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**Fax Survey**

**Scheduling**

**Review: Illustrator 5.5**



# An Illustrious Illustrator

by IAN F. DARWIN

*Imagine if you could have one of the world's best drawing programs on your desktop. Now imagine that it could fit in well with your existing X-based tools, using either mwm or olwm. Well, open your eyes, because now you can run the latest version (5.5) of graphics leader Adobe Illustrator on your SPARC Solaris desktop.*

## Adobe Illustrator

If you didn't have a SPARCstation, and worked with programs like Adobe Systems Inc.'s Illustrator, their appearance on fast SPARC hardware might be inducement enough to buy a SPARCstation.

Adobe Illustrator (AI) was one of the first large-volume, high-end, object-oriented drawing programs on the Macintosh, and Adobe hopes it will become the same on UNIX, specifically Solaris.

Originally written as a demonstration of PostScript's drawing abilities and released in 1988, AI quickly became a decisive factor in the Macintosh's invasion of the graphics arts industries.

Since then, of course, many other object-oriented draw programs have come along for the Mac, and some of these have also been sold for MS-Windows and UNIX. Commercial offerings have included Corel Corp.'s CorelDRAW!, Computer Support Corp.'s Arts & Letters, Altsys Corp.'s

Virtuoso (see "Virtuoso, Olympus and SPARCclassic X," January 1994, Page 66) and others. Of those listed, Virtuoso, at least, has pulled out of the UNIX market. Of those available on multiple platforms, some are easier to use in certain areas, but none has all

the power of AI, nor the reputation as the "industrial-strength" graphics application. Ask the average graphic arts professional about computers and you'll hear about

the Macintosh and about AI. And while Solaris is still not as user-friendly as the Mac (though it's getting closer with each release), you can now run on your Solaris desktop the same version (5.5) of Illustrator that the graphic artist runs on the Mac, and on some very fast machinery.

## Installation and Licensing

AI comes with a handful of adjunct applications (see "Adjunct Applications," Page 67). Of these, only AI

itself, and the Acrobat Distiller, need licensing. We faxed off one license request and emailed another; both came back the next morning. The distiller performs LZW compression, and its need for licensing may be rooted in a contract with Unisys Corp.

Illustrator is one of Adobe's flagship items, and you can be certain that wherever there is a licensing scheme that is reasonably secure for the developers and reasonably nonintrusive to users, it will be used.

FlexLM is one such license scheme for UNIX, and it's what Adobe uses. Since we already had flexlm running for a Sun C compiler, we only had to add two lines to our licenses file. The overhead of contacting the license server adds only a few seconds to start-up. This is nothing for Illustrator, which takes about a minute to start up. But for the distiller, which is often used interactively, it does add some overhead. However, we had no problems with the license software.

The install scripts worked fairly smoothly. A minor complaint is the overlap of font directories. This software originated on the Macintosh, where centralized font services are taken for granted (and Mac users never have to wrestle with an X Logical Font Description either!). Adobe's applications require certain fonts to be present before they will work properly, so it is natural that



Illustrator 5.5 has arrived for Suns.

they provide their own copies. The problem is that almost every one of the applications in this family provides its own "small" set of default fonts. And there is no checking for duplication among them.

By the time I had installed Illustrator, the DPSNX module (see DPS below) and the Acrobat Exchanger, I was up to 7,700 1-KB blocks of font directories. And that is not including any of the 220 Type 1 fonts from the Illustrator CD, which you install with TypeInstaller. The scripts do check for and avoid installing duplicate copies of DPSNX, so it would seem feasible that they provide one set of fonts for all their applications. And of course it would be better if UNIX provided central font services, but that's not Adobe's problem. Maybe, just maybe, the Common Desktop Environment (see "Birth of a Desktop," January 1994, Page 59) will fix this.

I am of two minds as to whether it would be better if the installation were done with the SVR4 standard pkgadd. On the one hand, pkgadd does make it easier to install software and does check for duplicate files (that's the 24 pathnames are already installed message pkgadd generates), which could solve the font duplication problem I mentioned above. And pkgadd keeps track of every file it installs, so you can easily uninstall if you need to (Adobe does not provide even a basic uninstall mechanism). On the other hand, the current version of pkgadd requires that you run it as root, which makes it hard for end users to install trial versions of software. Adobe gives you two install scripts—an "easy" install which must run as root, and a custom install which gives you more flexibility and can be run without root privilege.

