

## The Components of Macintosh Graphics

Broadly speaking, a Macintosh graphics system has three parts: **QuickDraw**, the video card and screen that constitute the display device, and the interface between them.

### QuickDraw

**QuickDraw** comes in three varieties: the original version offered with systems equipped with a 68000 microprocessor; the original **Color QuickDraw**, which appeared with the Macintosh II; and the current **Color QuickDraw**, which was introduced as 32-Bit **QuickDraw** and is now part of system software version 7.0.

In general, applications that use the original **QuickDraw** routines are compatible with all Macintosh systems. Applications using the original **Color QuickDraw** work even better under the new **Color QuickDraw**. But applications that use **Color QuickDraw** routines cannot execute under the original **QuickDraw**, nor can applications using direct pixel images run on the original **Color QuickDraw**.

Note that the original **QuickDraw** contains a simple eight-color system that is compatible with all machines (although the colors cannot be displayed on early black-and-white systems), so if your application needs eight colors or fewer, you can maximize compatibility by using that system, which is described in the **QuickDraw** description.

Whenever possible, earlier versions of **QuickDraw** have been upgraded with later features. For example, later versions of the original **QuickDraw** can process pictures that include color information. Although such **QuickDraw** versions cannot display color, they display the best black-and-white approximation possible.

### The Interface

The Monitors control panel lets users arrange their screens in relation to each other in space (above or below, side by side) and select how many colors, if any, a device is to display.

The **Color Picker Package** offers you a standard way to present the user with a color-selection dialog box. The Color Picker's wheel and slide controls let the user preview and select any color the hardware can produce. (The Color control panel, for example, uses the Color Picker to let the user choose a highlight color to be used on the desktop.)

The Monitors control panel and the **Color Picker** are user interface modules that demonstrate an important axiom: *the user is in charge*. The user can select any one of trillions of colors through the Color Picker, and that same user may set the color device to show only black and white pixels.

The **Palette Manager** provides a set of routines with which you can create and control the set of colors needed by your application window. Palettes are especially important with indexed screen devices, which support only displays that show a maximum of 256 colors at once. Since all or parts of several applications and the desktop may be visible on the screen, and they may all have different color schemes, contention can arise for those 256 table places. The **Palette Manager** can arbitrate among the contenders and automatically

see that the color requirements of the frontmost, or active, window are met first.

And no matter how wild a neon-blacklit-backlit effect you create, the **Palette Manager** restores graphics order when your application terminates.

The **Palette Manager** and **Color QuickDraw** both use the low-level graphics abilities of the **Color Manager** to find the best color available when all color table indexes are taken and another color is needed on the screen. The **Color Manager** examines the available colors and determines which of them is closest to the requested color. If your application needs to paint a race car British racing green, for example, you can ask for it by using a **Color QuickDraw** routine, and hope that whatever the **Color Manager** finds available is a close enough match to look good. Or you can ask the **Palette Manager** for the color and specify how close the match has to be. If no color comes as close as you like, the **Palette Manager** loads the exact color you requested into the color table for the device.

The **Graphics Devices Manager** and the **Slot Manager** are the final links to the video driver and its card. The **Slot Manager** examines every installed card when the system starts up, and from the information the cards supply, the **Slot Manager** supplies **QuickDraw** and the graphics interface managers with the information they need to operate. The **Graphics Devices Manager** manages the record that describes the capabilities of the graphics card.