



Adobe Photoshop

Teaching Outline

Marquee		Move
Lasso		Magic Wand
Crop		Slice
Healing Brush		Brush
Clone		History Brush
Eraser		Gradient
Blur		Dodge/Burn
Path Select		Type
Pen		Rectangle
Audio Annotate		Eyedropper
Hand		Zoom
Foreground Color		Reverse Fgnd/ Background Color
Default Colors		Quick Mask Mode
Normal Mode		No Menu Bar
Standard Display		Jump to ImageReady

Computer fundamentals

Necessary hardware

CPU

The central processing unit is at the heart of all computers. It is the computer. It's based around a single chip worth about \$6.

Monitor (number of colors)

- 8-bit color displays 256 colors
- 16-bit color displays thousands of colors (65,536)
- 24-bit color displays millions of colors (16,772,216) eight bits for each pixel component of RGB

Input

- Flatbed
- Negative (save on print-processing costs)
- Digital cameras

Mass-storage device

- Iomega Zip :less capital investment, less per cartridge; very common (100MB per cartridge)
- Iomega Jaz (1GB per cartridge)
- Magneto-Optical: more capital investment, less per cartridge
- Compact Disc (CD) or DVD
- Some sort of mass storage device is a necessity; floppies don't cut it

Printer (300dpi to over 3000dpi)

Output to film for true photographic quality

The graphical interface

Hierarchical File System (HFS)

- Review how to navigate through this system
- Talk about having multiple programs open at the same time
- Define a window and its characteristics
- Define a dialog box and its characteristics

The File menu: New, Open, Close, Save, Print, Quit

EXERCISE: Open a file using the HFS

Draw special attention to Save

Discuss file formats: TIFF, EPS, GIF, PICT, JPEG, Photoshop

The Edit menu: Undo, Cut, Copy, Paste

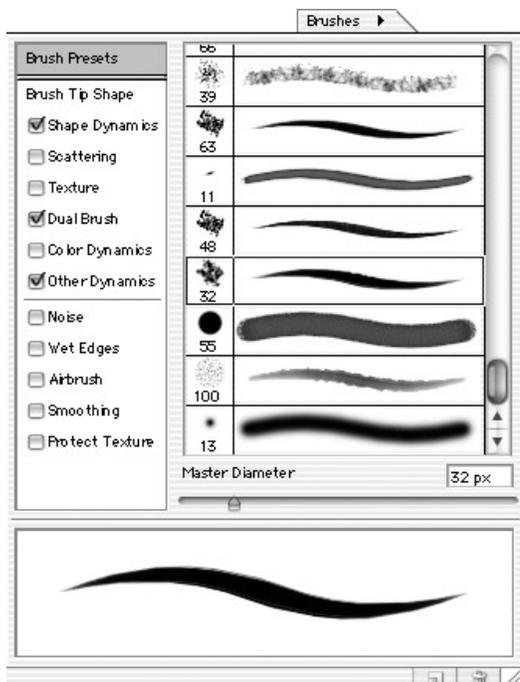
Draw special attention to Undo

Look at other menus in menu bar

- Image, Layer, Select, Filter, View, Window, Help
- You can hide all these things by pressing the Tab key; good time to discuss viewing the screen in different ways at the bottom of the Toolbox

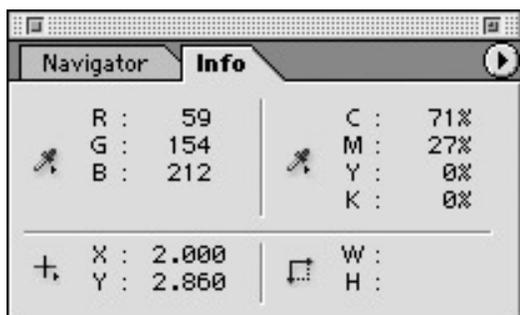
Memory allocation (RAM and ROM)

- Show About This Macintosh... under Apple menu
- One of the most important components is the Random Access Memory (or RAM); you can never have enough RAM
- The RAM is the working memory of the computer; it's measured in megabytes. Photoshop requires at least 16MB to run efficiently; 256MB is not too much.
- Memory is required for the image, undo operations, the snapshot, the clipboard and filters; 3x-5x the image size is needed to function efficiently
- If there's not enough RAM, PS goes to virtual memory
- Get Info; give PS all the RAM you can; RAM is probably the best single investment you can make to improve the efficiency of your computer
- Scratch disk should be fast, large, clean, defragmented



BRUSHES

With the brushes palette, you can select brush shapes and, often more importantly, affect aspects of the Pencil, Airbrush, Rubber Stamp, Line tool, Type tool, Paint Bucket, Gradient tool, Smudge, Blur, Sharpen, Dodge and Burn tools



SHOW INFO

This window shows the position of the mouse and the color under the mouse pointer. It also shows the change in position of a moved element and angle of rotation. Depending on the tool and object selected, it can also show a selection's dimensions and distance between two points.