### Functionality

Make no mistake: Illustrator is the definitive draw program. It has every feature you could imagine for dealing with sophisticated drawings, treating each drawn object as an object. There are so many effects possible that it is impossible to

describe them easily to somebody who hasn't seen the program in action. Elaine Weinmann and Peter Lourekas open their book *Visual QuickStart Guide: Illustrator 5.5 for Macintosh* by saying: "We were delighted to have the opportunity to write a book about Adobe Illustrator because it's such a well-designed program. Illustrator has a complete set of tools for creating many different

kinds of drawings, from corporate logos, symbols and labels to children's book illustrations. It has power, precision and a well-designed interface. It is sophisticated, yet easy to use."

Not to be outdone, Evi Nemeth et al, in the colophon to their recent (opinionated, but generally very good) *UNIX System Administration Handbook*, Second Edition, describe

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## ADJUNCT APPLICATIONS

### One for the Mac

**M**ac users still have one minor advantage over UNIX: a program called Streamline, which does what the Trace tool should do but doesn't: It intelligently converts bitmapped images into AI-format object-oriented pictures. Streamline uses some fancy algorithms for deciding when adjoining areas are a single object with graded colors, or two separate objects. But Streamline runs only on the Macintosh, so we did not test it. Although AI and PhotoShop have been ported to UNIX, Streamline has not.

### Type for the Show

**T**ypeInstaller maintains a systemwide or per-user directory of additional fonts. The same fonts are used by Adobe applications and by X11 (how innovative :-). Too bad most other vendors don't do as well. Adobe uses the same fonts on-screen and for printing, downloading to your PostScript printer as needed. I had no trouble installing from the Illustrator CD or any of the Type 1 fonts on the BitStream 500-font CD.

Another wrinkle was that TypeInstaller uses "Adobe" and "FontSpecific" as the Foundry and Charset parts of the X LFD; it should take both from the font. One minor wrinkle is that TypeInstaller insists on installing from the directory */cdrom*, so some fiddling (i.e., symbolic links) will be needed to install fonts from floppies. Some free-software Type 1 fonts caused minor grief with Illustrator, however. This is unfortunate, but not surprising since a Type 1 font is really a PostScript program. It installs (but does not require) AFM (font metric) files so other apps could use these if interested, and PFA (converts from PFB if needed). It also creates reasonable aliases so, on Solaris, you

can run any X client with *-font CopperplateGothicBT-Bold-35*, for example, and get 35-point Copperplate Bold.

### Acrobat Exchange for PDF Files

**A**dobe's Portable Document Format (PDF) is a PostScript-derived document exchange format that is intended to make documents and other formatting and appearance portable across different platforms and software packages. It competes with another standard format called Common Ground. Both differ from SGML, which makes documents portable by separating formatting from the content and structure of the document. If you know PostScript, you may think of PostScript as two parts: a stack-based scripting language and a powerful page-marking language. Think of PDF as the marking language: The scripting has already been run, so the PDF can be interpreted more easily than full PostScript.

Adobe Acrobat is the family of software that deals with PDF. Adobe gives you several methods of making PDF. On systems like the Macintosh and MS-Windows, where the system print servers have detailed knowledge of the printer, there is a "print driver" that does a moderate job of converting the output of any program into PDF. The reviewed version of Illustrator comes with Distiller 1.0.1, which does a better job than the print drivers of turning PostScript into PDF. Also, AI 5.5 can both open and save in PDF format, which is good for importing roguish PostScript into AI. For example, I took an amusing Solaris 2 logo from Usenet, distilled it and opened it in AI. This was neat, since the logo file is devoid of PostScript structuring comments, so it's not valid EPS. But distilled, it imported just fine.

We converted several documents using the distiller.

You also get Acrobat Exchange, a program for viewing and making annotations to a PDF file. It is similar to, but slightly more capable than, the free Acrobat Reader, which can be downloaded from Adobe's FTP site.

