

T H E P O S T S C R I P T I N D U S T R Y N E W S L E T T E R

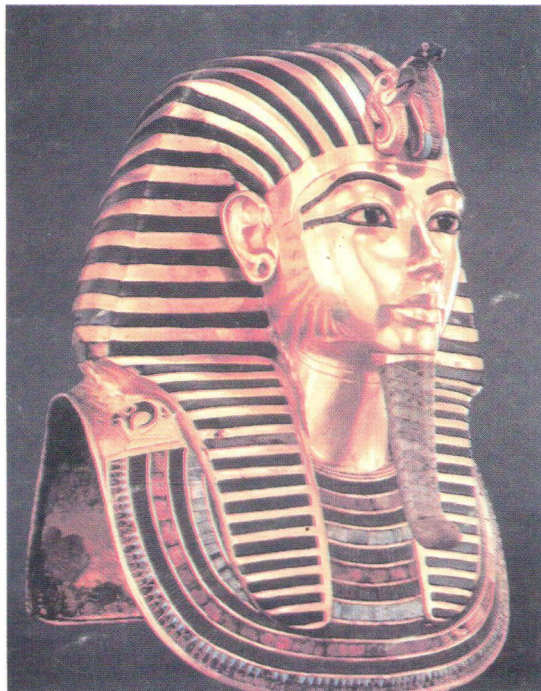
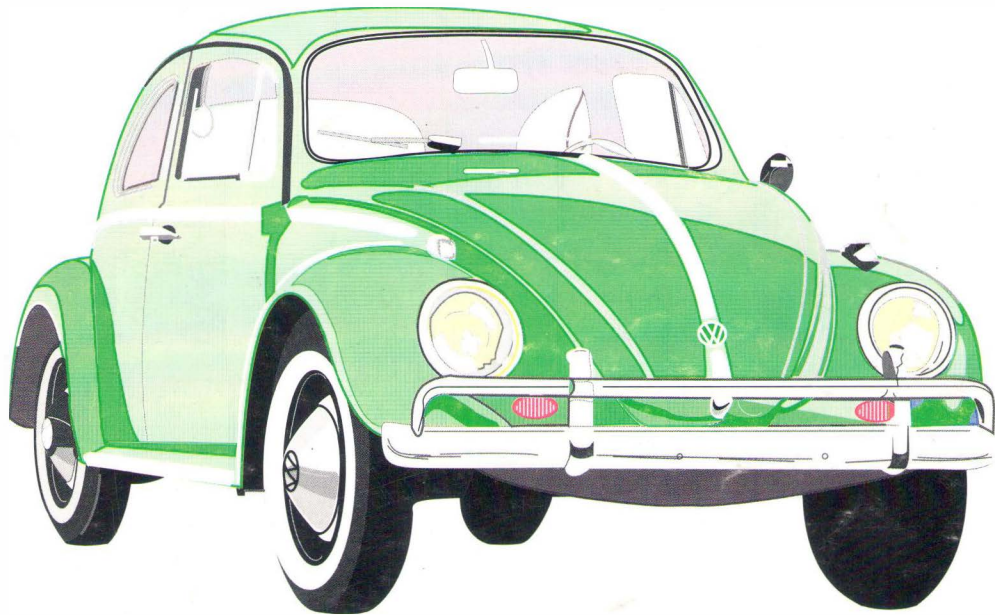
POSTSCRIPT

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THIS ISSUE:

- PostScript Tutorial: Part 3
- **Special Topic:** Color Separation
- **Cover Art:** Color PostScript Separations
- Digital Typeface Formats
- Illustrator & Cricketdraw
- PC Corner

rectangles and ovals to squares and circles, respectively. The Arc tool is a new tool that is similar to drawing an oval or rectangle. A Diamond tool is also included, and it is used the same as other tools. Defining a Polygon is different than defining any of the previous objects. To use the Polygon Tool click where desired to start the object, then click to define each of the vertices of the object. Double click to leave the object open or click back at the beginning of the object to close it. Totally new tools for any drawing package are the Grate and Starburst Tools. Grates provide a useful and quick way to design business forms and graph paper, even log x log paper. The Starburst tool creates a set of lines radiating outward from a central point. Using the Shift key to constrain the starburst to a circle and then connecting the endpoints of the starburst is a fast way of developing a regular polygon.

Bézier Curves can be created within Cricket Draw but not with the power of Illustrator. To draw a Bézier curve, select the tool and click at the first control point of the curve. Continue to click at the remaining three control points. When completed with the last point, a smooth curve is drawn by the application. Dragging a curve's endpoints does not move the control points, and no capability to edit the curve by dragging on it are provided (as in Illustrator).

