) and then on the key. Video Keyboard simply holds down the modifier for you. To release a modifier you didn't meant to click on, simply click it a second time. VideoKeyboard only works with desktop applications.

MouseKeys allows the Apple IIgs's keypad to be used to move the pointer on the screen instead of the actual mouse. Once activated, the 5 key is the same as clicking the mouse, the 8 key moves the pointer straight up the screen, the 2 key moves it straight down, the 9 key moves the pointer up and right, etc. Just think of the 1, 2, 3, 4, 6, 7, 8, and 9 keys as arrows instead of numbers, each pointing outward from the 5 key.

The 0 key is the same thing as holding down the mouse button, so users can drag an item using only the keypad by first maneuvering the mouse over the item, then typing 0 to hold the mouse button down, and then using the eight 'arrow' keys on the keypad to drag the item, and finally type the 5 key to release the mouse button. While that may sound like a lot of work, it's actually quite simple and proves very handy when you're trying to align items on the screen (which is especially simple to do using MouseKeys since you can move the pointer in a single axis with ease). MouseKeys is toggled on and off by pressing Command-Shift-Clear.

Sticky Keys is built into ROM 03 CPU's, but System 6 brings that functionality to ROM 01 users as well! Some users have difficulty holding down modifier keys and pressing another key at the same time. StickyKeys simply remembers which modifier key (or keys) were pressed one at a time before the regular key was pressed. Thus, to type the equivalent of Command-Control-Esc using StickyKeys, a user would press and release the Command key, then press and release the Control key, then press and release the Esc key.

StickyKeys can be activated by pressing the SHIFT key 5 times quickly. Once on, a small icon will appear in the upper right corner of the menu bar. If a modifier key (or keys) is being held down by Sticky keys, the icon changes to include a down arrow, providing visual feedback since the keys aren't physically held down. Once activated, a modifier can be locked down so it can be used with a series of key presses without having to be pressed again each time, simply by pressing the modifier key twice in a row. For example, the sequence Select All, Copy, Paste three times can be typed using StickyKeys as Command, Command (the second Command locks it down), A, C, V, V, V which would be the equivalent of pressing Command-A, Command-C, and Command-V three times. StickyKeys can be turned off by again quickly pressing the SHIFT key 5 times or by simply pressing

a modifier key AND a non-modifier key at the **same** time (which ind cates to StickyKeys that it's not needed since obviously you can press more than one key at a time).

The components of the **Universal Access suite have all appeared for several months now on the Developer CD's and on the** *d e v e l o p* **CD's so that developers could have advanced notice in case they needed to change anything in their applications to be compatible with Universal Access.** Developers uncertain whether or not they're doing everything they need to do in order to remain compatible should read *Apple IIgs Tech Notes #91*.

The most likely cause of conflict between applications and the components of Universal Access seems to be applications that write directly to the screen instead of going through Quick-Draw normally (this was typically done to get a slight performance improvements in the days before System 5.x's faster QuickDraw was released). CloseView has to patch QuickDraw at boot time in order to work and applications going around QuickDraw are then going around CloseView as well. The end result is that even if CloseView is installed but the screen is not currently being magnified, screen update problems can occur in certain applications. If you suspect an application is incompatible with CloseView, or you simply seem to be having weird things happen to your screen under System 6, remove or inactivate CloseView, reboot, and try again. Simply avoiding the use of CloseView isn't enough, you'll have to either delete it from your boot disk or inactivate it using the Finder's Icon Info window for CloseView and making sure its Inactive check box is checked.

The Alliance for Technology Access Centers were licensed to distribute the Universal Access suite, along with electronic documentation for it, in late 1991. This was possible because Universal Access was finished before the rest of System 6 and there was a strong desire to get these important components to their target market as quickly as possible.

Three new File System Translators (FST) are being introduced with System 6! The first two are read-only FST's that allow Apple II DOS 3.3 and Apple II Pascal formatted disks to be used with any application that properly supports GS/OS. These two FST's make it simple to move files formerly trapped on DOS 3.3 or Pascal floppies onto ProDOS, AppleShare, or HFS disks.

The third translator is the long-awaited HFS FST — HFS is the file system used on the Macintosh. The introduction of this FST means that it's now possible to read and write Mac floppies from Apple IIgs applications! You can't run Macintosh applications on your Apple IIgs and only some Mac file formats are useful on a Apple IIgs, but there are definite benefits to this FST. The most noticeable benefit is the elimination of the 32Meg limit for hard drive partitions (ProDOS-formatted files will always be limited to 32 Megs, but now you can create HFS-formatted partitions).

Only a ProDOS partition or an AppleShare server can be booted from, so a user with one high-capacity hard drive would typically have a 32 Meg ProDOS partitions (for booting and for their 8-bit applications) and the rest of the hard drive (well beyond the 32Meg limit of ProDOS) can be one big HFS partition. To drive this point home to developers, the special System 6 Beta CD that was sent to Apple II Partners and Associates in late 1991 included four ProDOS partitions, the first of which was bootable on an Apple IIgs, and one 160-Meg HFS partition, all of which was accessible from a stock ROM 03 simply by booting from the CD. The HFS FST was installed on the CD's boot partition. The 160-meg partition is nowhere close to the maximum size of an HFS partition, it was simply all the room that was left on the hard drive that was used as the master for the CD.