### Adobe Separator

**I**f you are making artwork that will be printed using a multicolor process, you need a tool for making color separations. Adobe Separator does this. It takes a color image and makes up to four separate plates, one for each of the four printing process colors: cyan, magenta, yellow and black.

### DPSNX

**W**hile Sun first provided window-based PostScript in its excellent NeWS window system (part of OpenWindows in SunOS 4.1.x), NeWS never caught on in the market, so Sun has switched to Adobe's Display PostScript, which works with X11. Naturally, Adobe Illustrator uses this extensively. So what if you want to run AI on a SPARCserver with the output displayed on an X display that lacks the "DPS extension"? That's where DPSNX comes in: It's a stand-alone application that translates the DPS calls into lower-level *Xlib* calls, so you can run DPS applications like AI (and, presumably, Sun's AnswerBook) on X displays that lack DPS. We ran on older Sun systems (Solaris 2) that lack DPS and it worked, apart from some problems with getting DPSNX started. We found it sometimes worked better when we started DPSNX by hand first.

### ShowPS

**S**howPS is a PostScript file previewer, like PageView or GhostView.—*id*

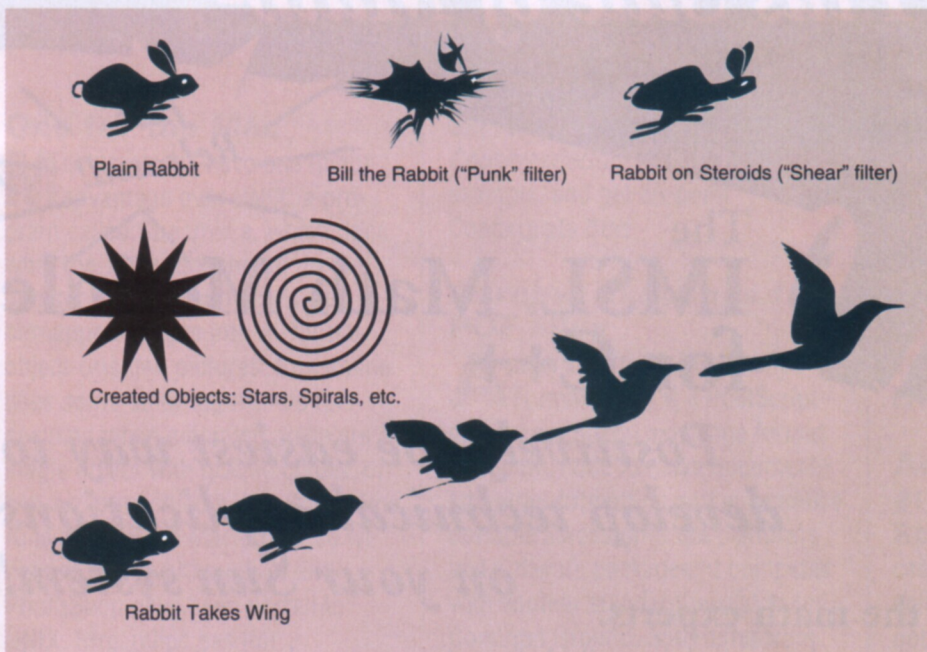


Figure 1. Blends and Filters Flexibility

Adobe Illustrator as "One of the world's most perfect applications."

One of the best aspects of Illustrator is the way it handles line drawings. A simple object is either an open path or a closed path, and is drawn with or without a "stroke," or outline, and a "fill," or inside color/pattern. Paths can be as simple as a circle or a square, as intricate as a crystal goblet, as squiggly as a fractal. Segments can be either straight or curved. Curved lines are drawn as Bezier curves, which means that they can be displayed exactly on any PostScript display or printer. Bezier curves to some of us conjure up recollections (or nightmares) of equations in college algebra. But Illustrator tames them; no math needed!

The anchor points for Bezier curves have direction lines that you can use to change the direction and amount of curvature. A corner point between a curve and a straight line has one direction line, while a point along a line has two. To maximize functionality and minimize clutter, the direction lines and points are drawn only for the selected object.