Object Control icons are presented at the bottom of the screen. The first is the Fill Control, and clicking on it presents a dialog box that controls Fill Intensity and Color. The user can create an object that is not filled, and an object can be filled with white. Option click on Fill Control gives a dialog box to access the POSTSCRIPT "transfer" modes, i.e. the operators `setscreen` and `settransfer`. From here the user can select Dot or Line screen frequencies and angles for Normal, Poster, or Negative transfers. However the dialog doesn't allow control of both the screen and transfer mode at the same time (cannot create a negative with a line screen other than the default). There are no screen representations of these transfer modes. The next icon gives access to Line Control including Line Width, Intensity, Color, and Line Style. Line intensity can vary between zero and 100 in one percent increments and ten line styles are supported. Finally, the last three controls, Duplicate, Rotate, and Tilt, are provided as a convenience here.

ILLUSTRATOR

The Package

Illustrator is shipped on two 800K disks consisting of a copy-protected Program disk and a Tutorial disk.

Also included is an excellent 229-page hardcover User's Manual set in type from Adobe's library and produced with POSTSCRIPT on a Linotype L300. The manual has six Chapters: Introduction, Tutorial, Feature Description, Tips & Tactics, Reference, and POSTSCRIPT. Appendices include Key Sequences, Preset Options, Memory Usage, and Problems & Solutions. The manual concludes with a six-page Glossary and an Index. Unique to Illustrator is a 30-minute informal session with the president of Adobe Systems on VHS tape, a three-page foldout quick Reference Card, and a Registration Card. Adobe encourages registering Illustrator by offering an unprotected version which is then personalized with the user's company name and the software serial number. All documents created with the unprotected version contain this information as comments. A subscription to the graphics newsletter Colophon, customer support for 60 days, product updates for 90 days, and two artwork disks are additional rewards for registration. The list price of \$495 is justified.

System Requirements

The minimum configuration to run Illustrator is a 512Ke further enhanced up to at least 1M of memory. As with most recent applications, a hard disk is also recommended. Clipart, a digitizer, or a scanner can provide a source of bitmapped graphics for the artist to use as base artwork to trace.

Operation

The initial operation of Illustrator can be intimidating. The tools seem sparse and they are certainly new. Adobe has anticipated this and have included 269K (!) of practice files. However, the application itself is not needed to print any previously-generated artwork, since they are normally saved as text files. Any POSTSCRIPT downloader can be used, and one is even included on the artwork disks. Be sure to check the Add Showpage option if available, or add a `showpage` using a text editor before downloading to a POSTSCRIPT device.

The "native mode" is to trace a bitmap or PICT template. A user can also create freehand artwork, but the software was not designed with this in mind. Correspondingly, Illustrator opens paint documents and displays them at 50% gray. The User's Manual and samples follow a convention using suffixes of "art" or "template" to differentiate files and opening a document gives an Artwork & Template View if this is followed. The application opens the 14 x 14-inch document in the middle of the drawing; however, launching the application does not bring up an Untitled

document. No facility exists to open POSTSCRIPT text files directly, but a Desk Accessory can be used to open and edit small files if desired. Illustrator will not open POSTSCRIPT or EPSF files generated from Cricket Draw even if the File Creator is changed to the name needed. The software is very robust, and with a few exceptions, Illustrator is a model application.

Online Help

As with the complete Adobe Illustrator package the Online Help feature is well (if not over) done. It consists of two main folders: Help with Commands and Help with Tools. Help with Commands also contains two additional folders for help with the Paint and Type dialog boxes. All panels are complete with cross references, and graphics are also used where necessary. These folders can be opened from under the Apple or from all Illustrator dialog boxes. All desk accessories are dimmed when in this help feature, but this doesn't seem to be much of a drawback. (The DA's are also dimmed when the Constrain, Paint, or Type dialog boxes are displayed; this is a little disconcerting.) The only criticism that can be made about the online help feature is that it isn't context sensitive. Collectively the Help... feature consists of 78 files and is over 485K in size, by far the most comprehensive and useful of any Macintosh application.

Menus

Unlike Cricket Draw, Illustrator has only a single windowing environment and a single menu. The application does support multiple windows, and the user can move a non-active window (Command drag) without having it become active. This capability is just like in the Finder. Also implemented is a new feature to send an active window to the back (Command-click title bar). However, a pulldown menu to manage multiple windows would be simpler.

Within the application, Illustrator does not allow you to view the POSTSCRIPT code as text. However, its documents are maintained as pure POSTSCRIPT that is both read and written by the application. The prologue used by Illustrator provides both compact and powerful code, but it also detracts from the readability. Adobe's Document Structuring Conventions (2.0) are implemented within Illustrator. This means that a document can be edited in a manner that will not affect the file's readability as far as the application is concerned. The comments `%%BeginDocument` and `%%EndDocument` are provided for this purpose and can be used to surround the handwritten code.