The Control Panel NDA has undergone radical surgery—the computer equivalent of a combination face lift, tummy tuck, liposuction, and hair transplant. It barely resembles the Control Panel found in System 5.x. In fact, the changes are so dramatic that CDev's (the items found within the Control Panel NDA) are no longer called CDev's. Instead, they're each referred to as a control panel and users are no longer limited to only one CDev, er control panel, open at a time. All of your control panels can be open at once if you want, since each control panel opens into its own window. In fact, if you open the CDevs folder, you can open any control panel by simply double-clicking on its icon! Since each control panel has its own window

under System 6, control panels can use smaller or larger windows than the standard size imposed by System 5.x — SetStart uses a very tiny window, while the AppleShare control panel uses a window that's very wide and very tall.

System 6 also introduces several new control panels including: Sounds, SetStart, Media Control, Namer, and even one to allow network booting directly into ProDOS 8. The Sounds control panel allows sounds, stored as rSound resources, to be assigned to various system events such as disk inserts, disk ejects, the regular beep, bad keypress, windows whooshing open/close, etc. These sounds are stored in the same format used by HyperCardIIgs, in fact, HyperCard IIgs v.1.1 knows when it's running under System 6 and will also search for a requested sound in the *:System:Sounds folder. Sound utilities such as Triad Venture's *Sound Convert* should make it simple to create rSound files for use with System 6.

SetStart allows users to easily boot into an application besides the Finder. SetStart allows users to pick the Finder (which facilitates restoring the factory settings), the currently running application, or any application on the boot volume via a Standard File dialog. The introduction of SetStart means users no longer have to know exactly what file to rename in their System folder and no longer have to copy their desired boot application into the System folder (or play any other boot-time games) in order to boot into the application of their choice.

The Media Control control panel (now there's a mouthful) allows users to define how their multimedia devices are connected. Users pick each of the eight channels, ignoring any unused channels, and click on a list of drivers to indicate the type of device for a given channel, then click on a list of connection methods for that device. For example, my channel 1 is assigned to a CD-drive connected via my SCSI card and my channel 2 is assigned to a Pioneer 4200 Laser disc player via my modem port. I could also assign channel 4 (skipping channel 3 just because I can) to a Pioneer 2000 Laser Disc player connected via the game port (no serial interface adaptor needed!) and channel 5 could be assigned to a second CD drive (if I had two) which would probably also be connected via the same SCSI card that the first one was. Once your channels are assigned, the Media Control Remote is about all you need to start dabbling in the various media devices.

Users familiar with AppleTalk networks have probably seen the old Namer application (an 8-bit application). Namer is used to assign names to printers on your network (something normally done by the network administrator). System 6 introduces a control panel version of Namer that's **much** easier to use than the old 8-bit application. Once you've used the Namer control panel, you'll forget all about the old way of doing things.

And speaking of networking becoming easier, System 6 includes a new Network control panel that allows users booting over a server to boot directly into GS/OS, like they did with System 5.x, or directly into ProDOS 8 **without** having to install a IIe Workstation card and connecting through it. Simply click the ProDOS 8 radio button in the Network control panel and the next time your Apple IIgs boots from a server, it will quickly boot directly into ProDOS 8.

Many of the control panels from System 5.x have been dramatically improved for better performance, a cleaner user interface, simplification through combining several small control panels into one, etc.

The AppleShare control panel is a little wider than it used to be, making it easier to read the zone and server names. Perhaps this wasn't a problem if your Apple IIgs was on a tiny network, but users on larger networks should find this improvement to be quite a blessing.

The AppleShare control panel also uses targetable controls (see the explanation below) for its server and zone lists. As a result, users can jump right to a specific server or zone by typing the first few characters of that server's or zone's name. On a network with hundreds of zones such as the one at Apple, this feature is almost mandatory —without it, selecting zones involves a **lot** of scrolling.

The Time control panel has been rewritten. It no longer uses popup menus to set the hours, minutes, and seconds. Instead, users click on the hour, minute, or second portions of the time display and either type a new value for it or click on the up/down arrow buttons in

the Time control panel to adjust the value. The month, day, and year are adjusted in a similar fashion.

Other changes in the Time control panel include a display of what day of the year it is and how many days are left in the year (which simplifies planning your New Year's Eve parties).

The Time control panel also features a checkbox that lets users decide whether or not they'd like the Time control panel to handle adjusting their clocks automatically for Daylight Savings time. If you prefer to track that manually, there are radio buttons for Daylight Time and Standard Time, clicking the unselected button will adjust your current clock's time up or back one hour.

The General control panel is a combination of the old General CDev, the Mouse CDev, and the Alphabet CDev. Now, you can adjust menu blinking, cursor flash rates, system speed, mouse speed, double-click timing, display language, keyboard layout (USA, Dvorak, etc.), and whether or not keyboard translation is performed. Keyboard translation allows or prevents access to characters within a font that requires the Option key to be held down. There's even a check box that allows you to have your NDA menu alphabetized.

So much is new in System 6 that a Shortcuts file was added to one of the disks. Prior to release, it was on the SystemTools2 disk but it could be moved to another disk if space constraints demand it. Once you have System 6 installed, open the Shortcuts file with Teach and you'll find tips for all aspects of System 6, including such gems as:

—Command-W always closes the front window even if it's a desk accessory or control panel.

—Whenever you see a List control with a bold frame, you can use the up and down arrows to select various items in the list, and you can type the first one or more letters of an item to select it. (When typing the first several letters of an item, you have to type a key every two-thirds of a second or faster.)

—You can type letters to move around in the CDA menu (first letter only). Each press moves you to the next line that starts with that letter).