You can draw new paths by hand using one of two tools: the Pen Tool for straight line segments (or drawing a curve one segment at a time) and the Freehand tool for drawing

smooth curves. Once a path is drawn, it can be altered in many ways. Objects can be overlapped, joined together or into groups or arranged into layers, used to mask (hide parts of) other objects, and edited in numerous ways.

But before you can alter an object, you must select it. Illustrator, like most drawing programs, uses a selection paradigm that will be familiar if you've used any window system (SunView, the Mac, MS-Windows or X11/OpenWindows). Click on

something to select, or click and drag to select and move. But AI goes beyond that. The Direct Selection model lets you select just one anchor point or line segment. Also, holding Shift while selecting allows you to add or subtract objects, so you can select any number of objects at once. And even if objects have been joined into a group, AI (unlike some other draw programs) still lets you select them. Using the various Selection tools, you can change one or more objects from within a group without having to de-group and re-group. Once you've used AI's flexible selection techniques, you'll hope for

them in every other graphics program you use.

Objects or groups of objects can be transformed in many ways. A path can have points added. Points can be moved to change the shape. You can change points into corners, and vice versa. Objects can be scaled, rotated, reflected or sheared (distorted diagonally). You can build a gradient between two or more colors. And you can blend two objects. This method can be used to make a running rabbit evolve into a flying gull

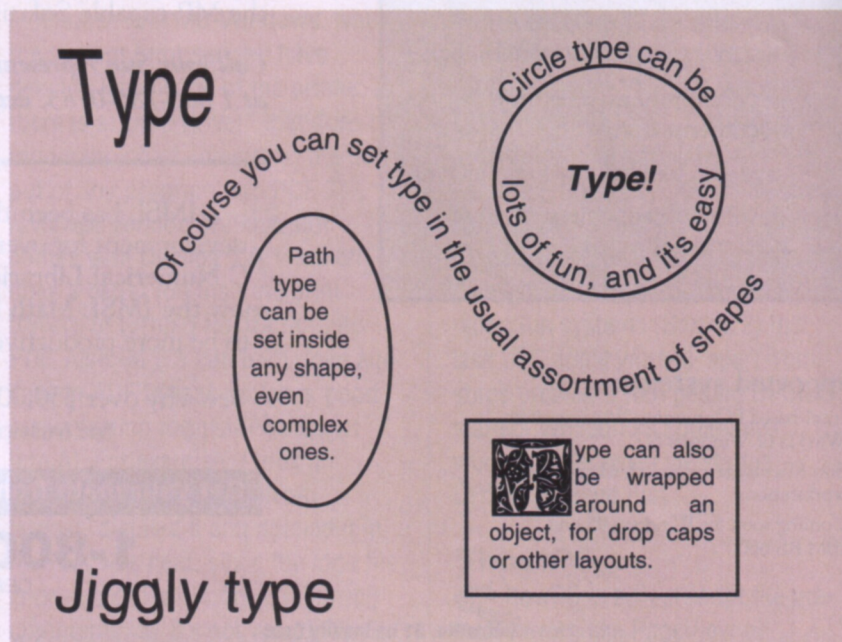


Figure 2. Easy Type Casting

(See Figure 1), to fill in a variety of identical shapes, or to blend colors in a fashion similar to gradients. Objects can be stylized in many ways.

Text can be set in any PostScript Type 1 font. Since neither X nor DPS supports TrueType fonts, you can't use them, nor can you use Speedo, F3 or other scalable fonts. But the popularity of Type 1 fonts (see Resources), plus the 220 fonts in 53 families on the CD-ROM ensure that you won't run out of fonts. Type can be set in straight lines, along any path, wrapped around an object or set inside any path. Type can also be converted to objects, after which you can apply any object transformation to it (see Figure 2). You can control leading, kerning, tracking, spacing and other attributes of the type. Text can be aligned, centered, indented, have its spelling checked—sounds almost like a word processor, and it is, but it's embedded in a wonderful graphics editor.

There is even a full-function graph editor that lets you enter tabular data (or import it from a spreadsheet or a UNIX text file), and design and style it to your heart's content. As with several other design items, you can save a graph design separately and reuse the design in other documents.