Nearly all selections have corresponding Command key definitions. These keys are well chosen and do not conflict or disagree with those accepted (by default) in the majority of Macintosh applications. As with any Macintosh application these Command keys exist as resources and can be redefined. This is beyond the scope of this article but can be found in various related computer magazines.

The first of the pulldown menus for the application is File. It contains the well known selections that pertain to entire documents. Choosing New from File displays a dialog box asking the user to choose a template as base art for a new document. The New command does not give a Cancel button nor a method to bypass the dialog box and immediately opens a new document without a template. Three formats (and three icons) exist to save files: POSTSCRIPT Only, EPSF for Macintosh and EPSF for IBM, and these three formats can be opened in any combination from the desktop. All menu selections within Illustrator are well behaved. For example, with a LaserWriter not selected from Chooser, Print... is dimmed and with no print drivers installed, Page Setup... gives an alert to select a print driver from the Chooser. Finally, depressing the Option key when selecting Print... skips the dialog box for changing printing options and immediately uses the last selection.

The Edit menu contains the same Cut and Copy as other applications and puts the selected objects to the Clipboard. However, if Show Clipboard is chosen the user sees that the Clipboard only gives the number of objects copied, e.g. "1 artwork objects" (sic). This is probably due to a limitation or conflict of the POSTSCRIPT screen driver that is used instead of QuickDraw to draw objects to the screen. Also new is the capability of Undoing a Clear and the capability to Paste in Front and Paste in Back of a currently selected object. For these last two features the newly pasted objects become selected, and all other objects are deselected. The new objects are also placed at the same location from which they were cut or copied. There is no Revert to last saved version implemented under the Edit menu.

The Arrange menu has commands to control the arrangement of objects that are Undoable. The Join selection is used to connect two ungrouped points with a straight line segment, but if exactly two points aren't selected, the selection should be dimmed and isn't. Average is similar to Join: it moves two or more selected anchor points to a new position which is the horizontal and vertical average of the selected points. Align Objects isn't available as a pulldown menu; alignment must be done manually by drawing crosshairs or aligning center points of objects, but this

can be simplified by using the Snap to Point option within the Constrain... selection. The default is with Snap to Point selected.

The View menu allows the user to select one of four viewing modes including Preview, Artwork & Template, Artwork Only, or Template Only. The Preview mode is a POSTSCRIPT preview of the artwork and can be updated in near real time when the artwork is changed. The remaining views show the base art and/or artwork in the active window as their names imply. A Template Only view does not allow any editing. The Select Actual Size and Fit in Window selections also do as their names imply, but after selection of either I would like to see it dimmed until the size is changed again. New View creates another window that can be changed into any viewing mode as listed above. Show/Hide Rulers and Hide/Show Toolbox are also familiar to users of other Macintosh applications. The zero point of the Rulers can be moved to any spot on the page and their intersection shows an icon that displays the level of magnification or reduction.

The last menu, Style, gives access to dialog boxes to set or change the paint attributes of objects as well as control the attributes of type objects. These dialogs support Cut, Copy, and Paste from the pulldown menus and Command keys, but not Show Clipboard. From the dialogs the user can access the help files. Each box does its corresponding error checking on input data when OK is selected, and both handle multiple errors correctly.

Choose Paint... to control the way objects are filled and/or stroked. The user can select None, White, %Black, or percentages of any of the three process colors for filling or stroking any object. Line Caps, Line Joins, and Stroke style can also be specified. The Stroke style can be up to a six-element array but no offset can be specified through the dialog. The Paint... dialog should also implement a clipping path, but this could be due to the fact that clip does not implicitly perform a newpath after it is finished with the current path (fill and stroke do). The Flatness parameter is also presented to control the drawing and printing speed of very complex curves. The default setting is 0, which allows Illustrator to substitute 1 and all POSTSCRIPT printers substitute their own preset flatness parameter. If this is set to any number both Illustrator and the printers will use that specified value.

The Type... dialog box is a feature of Illustrator that could use some more advanced capabilities. Currently it allows the ability to set POSTSCRIPT fonts in sizes between 0 and 1008 points with left, right, or center (but not full) justification. It also allows the

user to specify positive or negative leading and track kerning. However, Illustrator does not support pairwise kerning since it does not read the Adobe (!) Font Metric files. Manual kerning must be done by using separate Type blocks. Up to 254 characters can exist in a block but styles can not be mixed and no word wrap exists within the block. Finally, type can be scaled with a scaling tool but only the initial font is used on screen. After scaling, the display will look very poor or even useless. No way to specify x and y scaling of type exists beyond using the scaling tool. After scaling, the type can be resized from the dialog box in only the y direction (x scaling remains unchanged).