Control Panels

ATM font cache 384K or more for working with type
Memory Control Panel: disk cache as low as possible; virtual memory OFF; 32-bit addressing ON; RAM disk off

Photoshop fundamentals

Types of graphics programs

Paint

examples: SuperPaint, MacPaint, Photoshop
generally refers to 72dpi programs that edit the image by pixels;
Photoshop is a high-resolution bit-map editing program that can edit images in many resolutions; higher resolution images require more memory

EXERCISE: Option-click on K value in lower-left corner of image; notice resolution

EXERCISE: new document 1 inch by 1 inch, 72 ppi resolution, grayscale

Draw

examples: Adobe Illustrator, Macromedia FreeHand
refers to programs that edit the image based on lines and curves, not pixels. These lines and curves can be layered and changed without affecting the rest of the image

Pixels, lines and dots

Pixel (PPI)

Photoshop deals in pixels (picture elements); the pixel is the smallest unit of an image; on the display screen, it is assigned a hue, a saturation and a lightness; $PPI = LPI \times 2$

EXERCISE: squiggle in the middle of a small page with the Paint Brush enlarge it using the Magnifying Glass (Command +, Command -, double-click on Hand tool, double-click on magnifying glass)

Lines per inch (LPI)

This is the traditional screen frequency we are used to seeing in printing; newspapers print at about 85 LPI; magazines at 133LPI or greater; it's really a function of what frequency the press can handle; $\text{max LPI} = 10\% \times \text{DPI resolution of printer}$

Dots per inch (DPI)

A dot is the smallest unit of printed output; dot-matrix printers output at 72 dpi; laser printers at 300-600 dpi; imagesetters at 1000 dpi or greater

Preferences

General

Color Picker (use Photoshop's)
Interpolation (the way Photoshop determines what color pixel goes between two pixels when an image is resized) (use Bicubic; it's the best looking but also relatively slow) (Nearest Neighbor is rough, but it's very fast)

Display

EXERCISE: double-click on eraser to erase entire image. Draw a line with anti-aliasing on and one with it off; notice how PS tries to make line blend to background.

File Handling
 Display and cursors
 Transparency and gamut
 Units and rulers
 Guides, grid & slices
 Plug-ins and scratch disk

Determines where virtual memory is used; any disk in the SCSI chain

Tools, palettes and rulers

Displaying (vs. not displaying)

Reminder that Tab key toggles

The Toolbox

Review the names of each tool

Brushes palette: options

*Bring up the brushes palette and show how to select a brush
 Discuss how this palette affects the other creation tools as well
 Show how to create a custom brush*

Colors palette: picker, swatches, scratch

*Bring up the colors palette and show how to change the foreground/
 background color in various modes*

Channels palette: layers, channels, paths

*Call up an image in RGB and show the various images; edit the pref-
 erences to show them in color to bring out the effect*

Info palette

*EXERCISE: select something with the Lasso tool and notice how the
 Info Palette changes. Click inside this area, hold and drag and
 notice how it changes.*

History palette

Sort of like unlimited undos; note History Brush

Action palette

Record repetitive actions (good for resizing a bunch of photos)

File Browser

*A start at managing hundreds of files; still not as good as commercial
 software such as Photo Mechanic*

Editing modes

Grayscale

256 levels of gray approximate those in a continuous tone image

CMYK (cyan, magenta, yellow, black; for printing)

Subtractive color (sum of all color = black)

EXERCISE: finger-painting

RGB (red, green, blue; for display and Web pages)

Additive color (sum of all colors = white)