But we've barely touched on one whole aspect of the power that AI gives you. Adobe provides a number of "plug-in" filters that can create or modify objects. And Adobe actively encourages software developers to build and distribute their own plug-ins. There is a plug-in API for each major Adobe product—Illustrator, PhotoShop, Acrobat—and in most cases the Software Development Kit (SDK) can be obtained either free from [ftp.adobe.com](http://ftp.adobe.com) or directly from Adobe. Unfortunately, the Illustrator SDK was not available on UNIX at press time. We did try out some PhotoShop plug-ins (and even wrote one or two), but that's a story for our upcoming PhotoShop review.

Illustrator ships with a large collection of filters. There are filters to create stars, spirals and other objects. There are filters to add anchor

points, join paths, make compound paths (see Figure 3) and more. There are filters to roughen, distort, stylize, punk or bloat objects or add drop shadows—too many even to list here. In short, it is not much of an exaggeration to say that anything you could do with traditional artists' materials can be done with Adobe Illustrator's object-oriented drawing methods.

One difference from many other draw programs is in the "transformation," such as reshaping, shearing, etc. Like most other programs, the operation of moving an object with the pointing device is direct. You can select an object and drag it to move it. But most other transformations require an additional step. On other draw programs, you can resize an object just by dragging a corner. But

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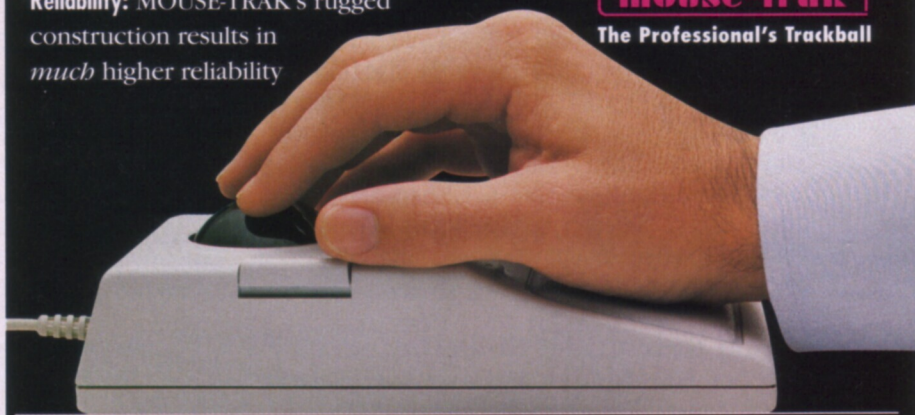
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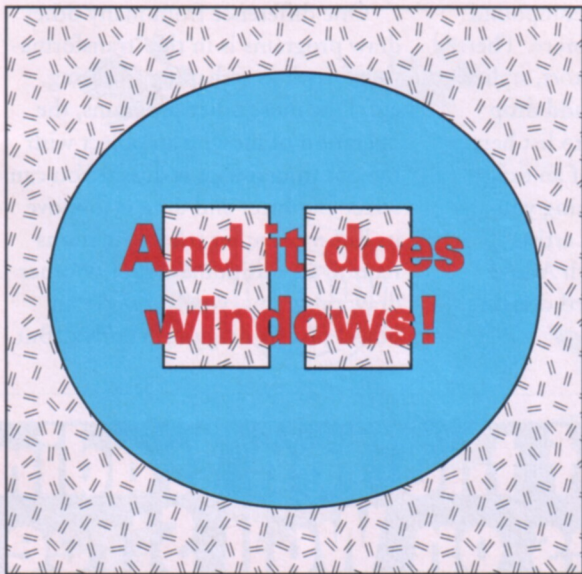


Figure 3. Compound Paths/Transparent Objects

in Illustrator, because it has so many possible operations, you must select Resize from the toolbox (or from a menu), then select a corner and drag. This is not to fault Illustrator. There are so many different options that there does have to be a way to tell it what you want to do. But this is one area that took a little getting used to.