Tools

The Illustrator Toolbox contains 13 icons that represent tools used to draw, move, and transform objects. The Toolbox can be repositioned by dragging and can be closed but cannot be placed behind a window. Keyboard equivalents exist to temporarily access the tools used to control object and screen movement, and these work even if Toolbox is hidden. When drawing, the window automatically scrolls to keep the current tool on the screen. Let's look at each tool separately.

The Selection Tool is used to designate objects and anchor points, segments, and type. With a object selected, holding the Option key when picking the Selection Tool gives a move dialog box where the user can specify horizontal, vertical, or angular movement. The Selection tool gives the user a variety of ways to edit Bézier curves. One can pull on a curve to keep constant anchor points but lengthen direction vectors, drag either anchor point but still maintain its relative control point, drag a direction point to give more "velocity" to the curve or spin a direction point to change a curve's initial direction. All curve editing is displayed in real time.

The Hand Tool is used to move about the page. Double clicking the Hand Tool fits the complete document in a window. Four levels of magnification and four levels of reduction can be achieved with the Zoom Tool. After selection, a mouse click initiates the zoom, keeping the mouse button down gives the Hand Tool, and the new magnification can be repositioned. The Option key is available to change the tool to zoom out (back away). A double click on the tool zooms in about the center of the window, and Option double click zooms out about the center of the window.

The Pen Tool and its power to draw Bézier curves and straight lines is the specialty of Illustrator. Selecting the Pen Tool is the POSTSCRIPT equivalent of "newpath" and forces the cursor to

become an x. Move the cursor, click at the desired anchor point and drag to create a tangent direction vector and the first control point. Release the mouse button and the cursor becomes a plus sign. Click at the curve's inflection point or endpoint and drag to create a second control point. The position of the cursor is exactly opposite of this second control point and actually forms a possible control point for the next curve. The technique is difficult to explain here, but is addressed well in the documentation and video tape. With practice the Pen Tool can be used to create paths with changing curvature, corner points, and cusps.

Using Illustrator's Type Tool, the user can add type to any drawing. When creating type, the user marks the baseline and alignment point with the cursor, and the application responds by displaying a dialog box to enter or edit the type. A block of type is treated as an object and therefore can be painted, stroked, rotated, scaled, sheared, and so on.

The Square and Circle are the only traditional looking tools within the Toolbox, but again even these simple tools act far beyond what you would expect. Specifically, a square or circle can be Ungrouped into four pieces and further edited. However to rescale either visually (as opposed to mathematically) the object has to be Ungrouped and then Grouped again if needed. For both tools, holding the Option key allows drawing from the center.

To split a path into two paths or break a closed path into an open path the user can pick the Scissors Tool. Additionally, the Scissors can be used with the Option key when clicking on any curve to insert an anchor point along any path segment. Other tools for object transformations include Scale, Rotate, Reflect, and Shear. These tools can be used on text as well as other objects, as mentioned before; however, scaling and rotation are reflected in the POSTSCRIPT code not as operators but as absolute data points. Keeping the Option key depressed while selecting a reference point with any of these tools gives a dialog box for an exact modification using that tool. These dialog boxes can also produce copies of objects, or option Drag can also produce copies of objects, thus preserving the original. Finally, the Page tool can be used to tile the 14 x 14 image into four or nine pages as needed.

Conclusion

The two applications reviewed here have targeted two separate positions in the Macintosh software market. Each should hold their position strongly for some time to come. The review included testing Adobe Illustrator version 1.1 and Cricket Draw v1.01. Both packages represent the current release at the time of this

review. Hardware used during testing included a Macintosh 512Ke with a Hyperdrive 2000 upgrade (12 MHz 68000, math coprocessor, 2M memory, and a 20M internal hard disk) running version V3R1 drive software and an Apple LaserWriter Plus (POSTSCRIPT interpreter version 38.0) with AppleTalk. Finder 5.3, System 3.2, and 3.1 printer drivers were used. Macintoshes and peripherals other than those listed were not tested. Integration with other applications and file transfer formats including EPSF, PICT, and Clipboard were not tested either.

The author is currently a Senior Project Engineer developing drive firmware for a Write Once Read Many (WORM) optical disk. He also has previous experience in Man Machine Interface design. The author enjoys exploring the uses of POSTSCRIPT in typesetting and commercial graphics and would welcome any programming or printing jobs.

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Editor's Note:

We spoke with Doug Seward at Cricket Software about the new Cricket Draw version 1.1 that they started shipping in mid-October. He told us that many of the problems and bugs pointed out in this review have been fixed, and that the new version is much faster than the old one—up to ten times as fast. He also told us that printer timeouts are now rare due to a new downloading method.

Specifically, the bugs that weren't fixed are the errors in the `PcstScript.help` file and the problem of not being able to set both the transfer and spot functions at the same time. He also said that there were no changes made to the way splines are drawn or edited.

Although color separation was announced as a capability of version 1.1, Doug told us that it will not be available until a later release.