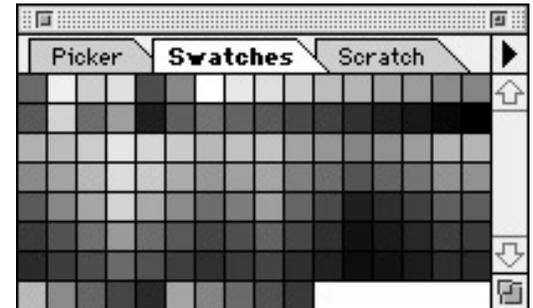
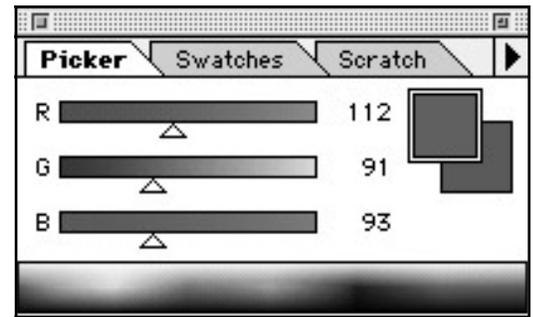
*EXERCISE: create the same color using the color palette mixing RGB
 which is really the only method the monitor can display (plus it's
 only three channels)*

Lab

*Lightness, a, b
 approximates vision; standard*

Duotone

*A specific mode with specialized uses
 Discuss Pantone colors in Color Picker*



COLOR PICKER AND SWATCHES

The color palettes show the colors with which you are working. They also allow you to select other colors which you can apply to the image. They work in Grayscale, Lab, RGB, HSB, and CMYK modes.



PICTURE BROWSER

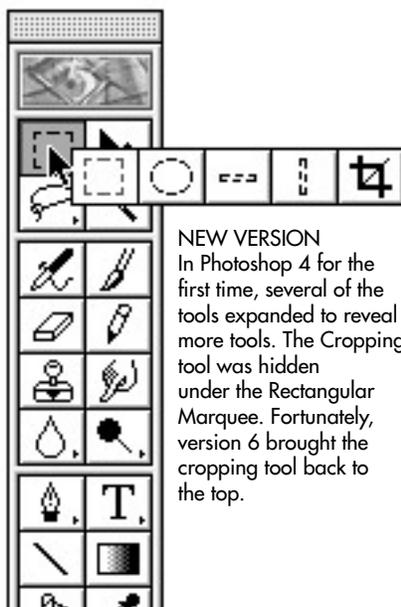
In an effort to help users manage files, Adobe added the Picture Browser with Photoshop 7. In this browser, Photoshop displays thumbnails of any images in a given folder. With digital camera files, it also shows the information from the camera including aperture and shutter speed.



Original images



Manipulated images
Artwork by Daniel Weisbeck,
Taylor Publishing Co., Dallas, TX



NEW VERSION
In Photoshop 4 for the first time, several of the tools expanded to reveal more tools. The Cropping tool was hidden under the Rectangular Marquee. Fortunately, version 6 brought the cropping tool back to the top.

Image-creation tools

Here's a good chance to show how to open a New Window (Window) for viewing in one window and editing in another

Foreground/Background

Just a reminder of what the foreground and background is

EXERCISE: Lasso something, cut it; notice how the background color shows through

Note that Option-Delete replaces a deleted item with the Foreground color

Airbrush

Notice how holding down the clicker puddles the "ink"

Brush

Discuss opacity

Double-click options include fade out and pressure

EXERCISE: create a brush and paint something or work on already open image

With Eyedropper, notice the color values with the Color Palette open

Selecting brushes

Double click to bring up Paintbrush options

Eraser

Holding down the Option key brings up the Magic Eraser which reverts to SAVED image

Pencil (under Brush)

Edits pixel by pixel

NOT aliased

Line

Holding down the Shift key draws a straight line

Double-clicking allows you to change the width

Gradient

Works on a selected area from foreground to background

Double-click on Gradient Tool to select Style, Type, etc.

EXERCISE: draw a gradient style over the entire image with opacity at 25%

Paint Bucket (under Gradient)

Painting Modes

Normal: foreground covers underlying pixels

Dissolve: changes pixels to make it the result in a random fashion depending on the opacity of any given pixel

Behind: changes pixel to make it the result color; like painting on the back of the transparent areas in a sheet of acetate

Clear: Changes each pixel and makes it transparent

Darken: only pixels lighter than foreground are changed

Multiply: darkens the image by multiplying the color values according to a mathematical formula

Color burn: looks at the color information in each channel and darkens the base color to reflect the blend color. Blending with white produces no change.

Linear Burn

Lighten: only pixels darker than foreground are changed

Screen: lighten the pixels being painted over while giving them the tint of the foreground (opposite of Multiply)

Color dodge: looks at the color information in each channel and brightens the base color to reflect the blend color. Blending with black produces no change.