Macintosh experts like to abuse UNIX vendors that port their software to the Mac GUI without following all the Mac conventions. This time the shoe is on the other foot.

with very little retraining (Sun's file manager program helps). What you get is a Motif menu bar at the top of the main window; UNIX/X users expect this, while users of the Mac, where only one application can be active at a time, expect "the" menu bar to be at the top of the screen. Most of the pop-up dialogs have a Macintosh flavor to them (see Figure 4). In fact, the File Chooser is one example of a dialog that UNIX GUIs do better (more flexibly) than the Mac. The Mac file chooser has a list

The "port" of AI to UNIX is indeed only a partial conversion; the internal MacOS-like operations are mapped to UNIX using emulation technology called QCE, the Quorum Compatibility Engine. This results in Adobe Illustrator running on UNIX but being very "Mac-like." This is great for existing Mac shops that want to move to the speed of fast SPARC hardware

of directories that you've explicitly added, while the UNIX ones give you all the subdirectories to choose from. We'd like to see this one converted to a Motif file chooser.

AI's Mac background is further evidenced by its Mac-style file orientation. As on the Mac, each file that you create is stored in two parts: a "resource fork" (which on UNIX is stored in a second file, with a percent sign at the front of the filename), which describes the file, and a "data fork," which contains the data—in this case, the objects you have drawn. One strong point for mixed Mac-UNIX shops is that AI (or actually QCE) has built-in support for various commercial Mac-UNIX file sharing methods! You can create (or import) and use files with spaces or other odd filename characters, although some standard UNIX utilities will not handle them correctly.

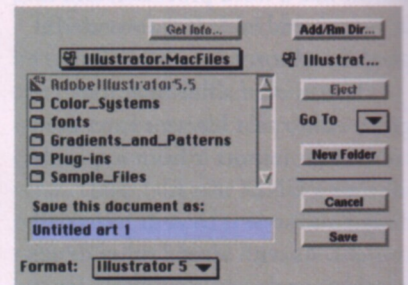


Figure 4. Pop-Up with Mac Flair

## Resources

Illustrator, at Release 5.5, is a mature product, with lots of users already in place on the Mac (MS-Windows is still at AI 4.0). The result is a big market, and there are third-party applications that work well with Illustrator. There is also lots of third-party documentation (books from many publishers, including Adobe Press). We consulted two books at random and found them good, though at opposite ends of the verbosity spectrum.

**Visual QuickStart Guide: Illustrator 5.5 for Macintosh**, by Elaine Weinmann and Peter Lourekas. Berkeley: Peachpit Press, 1994. ISBN 1-56609-160-8. A concise tutorial, lots of hints but no long detailed examples.

**MacWorld Illustrator 5.0/5.5 Bible**, by Ted Alspach, foreword by Pierre Bezier. IDG Books 1994. ISBN 1-56884-097-1. A fat tome that gives a too-gentle introduction, but is very good on all the little

hints; also includes some dissected full-scale example illustrations and a Mac-format CD-ROM.

We found that books about Illustrator for the Mac were usable with very little translation, except for the modifier keys. Not counting "shift," Mac applications use three keyboard modifier keys: Command/Apple, Option and Control. Due to the variety of keyboards that X has to support, UNIX AI lets you assign your choice of keys for these three functions, and the manuals refer to MKEY1, MKEY2 and MKEY3.

There is a cornucopia of clip art in the EPS (Encapsulated PostScript) format. Illustrator ships with a collection of clip art (and patterns, and gradients...) on the CD, and there is plenty of third-party and free-ware EPS clip art. To test it out, we bought an inexpensive PC-format clip art disk (Pro-One Animals Clip Art) and used it for the animals in Figure 1.

Adobe has a Web site: see especially the URL <http://www.adobe.com/Tips/TT.html>—id

However, if you don't have Macs on your network but still need to read the occasional Mac floppy, fear not! The MacOS file compatibility of Quorum is directly accessible from a special Copy Files item (hidden away on the Info menu). We used this to read several files from Mac floppies—it has a FLOPPY push-button and even cooperates with the volume manager—but could not get it to read Mac CD-ROMs.

But all this functionality and emulation does not come cheaply.