—When Initializing or Erasing a disk (in the "Initialize device .SPLAT as..." dialog), Command-Return works for the Initialize or Erase button.

—In the Finder, you can hold down Option and choose Control Panels from the Apple menu to open the System:CDevs folder.

—Command-Shift-Esc opens the Control Panels NDA, just like choosing Control Panels from the Apple menu.

—You can use letters and the arrow keys to select a control panel icon.

—You can hold down the Command key and click on an icon to select several control panel icons at once, or you can hold down Shift to select a whole range of control panel icons.

There are some subtle changes to System 6 that may briefly trip up experienced users who don't bother to read the Shortcuts file or the manual for System 6. Most notably, TAB no longer advances to the next disk when a Standard File dialog is open. To understand why, I'll first need to explain the concept of targetable controls.

System 6 supports the same concept of targetable controls that was first introduced in Macintosh System 7.0. A control is said to be the target if key presses from the user are handled by the control instead of being passed somewhere else or simply ignored. Let's look at a generic example first: a dialog with two text entry fields. Normally, users would have to click in one field or the other to move between them. Under System 6, if both are targetable controls, then the current target is the one that is sent the user's key presses. Pressing the TAB key tells the system to make the next control the target. For controls other than line edit/text edit controls, a bold frame is drawn around the current target to help inform the user where their key presses will be sent. Text entry fields have a blinking cursor when they're active (or a range of selected text), so no bold frame is needed.

In a Standard Save File dialog, the intial target is the file name field (where you type a name for the new file). Pressing the TAB key makes the list of files/folders the target — pressing keys now simply moves through the list of existing files/folders. While this may seem a tad confusing at first, it take only a few tries to get used to this enhanced approach to navigating disks.

So just how does a user advance to the next online device if TAB now does something different? Command-TAB moves to the next disk. Also, Command-Esc is a new key equivalent for the Volumes button, making it much easier to move between your online devices.

Look around the system for other places that take advantage of targetable controls. The AppleShare control panel is another great example, it's much easier to move around large networks when the

Fighting is unnecessary, gentlemen!
We've ordered 2 copies of System 6

zone/server/volume lists can accept keyboard input to jump to your desired location without a lot of scrolling.

The Control Panels NDA isn't the only long-time component of Apple IIgs System Software that's undergone a major rework for System 6. The Installer has been greatly simplified so it should no longer be intimidating to normal users. Instead of forcing users to pick which components of the System Software they want installed, a new EasyUpdate approach has been implemented. EasyUpdate tells the Installer to figure out what the user needs to have installed in order to bring an existing or new system disk up to date with System 6. The Installer looks at what you have already installed (drivers, FST's, CDev's, etc) as well as what you have connected (in case you forgot to install a driver that you really needed).

The old familiar list of scripts that could be installed is still available, just click the Customize button on the Installer's EasyUpdate screen. There are some changes in the custom installation area though. Mostly they are behind the scenes changes that simplify installation. If you select several scripts, each of which may include the same file, the System 5.x Installer would copy that file several times, once for each script that called for it. The System 6 Installer is smarter than that — it scans the selected scripts and combines them into one super script, eliminating all redundancies along the way. The result is a faster installation and fewer disk swaps.

The Installer in System 6 won't let you install to the disk you booted from, so make sure you boot from the floppy that the Installer comes on. If you're not certain what portions of System 6 you need installed on your Apple IIgs, just let EasyUpdate handle things for you. Bear in mind though that EasyUpdate won't add **new** items, like the HFS FST, to your system. You'll need to use the Customize mode for that after you've run EasyUpdate.

EasyUpdate also won't install applications like Teach or Archiver since they could be placed anywhere, unlike regular system components that have to be in exactly the right spot. Just use the Customize mode and tell the Installer where you want those applications to be placed.

One last note about the Installer — when you're prompted to insert a disk, just stick the floppy in the drive. You do **not** need to click on the OK button. No, the Installer's not doing anything special, it's actually a change deeper within System 6. Anytime the system prompts you to insert a 3.5 inch floppy, the System will click the OK button for you once it detects a disk has been inserted. 5.25 inch disks can't be detected as they're inserted, so you'll still need to click your own OK buttons when prompted for one of them.

There are dramatic, behind the scenes, improvements throughout System 6's Toolbox, but most of them don't show

up for end users. Instead, they open new doors or remove existing hurdles for developers. One of the most obvious changes you will see is that the standard scroll bar coloring is no longer the coarse black and white checkerboard. Instead, it's a smooth grey. While this probably sounds like a trivial change, the effect in terms of polishing the look of the desktop is quite large.

Other toolbox changes include support for larger font sizes and thermometer controls like the one on the boot screen. Many of the changes within the toolbox are the addition of new bits to define new behavior, a change that end users aren't likely to notice but developers certainly have. There are so many of these changes that the lead Toolbox engineer coined the phrase "we have a flag bit for that."

There's one last major area of change — the Finder. So much has changed in the Finder that it really needs to be fully explored as a separate article. Rather than make you wait in suspense until such an article appears (editor's note: he can't wait till next month?), I'll briefly mention a few of the changes.

My favorite new feature may seem a little odd to some folks but it makes managing the Finder's desktop so much easier that I now expect all applications to include similar functionality. I'm talking, of course about the new Windows menu. If you've ever had several windows open at once, you know what a hassle it can be to find a smaller window that's completely hidden by a larger one. You have to shuffle windows around so they're hanging mostly offscreen, or close them and reopen them after you've carefully positioned the smaller window. No more! Each window that the Finder opens is listed in the Windows menu. Selecting a window's name from this menu snaps that window to the front without requiring any other shuffling. Many word processors already have this functionality, but I find it particularly handy to have it in the Finder.