Linear Dodge

Overlay: multiplies or screens the colors depending on base color; the base color is mixed with the blend

Soft light: darkens or lightens the colors depending on the blend color

Hard light: multiplies or screens colors depending on the blend color

Vivid Light

Linear Light

Pin Light

Difference: subtracts either the blend color from the base color or the base color from the blend color depending on which has greater brightness value

Exclusion: creates an effect similar to but softer than the Difference mode. Blending with white inverts the base color values. Blending with black produces no change.

Hue: painted over pixels changes to that of the foreground color

Saturation: painting changes the saturation of the underlying pixels, but leaves their H and L alone

Color: changes pixels to foreground color; H/S changed, but not luminosity

Luminosity: affects only the lightness, not color values

Type

Remind them of ATM font cache

Notice how font becomes "pixelated"; it's part of a TIFF image now

Vertical Type

Type Mask

Editing

Cut, Copy and Paste

Hand

Double-click allows you to fill screen with largest possible window (at an even size)

Zoom

Double-click brings image to 1:1

Clone

Double-click on the Clone Stamp Tool to bring up Options

EXERCISE: clone something

EXERCISE: repair a damaged photo

Cropping

Double-click allows you to specify a final size

Crop part of an image and click with scissors inside the image; canvas size changes; image size does NOT

Cropping can also be done with the rectangular marquee tool

Dodge/Burn

Just like in the darkroom

EXERCISE: On a grayscale image do some dodging and burning

Smudge, Sharpen and Blur

Locally blur or sharpen an image

Effectively, blur lowers the contrast of the affected pixels

Holding down the Option key brings Sharpen (sharp edge)

Healing Brush Tool/Patch Tool

EXERCISE: "Heal" a photo

The Eyedropper

Hold down the clicker and notice how the color under the Eyedropper changes as it's moved around

Double-click on Eyedropper to bring up sampling options

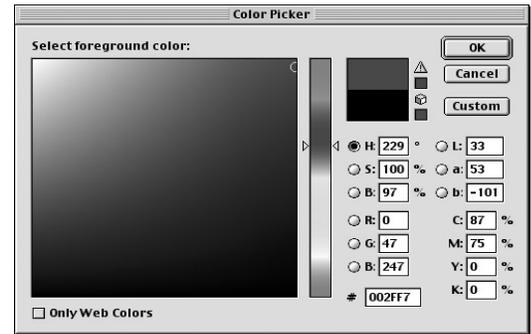
Channels and Layers

Remind them of four-color channels and view each one in grayscale

Create some things in different channels and load them for effects

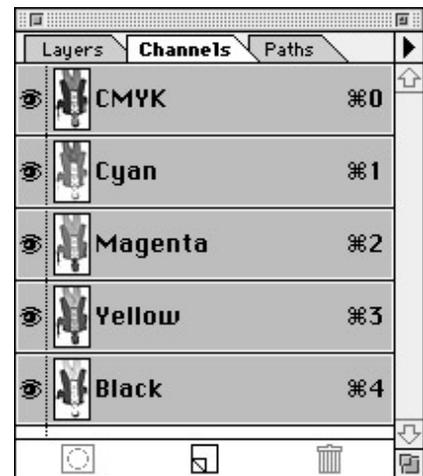
Discuss layers

EXERCISE: From Wow book



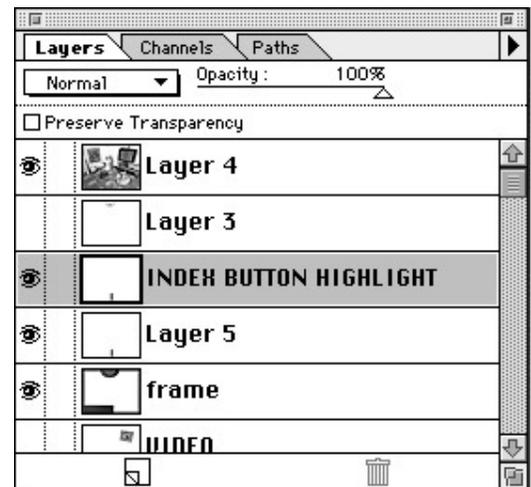
COLOR PICKER

The color picker shows any given color in the four primary editing modes, HSB, RGB, Lab and CMYK. When you select a radio button, the two-dimensional display on the left shows the other two functions. For example, if you pick Hue (as above), the display shows saturation (x) and brightness (y).