## Adobe Illustrator 5.5

### Company

Adobe Systems Inc.  
1585 Charleston Road  
P.O. Box 7900  
Mountain View, CA 94039-7900

### Phone

800-833-6687  
206-628-2749

### WWW

<http://www.adobe.com>

### System Requirements

SPARCstation 2, IPX or newer;  
32 MB; Solaris 2.3 or higher;  
OpenWindows olwm or Motif  
mwm; hard disk, CD-ROM,  
PostScript printer or NeWSPrinter.

### Best Feature

Powerful all-around graphics support. Good for migrating Mac users to UNIX; just as good for UNIX users doing graphics.

### Worst Feature

Memory requirements (32-MB system required). Adobe's voice mail defenses can sometimes make the company seem like a walled city. Illustrator does not use ToolTalk, so opening two files from File Manager starts up two copies of Illustrator.

### Price

AI for UNIX lists at \$995 for a single floating license, including Distiller, ShowPS, Acrobat Exchange, DPSNX. Upgrade from UNIX 3.5 to 5.5 is \$295.

### Circle 149

Because QCE includes much of the functionality of the Macintosh Operating System right in the AI binary, AI is not a small program. Adobe lists 32 MB of main storage as one of the system requirements. We can state that it will run (or at least crawl) under Solaris 2.3 on a 16-MB machine, as long as you don't have much running besides the X or OpenWindows server, an xterm or cmdtool and AI, and don't try anything too fancy. We also ran it on a 24-MB Classic, where it worked and didn't run out of memory.

## Bitmaps Anyone?

The treatment of bitmaps is a bit unusual in AI in that you must choose one of two methods of dealing with them. Bitmaps may be imported as nonprinting "templates" for tracing (manually or with the Trace Tool). Illustrator is often used this way, to start with a scanned drawing or photograph and manually "trace" over it; that is, to draw a picture of the same object using the drawing tools. The Mac version also includes an external tracer called Streamline (see "One for the Mac," Page 67), which does a better job, but this is not now available on UNIX versions.

But sometimes you want to import a bitmap and use it in the finished picture as a bitmap. For this purpose, bitmaps can be loaded as "Placed Art," which lets you stretch and rotate them, for example, but then you cannot trace them with the trace tool. Templates never print, but placed art can be printed or hidden. This is another of those distinctions that makes good sense but takes some getting used to. Illustrator seems a bit weak on bitmap handling; you can't import many bitmap formats, and you can't do very much with bitmaps. That's because, in the Adobe scheme of things, such tasks are handed off to a program called Adobe PhotoShop, which does a splendid job (and the Sun version reads SunRaster files). We can't do it justice here, so we won't even try. Do look for our review of PhotoShop in this magazine in a few months.

## Summary

While Illustrator fits very well into the UNIX environment, it can still be improved.

SunView and Open Look users expect the right mouse button to bring up a menu. On the menu bar at the top of the main window, the right button brings up a menu but most choices are ignored; you have to use the left button instead (which is Motif-like, but curious in the Sun environment).

On some of our tests, AI malfunctions if you direct its output to a remote X display with a non-Sun keyboard, even to Solaris on x86. It works to a remote SPARC machine, which makes me suspect that Adobe has used `keysyms` directly instead of having X translate them.

If you start Illustrator with a filename, it's ignored, and you have to use the File -> Open dialog to open the file. You can launch the application by double-clicking in the File Manager on a file whose name ends in `.ai`. Lamentably, AI does not use ToolTalk, so if you try to open up a second file this way, a new copy of Illustrator starts up. This needs to be fixed.

Worse, the "flexible license manager" is configured to consider each window as a separate session, so you probably won't be allowed to start the second copy.

Despite these nits, Illustrator is an excellent choice for drawn graphics (use PhotoShop for bitmap graphics), and its arrival on Sun Solaris is an important event in the commercial presence of UNIX. ⇐

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Ian Darwin ([ian@darwinsys.com](mailto:ian@darwinsys.com)) is the author of several courses and seminars, and over 50 magazine articles, on all aspects of UNIX. He is the author of the O'Reilly book *Checking C Programs With Lint* and the as yet unpublished O'Reilly book *X User's Guide: Volume 3 OPEN LOOK Edition*, which is included in Darwin Open Systems' (<http://www.uunet.ca/darwinsys>) XView and OPEN LOOK Source and Documentation CD-ROM.