Holding the Option key down while selecting a window's name from the Windows menu tells the Finder to close that window instead of bringing it to the front. Another nice touch for managing your desktop.

The Windows menu also includes a Stack Windows item that, when selected, neatly stacks all of your open windows on the screen. The title bars are staggered vertically so that each title bar can be read. A seemingly simple touch perhaps, but a very nice one!

As hard drives become increasingly popular among Apple IIgs users, files seem to be buried deeper and deeper within nested folders. As you navigate downwards through the sea of folders, your desktop becomes a veritable junkyard of open windows. What if there were way to close the current window as you were opening a folder within it? As you dove deeper and deeper into the sea of folders, you could keep only one folder open at a time if you so desired (or keep only some of the folders along the way open).

System 6's Finder provides tunneling, first introduced in Macintosh System 7, and also reverse tunneling, which lets you keep your desktop neat as you navigate back up the sea of folders. Holding down the Option key when you double-click on a folder icon will open that folder, and then close the parent folder (the one that contained the folder icon you just double-clicked). If you want the parent folder to stay open, don't hold down the Option key.

Reverse tunneling requires two keys to be held down, the Option key and the Command key. Plus, you have to click on the window's title bar. Don't just click and let go of the mouse, you'll need to hold the mouse button down because your action will cause a popup menu to appear, dangling from the window's title bar. In that popup will be the list of folders all the way back to the disk that the folder is on. The top item in the list is the current folder, the bottom item is the disk the folder is on, and the items in between represent the parent folders for the current folder. Perhaps it's easier to visualize if I say the middle items are the parent, grandparent, great grandparent, etc folders. To close the current folder, and open a parent folder, simply select a parent folder from the popup menu and release the mouse. The parent folder will be opened, then the folder whose title bar you clicked in will be closed.

If you don't hold down the Option key while clicking on a window's title bar, you can still navigate to a parent folder, but the folder you're coming from won't be closed. Together, tunneling, reverse tunneling, and reverse tunneling without closing (for lack of a better name) make it much easier to work in the Finder without introducing a lot of window clutter.

Prior to System 6, users have often asked how they could be certain they were using a specific version of the System Software. Hard core power users knew how to read the version numbers that appeared if you held down the space bar while booting, but that's hardly a solution for the masses. So, System 6 starts a new tradition. On the splash screen, just above the thermometer that indicates boot progress, the words "System 6.0" are displayed. As the system is revised in the future, these words should change to reflect what system is being booted.

If you forgot to check your splash screen during booting but still want to verify what version of the System you're running under, there's no need to reboot. Simply open the Finder's About box. In it, you'll see the Finder's version number, the System's version number, how much memory is installed in your Apple IIgs, and how much memory is currently available. Does it seem like there's not much memory left over and you're certain it's 6.0's fault? Look again, the Finder's About box also breaks out how much memory is being used by the System, how much is being used by the Finder, how much is being used by Setup files (things like SysBeep and GSBug), and how much is being used by all those desk accessories you already had installed.

I was shocked the first time I saw how much memory my desk accessories and setup files were using! So shocked that I cleaned out the ones that I didn't really use. I was surprised at how many desk accessories were still active that I'd dropped in to try out, but never used again. If you have a hard drive, odds are high that you're spending a lot more memory than you realize on things you don't really use.

System 6 is in its final stages of development as I write this. Engineering is working on their first final candidate, and Testing is taking a deep breath to prepare for the big push towards golden master. Hopefully, by Valentine's Day, System 6 will long-since be in the hands of end users. That's a little later than I predicted during last October's User Group TV broadcast, but I did say we reserve the right to slip the schedule in the interest of delivering a top-quality product.

So, where can you get System 6? All the usual places: order it directly from **Resource Central**; get it from a User Group that's licensed to distribute Apple IIgs System Software; download it from an online service such as GEnie, CompuServe, or America Online; etc. System 6 is expected to be available in several formats: in the box with new CPU's; as disks only for customers that want to save a few bucks; for sale with the manuals that document all the new features; and, if everything goes right, for sale on a special CD that contains System 6, related sample code, related updates to Apple's developer tools, updated interfaces, electronic documentation for the new tool and operating system changes, and much more. Watch for more details in future issues of **A2-Central** or keep in touch with your User Group or online service.

As a closing note, many users ponder whether or not a hard drive is needed for use with an Apple IIgs and/or System 6. Technically, the answer is "no". You can operate cleanly in a floppy-only environment, but you won't have full access to everything the system has to offer (there just isn't enough room on an 800K floppy to hold all of the excitement that's been packed into System 6). If you have a hard drive, you're probably going to get a lot more out of the system. My personal opinion on the subject is that it's like wearing a warm coat on a very cold day, it's not required, but it's generally a darned good idea.