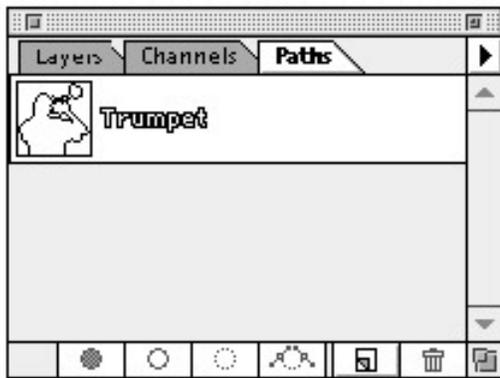
CHANNELS PALETTE

The channels palette allows you to work in only one portion of an image, the yellow portion, for example. Multiple channels are copies of the image and can take up a considerable amount of space.



LAYERS PALETTE

Like working in most draw programs, Photoshop allows you to work on individual layers without affecting the rest of the image.



PATHS

Paths are useful for separating an object from the background or combining images. Since the path can be saved and easily manipulated, it has some advantages over other methods of selecting an area.



KNOCK OUTS

To separate an object from the background, create a clipping path. First define the path using the Pen tool. Save that path as a clipping path. Although a bit time-consuming and tedious on complicated images, this provides a flexible image that can be placed on a variety of backgrounds.

Making Selections

Command-A for Select All; Command-D for Deselect All

Shift adds; Command takes away

Marquee

Show clear, fill under Edit menu, show marquee options

Lasso tool

Holding down the Option key allows a "connect the dot" effect

Magic Wand

The most powerful selection tool; notice "Similar" under the Select menu

Double-click for tolerance

Masking

Use Quick Mask mode as a selection device; very powerful

The Select menu

Select all or none

Make note of Inverse which is useful when one area of an image can be grabbed but you want the other portion

The importance of Grow

EXERCISE: Set tolerance at 1, magnify image until you can see individual pixels; click on one pixel and select similar from the Select image.

EXERCISE: Experiment with various items under the Select menu

Pen tool and paths

Discuss bezier curves

EXERCISE: Create a path and turn it into a selection

EXERCISE: Create a selection and turn it into a path

EXERCISE: Create a clipping path which PageMaker and QuarkX-

Press require to keep edges smooth

Combining images

Paste from one image into another image

Paste inside a selected area

Fill with pattern

Quick Mask and gradient

Image menu

Adjustments

Levels

Pay particular attention to the highlights, shadow areas and midtones

Curves

Edit the curve paying particular attention to the highlights, shadows and the midpoint

EXERCISE: Add some points and invert the curves

Color Balance

Brightness/Contrast

EXERCISE: With image open, play with brightness and contrast; pay particular attention to the difference; analogy: brightness is affected by time of the exposure; contrast is affected by filters when printing

Hue/Saturation

Replace Color

Invert

Command I is keyboard shortcut

Equalize

Threshold

Posterize

Once a popular yearbook effect

Variations

This is a fast way to get some modifications of an image; very powerful

Calculations...

Image Size

Changing this means adding information (interpolation) or deleting information

Canvas Size

A good way to add borders

Rotate canvas

Done in terms of clockwise, etc.

Flipping image on a horizontal or vertical axis

It's better to do this kind of thing BEFORE bringing it into PageMaker or QuarkXPress because it takes less memory

Liquify

A great way to mess up good photos.

Layer menu

New

Duplicate Layer...

Delete

Layer styles

Drop Shadow, Inner Shadow, Outer Glow, Inner Glow, Bevel and Emboss, Satin

Type

Warp Text

Rasterize

Flatten image

View menu

CMYK preview

Gamut warning

Guides

Rulers

Filters (the "fun" stuff)

Liquify...

Pattern Maker...

Artistic

Blur

Gaussian blur

Brush Strokes

Distort

Noise

Useful for getting something form nothing

Pixilate

Render

Clouds

Lens flare

Lighting effects

Sharpen

Unsharp mask

Sketch

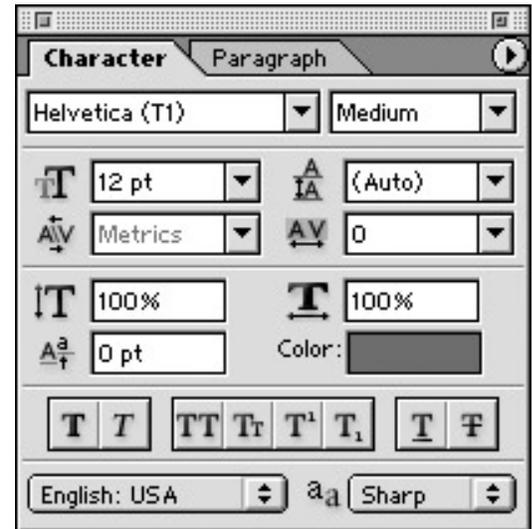
Stylize

Emboss

Solarize

Wind

Texture



TYPE FORMAT

Photoshop 6 and 7 added sophisticated type and paragraph formatting capabilities similar to those in PageMaker or InDesign. Not only can users change font and size on the fly (without moving into another dialog box), but they can change leading, color, character width and even position.