*(Tim Swihart has been working with computers since his first FORTRAN class in 1980. He was hired by Apple Computer, Inc to manage Apple IIgs developer tools and is currently Apple's Product Manager for Apple IIgs System Software, HyperCard Apple IIgs, and developer tools. Tim's been part of the HyperCard Apple IIgs v.1.0 and v.1.1 teams, the HyperMover team, the System 5.0.3, 5.0.4, and 6.0 teams, and lead the effort in the creation of the System 6 Beta CD. He's also written FreeWare and ShareWare solutions for the Apple IIgs, programming articles for the Apple IIgs, fielded questions of all sorts on America Online and GEnie, and recently co-authored a book on Macintosh programming, **Programming for System 7**, Addison-Wesley, Gary Little & Tim Swihart).*

Miscellanea

The biggest news around here, miscellanea-wise, is that Resource Central is the new home of all the Apple-label Apple II development tools that were previously handled by APDA. By the time this issue hits the newsstand, we will be fully stocked and ready for your orders. Our prices will be the same as APDA's or lower. The *best* result of this development is that we will now be able to offer System 6 and the upcoming ProDOS 8 System Disk 2.0 to anyone. The licensing difficulties that prevented this in the past are behind us. Check next month's catalog for prices and a complete listing of the APDA products that we have, or give us a call.

Early in March, Office Productivity Software, P.O. Box 1042, Mahomet, Ohio 61853, will be releasing their third AppleWorks-related product, *Disk Tools*. The package requires AppleWorks 3.0 and includes three TimeOut ™ applications. TO.Volume Backup makes a full volume backup of your hard disk while compressing data to reduce the number of disks needed and to speed the backup process. TO.File Backup makes an incremental backup. TO.Archive is used to handle NuFX archive files. This application is able to put files into or extract them from both standard NuFX (.shk) archives or Binary II encapsulated NuFX (.bxy) files. It also handles both the LZW/1 compression format used by the 8-bit ShrinkIt and the LZW/2 format used by ShrinkIt GS.

Recognizing that the present economy makes it difficult to invest in computer products, the president of the Morgan Davis Group, Morgan Davis, is offering his highly praised Proline bulletin board software for the unbelievable price of $99.00. This offer is good only until February 14, 1992. For further information contact the company at 10079 Nuerto, Rancho San Diego, Calif. 91977-7132, 619-670-0563, or fax 619-670-9643.

Rich man/poor man? USA Today recently reported that Microsoft Corporation's 35-year-old William Gates may be the richest person in America. The value of the 56.7 million shares that he holds in his company rose to nearly $6.5 billion dollars on the first day of trading this year. On the other side of the coin, however, the California Technology Stock Letter predicts, among other things, that Apple Inc. will win the law suit against Microsoft and get an injunction against the sales of Windows.

If you ever heard the Navy's Grace Hopper speak, you'll be saddened to hear she died of natural causes on New Years Day. She was 85. She had pioneered the use of compilers in the early 50's and was involved in the development of COBOL, which is still one of the most widely used programming languages today.

Apple Computer, Inc. has announced a special promotion for purchasers of their extended service program, commonly referred to as AppleCare. The promotion, which begins on January 20, 1992 and extends until September 30, 1992, gives AppleCare customers the option of either deferring billing for one year or receiving rebates on selected Apple Computer products. For more information contact your local authorized Apple dealer or call Apple at 800-538-9696.

Of interest to European subscribers is the French version of Ultimate Fonts by Kingwood Micro Software. According the Kingwood's press release, this product is completely compatible with the French version of AppleWorks 3.0C and UltraMacros commands. Contact Beverly Cadieux at Kingwood for more details. (2018 Oak Dew Drive, San Antonio, Texas 78232)

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Ask (or tell) Uncle DOS

I've got the time....

On January 1, 1992, users of AppleWorks, Publish It and all other ProDOS applications on the IIe and IIc went back in time to 1986, at least as far as dating files is concerned, that is.

This little inconvenience is not a result of a problem with your clock card but a limitation included within ProDOS when it was written back in 1984. In fact, this same problem occurred in 1987. ProDOS can only keep track of, at the most, 6 years until it has to be patched. Included here is a simple program that will allow you to update your ProDOS Version 1.7, 1.8, or 1.9 disks.

The problem occurs with an algorithm within ProDOS after it reads your clock card. The algorithm calculates the year based on the date and the day of the week. Once this information has been computed, ProDOS searches a table to determine which year could produce the same day/date combination it just read. This internal table is seven bytes long and those years that are leap years must be included twice. Because both 1992 and 1996 are leap years, we can only modify ProDOS to keep track of the next 5 ·ears at this time. In 1997, the problem will tart all over again.

After you type in the following program, save it to disk as "UPDATE.PRODOS." When you are ready to modify a disk (you only need to modify disks that you *boot* from), run the program. When executing, the program will load the file "PRODOS" into memory, make the necessary patches, and save it back to disk-but obviously with the wrong date. To test the new ProDOS version, simply reboot your computer with the newly patched disk. Make sure you saved the program first.

When the disk boots and displays the ProDOS startup screen, you should notice a plus (+) sign after the version number, such as "Version 1.8+". This indicates that the patch was successful and that this is the new version.

```
100 REM Update ProDOS Year Table
101 REM Author: Edward Girard FantasyWorks Software, Inc.
102 REM Date:   January 5, 1992
103 REM V1.9 mods by Tom Weishaar 1/13/92
104 REM ProDOS Versions 1.7, 1.8, and 1.9 only

140 D$=CHR$(4) : Text : Home
145 Print "UPDATE PRODOS YEAR TABLE" : Print :Print
150 Print "This program updates the year table"
151 Print "  inside ProDOS so that files are"
152 Print "  dated in the 1992-1996 range."
153 Print
160 Input "Slot number of disk to be updated: ";S$
161 S=Val(S$) : If S=0 then Print D$;"Bye"
162 If S<1 or S>7 then Print Chr$(7) : Goto 160
170 Input "Drive number of disk to be updated: ";D
171 If D<1 or D>2 then Print Chr$(7) : Goto 170

180 Poke 9753,0 : Poke 9764,0 : Poke 9811,0
190 Print D$;"Prefix ,S";S;",D";D
191 Print : Print "Loading PRODOS"
192 Print D$;"BLOAD PRODOS,A$2000,TSYS"
200 If Peek(9753)=183 then 240 : REM V1.7
210 If Peek(9764)=184 then 250 : REM V1.8
220 If Peek(9811)=185 then 260 : REM V1.9
230 Print : Print "         *** ERROR ***"
231 Print "Can't recognize this version of ProDOS"
232 Print "   Must be V1.7, V1.8, or V1.9"

233 Get A$ : Print A$ : Goto 140

240 Poke 9754,171 : Rem Add "+" for V1.7+
241 TableAdr=20854 : Size=15485
242 Goto 270

250 Poke 9765,171 : Rem Add "+" for V1.8+
251 TableAdr=21110 : Size=15741
252 Goto 270

260 Poke 9812,171 : Rem Add "+" for V1.9+
261 TableAdr=21110 : Size=16509

270 Poke TableAdr,96 : Poke TableAdr+1,95
271 Poke TableAdr+2,94 : Poke TableAdr+3,93
272 Poke TableAdr+4,92 : Poke TableAdr+5,92
273 Poke TableAdr+6,96

280 Print : Print D$;"BSAVE PRODOS,TSYS,A$2000,L";Size
290 Print : Print "Update completed!
300 Get A$ : Print A$ : Goto 140
```

Edward Girard
Bedford, Texas

Those of you who get our monthly disk will find that the version of ProDOS 1.9 that's on it has already been fixed. Alternatively, just copy it to your other boot disks. Nonetheless, we've included this program on the disk as well as a much longer program Apple is distributing that can do a patch for any range of years from 1940 to 2039.

For those of you who'd like to know how to patch other versions of ProDOS, look for the hex pattern 5A 59 58 58 57 56 5B and change it to 60 5F 5E 5D 5C 5C 60.

If you use an Apple IIgs, these patches aren't necessary. The clock in the Apple IIgs keeps track of the year and ProDOS gets the year from the clock when it's running on an Apple IIgs. Clocks on other Apple IIs usually don't track the year, so on those computers ProDOS has to calculate the year based on the date and day of the week. Because there are seven days in a week, this trick only works for seven date/day combinations. And since any seven-year period is going to have one or two leap years, which contain two date/day combi-

nations, the table has to be updated every five or six years. This update will last through the last day of 1996.—TW

Macro minded

It has come to my attention that, contrary to my review, ProTERM 3.0's macro language does support arrays, after a fashion. The variables, which are referenced by number, can be referenced by another variable as well. For example, referencing &$1 when $1 is set to 3 accesses the third string variable. This is really more akin to a pointer than to an array, but it can be used to access different variables depending on the value of a subscript. Another fact not mentioned in the review is that there are always exactly 30 numeric variables; only the string variables share space with the global macros.

Barry Hatchett
Detroit, Mich.

Calling it quits

I have become intrigued at the variety of different ways system programmers use the ProDOS MLI Quit Call to exercise different options in their programs.

For example, Glen Bredon's *ProSel* Utilities has a way of chaining a RESTORE program to run after the RAM.DRV program has set up a RAMdisk. Roger Wagner, in *Ask Nibble* of August 1988, also outlined how an 'enhanced' Quit (in Prodos) could be used to run a P16 program on the IIgs provided that ProDOS 16 was already in memory.

What I would like to do is get BASIC.SYSTEM loaded and running in an enhanced IIe, after I have edited a TXT file with *EDIT IT!*, the superb text file editor written by Bill Tudor of *North-East Micro Systems* that was included with *Talk is Cheap*. As the editor is mainly used in a 128k IIe with dual 5.25" floppy drives, and no hard disk or extra memory, I am reluctant to use a program selector now that ProDOS 8 Quit code is reasonably friendly.

Is there any chance of you giving us an indepth article on different ways of using the Quit call to advantage, and the programming steps that must be implemented to achieve this?

John Wolff
Hamilton, N.Z.

There are two separate issues here: ProDOS 8's "enhanced quit" actually passes quit information to a GS/OS routine. Since GS/OS won't run on the IIe, the enhanced quit won't work there (or on a IIgs where ProDOS 8 was booted directly, for that matter).

Several of ProSel-8's utilities quit to another application by using a variation of the "start-up" protocol Apple described for ProDOS 8 system programs. Basically, the protocol describes a standard way to embed a ProDOS pathname near the beginning of an 8-bit system (type "SYS" or $FF) file. To identify the presence of a filename, the first three bytes must be a 6502 JMP instruction ($4C followed by a two-byte address). If the fourth and fifth byte values are each $EE, then a program can assume that the next byte is a length value for a buffer containing a ProDOS pathname, followed by the buffer. (Don't forget that the pathname in the buffer must conform to the ProDOS format with a leading length byte; the byte before the buffer is the length of the entire buffer.)

ProSel-8's instructions describe how to edit

these pathnames for the utilities that use them (some ProSel utilities also use multiple pathname buffers). You could use a similar mechanism in your own program, but the work of reading the information from the buffer and passing control to the next file is up to the programmer (that's you). An example of "launching" a program from a "quit" mechanism is given in Gary Little's _Exploring Apple GS/OS and ProDOS 8_, pp. 173-181.—DJD

(Word)Perfect Answer

In answer to W.A. MacDonald "(Word)perfect processing", *A2-Central*, p.7.95, *Word Perfect GS* version 2.1e and 2.1f are both thouroughly compatible with GS/OS 5.0.4. There is one thing that must be done for the program to work properly. This can be done only through the graphics control panel from the Finder. Select the keyboard option and set default translation to none instead of standard. Things will work fine after that.