Bevel

LAYER STYLES

In what used to take a dozen or more steps, Photoshop 6 and 7 allows a user to do drop shadows and bevels with one click.

Position statement on photo manipulation

Given the rapid growth brought about by photo-manipulation software and the reliance scholastic journalism programs are placing on them, the Journalism Education Association urges students and advisers to follow these principles:

Advisers of student media should not make decisions about the suitability or legality of images in question. Instead, advisers should empower students to make such decisions and to counsel students to avoid deceptive practices in all aspects of publication work.

Advisers should also counsel students to seek professional legal advice in all legal and ethical questions.

Students working on publications should consider the following tests devised by University of Oregon professors Tom Wheeler and Tim Gleason about “whether and how to manipulate, alter or enhance” images:

The viewfinder test—Does the photograph show more than what the photographer saw through the viewfinder?

The photo-processing test—A range of technical enhancements and corrections on an image after the photo is shot could change the image. Do things go beyond what is routinely done in the darkroom to improve image quality—cropping, color corrections, lightening or darkening?

The technical credibility test—Is the proposed alteration not technically obvious to the readers?

The clear-implausibility test—Is the altered image not obviously false to readers?

If any of the above tests can be answered “yes,” JEA urges student journalists to:

- not manipulate news photos;
- not publish the image(s) in question; or
- clearly label images as photo-illustrations when student editors decide they are the best way to support story content.

From the Journalism Education Association

Photo ethics policy

As journalists, we believe the guiding principle of our profession is accuracy. Therefore, we believe it is wrong to alter the content of a photograph in any way that deceives the public.

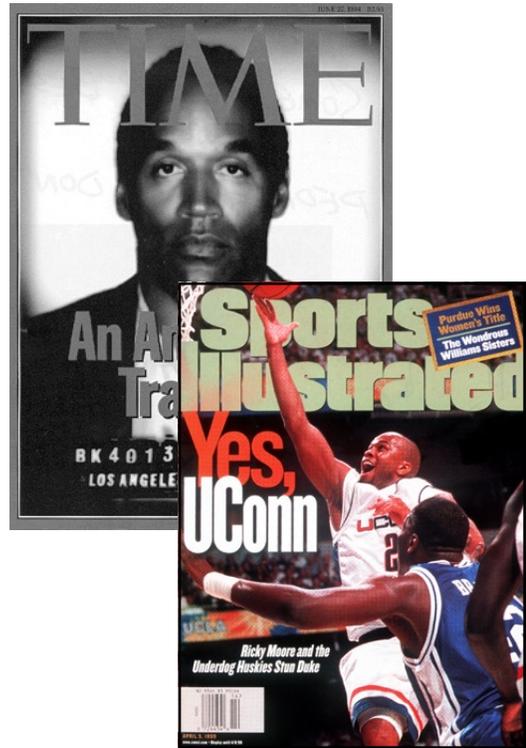
As photojournalists, we have the responsibility to document society and to preserve its images as a matter of historical record. It is clear the emerging electronic technologies provide new challenges to the integrity of photographic images. This technology enables the manipulation of the content of an image in such a way that the change is virtually undetectable. In light of this, we, the National Press Photographers Association, reaffirm the basis of our ethics: accurate representation is the benchmark of our profession.

We believe photojournalistic guidelines for accuracy currently in use should be the criteria for judging what may be done electronically to a photograph. Altering the editorial content of a photograph, in any degree, is a breach of the ethical standards recognized by the NPPA.

From the National Press Photographers Association

Interfacing with other programs

Adobe Illustrator
Macromedia FreeHand
Adobe PageMaker
QuarkXPress



Law and ethics Photo manipulation

When does a photo become a photo illustration?

When is it never OK to manipulate a photo?

Public expects a depiction of reality.

This outline was originally written for the Instructors Only Summer Workshop of the Association of Texas Photography Instructors in 1995. It has been modified to accommodate upgrades to the software and is geared towards instructors of digital imaging in a photojournalism setting. Consequently, not all functions of the software are included.