While I wish *Word Perfect* would upgrade 2.1 with some bug fixes, they assure me that it is a dead issue. In any case, it is by far the best word processor for the Apple IIgs in terms of features and functionality. A word processor is supposed to process words, not spend its time playing with graphics. *Word Perfect* does this and has a myriad of features not available elsewhere in the Apple II world.

Eric A. Seiden
Miami, Fla.

Icons and inter-connections

What programs are available for me to create (draw and assign) icons for the Finder? I can create icons for *HyperCard IIgs*—can I use *HyperCard IIgs* icons with the Finder? I'd like to generate some unique icons for a few of my Applesoft programs and other applications.

I recently purchased a Mac IIsi with a LaserWriter II NT for my office. I'd like to connect my Mac SE and two of my Apple IIgs computers to the LaserWriter (and throw an ImageWriter II into the network for good measure). I assume I need an AppleTalk cable for each of the computers and printers but what else do I need? If I just want to be able to access either printer from the Apple IIgs computers, will GS/OS do the trick?

And while I'm at it. I'd like to be able to mix text (between AppleWorks and *MS Word*) and graphics between the Apple IIgs and Macintosh computers. Up until now, I've converted an AppleWorks word processing file to a text file (using *TimeOut*), saved the file on a ProDOS formatted 3.5 disk, transferred the file from the disk to a Macintosh formatted disk using Apple File Exchange on a Mac, and read the transferred text file using *MS Word*. For graphics, I have *Graphics Exchange*, but haven't used the Mac-option yet.

Incidentally, my first issue of *Script-Central* was impressive, enjoyable and very enlightening. I hope that you will continue to write about

Party Animals

I just finished reading your January issue with the comments celebrating 15 years of Apple. Most inspiring. Let me add one more:

As a consultant who specializes with Apple II and Macintosh, I often get calls to solve "impossible" tasks related interaction needs of both computers. One day, I received a call from a gentleman who asked me to go out to his place to "fix things" so his Macintosh LC would work with his new laser printer. I arrived to discover that he couldn't get the printer to work while using the Apple IIe card. A little tricky but I showed him how to do it. Then I discovered that this gentleman is busy writing some pretty sophisticated programs in Applesoft BASIC on his Macintosh LC. He had taught himself from scratch over a period of a few weeks. What's so special about that? This gentleman is 91 years old and is writing programs to help his daughter who is a teacher at a school using Apple II's.

Glad he found a useful function for his Macintosh LC. It took a IIe card to do it, though. And the next time someone tells me an Apple II is good for everyone between 9 and 90, I'll suggest he not be so restrictive.

This letter was prepared with AppleWorks 3.0 installed on a 1.44 meg disk (impossible!) containing my dictionary, thesaurus, many TimeOut applications, SuperFonts, and used on a Mac LC with the Apple IIe card. I am printing it to a PLP printer which, I am told, is totally incompatible with the Apple II. I wish people, especially those at Apple dealers, would stop telling me all these things that are impossible to do with an Apple II.

Jim Low
Toronto, Ontario

In response to your January 1992 column: I owned an Apple II Plus in 1980, and have continued to add to it since (I currently have an Apple IIgs motherboard upgrade in an Apple IIe case). Until the recent shift by Apple, whenever someone asked "what should I buy?" I recommended the Apple II line, because it could easily grow any way the user did. Mine still grows with me, and it has enabled me to realize my dream of designing games in my spare time without giving up productivity or my day job. I will use other machines, but I'll always show off my Apple IIgs.

Ken (ReliefWare) Franklin
1603 Northridge Court
Clarksville, Tenn. 37042

(Ken Franklin is the author of the very entertaining and successful Apple IIgs ReliefWare games Milestones 2000, Plunder and One Armed Battle. ReliefWare is a concept conceived by Franklin as a way to help the homeless. He donates the money he receives from his programs to aid the less fortunate.—edr)

HyperCard IIgs and *HyperCard* on the Macintosh as it relates to the Apple IIgs. For better or for worse, like it or not, the Apple II will always be a part of the Macintosh's past and the Macintosh has become part of the Apple II's future.

Richard Katz
Scottsdale, Ariz.

To answer the icon part of your question, we consulted GEnie's icon expert, Lunatic. Here's what he had to say:

The Icon Editor stack that comes with Hyper-Card IIGS cannot be used to create Finder icons or edit their attributes. When System 6.0 arrives, you may be able to use that Icon Editor stack to **edit** the new Finder 6.0 icon's images, but you still will not be able to **create** them. The new icons in System 6.0 use other new resources, called rBundle and rFinderPath, which the Icon Editor stack knows nothing about.

To edit Finder icons, right now, you need a Finder icon editor, such as **IconEd** by Paul Elseth, 2739 Fairview Ct., SE Rochester, MN 55901, $15 shareware fee; **DIcEd** by Dave Lyons, DAL Systems, P.O. Box 875, Cupertino, CA 95015, $15 shareware fee; or **Icon Editor** by Apple, soon to be available from **Resource Central**. IconEd and DIcEd are available on GEnie as file #15301, ICONED.1.3.BXY, and file #11613, DICED.1.2.BXY. They are also available on other online services, from the Big Red Computer Club, and probably from their authors. Apple's own **Icon Editor** never got out of beta stage, so it still has a few bugs. It

doesn't have nearly as many features as **IconEd** or **DIcEd**, either.

SuperConvert from Seven Hills Software, 2310 Oxford Road, Tallahassee, Fla. 32304-3930, 904-575-2015, contains an option for creating icons from other types of graphics.

There's also an NDA called **Instant Icon** that can save parts of the current screen as Finder icons, but it cannot be used to edit existing icons. **Instant Icon** is also available on GEnie and other online services.

When System 6.0 comes out, you'll find that it uses a new kind of icon, contained in resources. The new Finder 6.0 can still use all of the old Finder's icons, though, with no changes. It actually converts the old icons internally, as you use them. Right now, there are no icon editors that can create the new kind of icons and use their new features.

Genesys has an icon editor that could edit the new icon images. The icon editor in **Genesys** was written by the same person who wrote **IconEd,** Paul Elseth. It even has the same undocumented features, such as being able to draw in a different color from the one currently selected, by double-clicking! However, until **Genesys** gets an update, it also will not be able to **create** the new kinds of Finder icons, or edit their attributes.

It sounds like you have the text transfer system down, but there may be a couple of things you can do to make it easier.

First, get some AppleTalk connectors. You'll need one for each computer and printer. Rather than Apple's connectors, get the third-party kind that can be connected with phone wire. We just dropped the price on the ones we sell to $19.95 each. You'll also need an AppleTalk card for your ImageWriter II. Use the GS/OS Chooser to select whether printing will go to the LaserWriter or ImageWriter. If you run Mac System 7, you can also save files directly to the Mac hard disk from either IIgs.

Next, see if you can find **Works-to-Works Transporter,** an add-on translator for Apple File Exchange that translates AppleWorks (2.0 and 3.0) files directly to **Microsoft Works** format (which will probably load into **Microsoft Word**). You should be able to obtain **Works-to-Works** from sources of Mac freeware and shareware programs.

The bad news is that **Works-to-Works** goes in the ProDOS to Mac direction only. If you're interested in seeing two-way transfers, it may be advisable to write **Microsoft** and ask that they forward that request to the company providing the translator.

Most of **Claris's** newer programs include their Xtnd technology, which allows importing and exporting files in a variety of formats. **MacWrite II** and **ClarisWorks**, for example, will import and export Word files as well as AppleWorks 2.0 files. But the current translators will only import AppleWorks 3.0 and AppleWorks GS word processor files; the only Apple II format you can export is AppleWorks 2.0.

An opportunity for some enterprising programmer would be to write a utility to translate files based on the "rich text" format currently supported by several programs. Rich text is an ASCII text file representation of the document where formatting codes are translated to text tokens and embedded into the document text. Another program reading the document therefore has the chance to interpret (or discard) the codes. This creates a "text interchange"

format distinct from proprietary formats.

As for graphics, either **The Graphics Exchange** or **SuperConvert** should serve to translate graphics for you. The GIF or TIFF formats are probably the most "generic" (you can usually find a program to convert them to a computer-specific format, such as IIgs Apple Preferred format or the Macintosh PICT format, if your application won't import GIF or TIFF directly). We tend to pass the files across AppleShare; if you use Apple File Exchange instead the most important thing to remember is to turn any "text translation" off before transferring the files. Many programs save GIF or TIFF files as "text" files, but the conversion done by Apple File Exchange's text translation will destroy the graphics format of the translated file.

The other problem is that the Mac can be downright stubborn about "seeing" converted files. Usually, in the case of GIF and TIFF files, the type of the file needs to be changed; you'll need to scout around for a Mac utility to do this (normally, we change the type of a GIF file to "TEXT"; for TIFF files, we use a type of "TIFF"). Even then, you may run into other problems. **Quark Xpress** doesn't seem to like any of the **SuperConvert** TIFF formats, and it doesn't recognize GIF files. It does read Mac PICT files, though, so we run the GIF or TIFF files through a conversion (**ClarisWorks's** graphics module can load either format and save it as a PICT file).

Also, when you load images converted from the IIgs's 640 by 200 Super High-Resolution mode, you may find their aspect ratio makes them look half as tall as they should. Graphics conversion programs often can resize the image to correct this (just double the height). 320 by 200 pictures should look about right. Reverse the procedure in the other direction if necessary (often you'll have to squeeze a Mac image vertically to fit it into a 640 by 200 screen; the Mac screens have greater vertical resolution, typically 512 by 342 for "compact Macs" like the SE or Classic, 512 by 384 for the smaller color display, and 640 by 480 for a color display). Overall, the problem is the same as outlined in **"Fonts on screen and in print"** (February 1989 pp. 5.1-5.6); the Mac screen dots are square, while the IIgs dots are rectangular.

Transferring files is getting easier, and the IIgs can do it better than most personal computers. The other day we examined an MS-DOS CD-ROM filled with graphics files and we could import them directly into **The Graphics Exchange** and **SuperConvert** using GS/OS's High Sierra FST and CD-ROM drivers with an AppleCD SC. The best part is that it's completely transparent, just as if the graphics were on a ProDOS disk.

The major problem is still proprietary file formats (an AppleWorks GS word processor file versus rich text format, for example). If software companies aren't given some motivation to allow access to their formats (or document them, as has generally been done for Apple-Works and AppleWorks GS), that's where the information exchange will be frustrated. Apple DTS has made a strong attempt to avoid this problem by documenting many known formats in their File Type Notes.—DJD